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सी ई एन - ०१/२०२४ - CEN - 01/2024
सहायक लोको पायलट की भर्ती / Recruitment of Assistant Loco Pilot

RRB ALP 2024 CBT 2

Assistant Loco Pilot · CEN 01/2024 · CBT 2 · Part B of every trade · Question Paper

English

All 47 Shifts (Sets) · Official Answer Key

About this Compilation

This booklet contains all **47 shift papers** of the **RRB ALP 2024 CBT 2 Part B (all trades)** examination in **English**, with the correct option marked as per the official answer key.

✓ Correct option (highlighted green)

97 of these 3465 questions are shown in Hindi. Our saved English papers do not carry them in English, so the official Hindi version of the same question is printed instead and marked with a HINDI chip. Nothing here is machine translated.

60 questions in 4 papers are not in our bank in any language (not saved from any response sheet); each paper prints the questions that are saved.

How to use

- Use the **Index** page to jump directly to any set (clickable).
- Questions appear section by section in the order of the paper, numbered 1 onward.
- Diagram and wide-table questions appear at full width at the end of their section.
- The correct answer is highlighted in green with a tick.

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blackboard

Part B

75 Questions • Answer Key

Q1 Part B

A DC generator is running at constant speed. If the load current increases, what happens to the terminal voltage?

- A. Decreases ✓
- B. Increases
- C. Remains constant
- D. Fluctuates randomly

Q2 Part B

When selecting a sheet size for an original drawing, what should be the primary consideration?

- A. The standard size of the drawing office.
- B. The clarity and resolution required. ✓
- C. The orientation of the drawing (horizontal or vertical).
- D. The size of the reproduction.

Q3 Part B

What type of device is a UJT?

- A. Metal-oxide-semiconductor device
- B. Optical device
- C. Unipolar junction device
- D. Bipolar junction device ✓

Q4 Part B

A 20 kVA, 2500/250 V, 50 Hz, single phase transformer gave the open circuit test result (on low voltage side) as 250 V, 1.6 A and 100 W; then no load power factor is:

- A. 0.15
- B. 0.2
- C. 0.25 ✓
- D. 0.1

Q5 Part B

In a balanced star-connected system, the neutral point _____.

- A. carries current even in balanced loading conditions
- B. is always at a voltage equal to any phase
- C. is at zero potential with respect to all phases ✓
- D. is at a higher constant voltage relative to the ground

Q6 Part B

When a strong magnet is placed near a weak magnet, what will likely happen?

- A. The weak magnet will disappear.
- B. The strong magnet will induce magnetism in the weak magnet. ✓
- C. The strong magnet will lose its magnetism.
- D. The weak magnet will repel the strong magnet.

Q7 Part B

A circular hole of radius 3 cm is cut from a rectangular sheet of dimensions 12 cm × 10 cm. Find the remaining area.

(Take π = 3.14)

- A. 100 cm^2
- B. 91.74 cm^2 ✓
- C. 95.86 cm^2
- D. 75.74 cm^2

Q8 Part B

Non-functional dimensions are _____.

- A. not essential for the function of the space or component ✓
- B. essential for the function of the space or component
- C. derived from the values of the related features of a drawing
- D. directly derived from the values given on a drawing

Q9 Part B

In the context of earthing in an electrical system, _____ has the greatest impact on earth resistance.

- A. the length of the earthing conductor
- B. the voltage applied to the ground
- C. the material of the grounding rod
- D. soil resistivity ✓

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Q10 Part B

Alternators run at a speed _____ synchronous speed.

- A. less than or greater than
- B. equal to ✓
- C. only less than
- D. only greater than

Q11 Part B

In rotating armature type alternator, magnetic field is produced by:

- A. Slip rings on rotor
- B. DC electromagnets placed on stator ✓
- C. Slip rings and brushes
- D. Commutator

Q12 Part B

In a velocity-time graph, the negative slope represents _____.

- A. retardation ✓
- B. displacement
- C. acceleration
- D. distance

Q13 Part B

What is the phase difference between the line voltage and phase voltage in a star-connected load?

- A. 30°
- B. 120°
- C. 0° ✓
- D. 90°

Q14 Part B

In a three-phase, balanced system, if the load is purely resistive, the line current is _____.

- A. in phase with the line voltage ✓
- B. 90° ahead of the line voltage
- C. unrelated to the line voltage
- D. 90° behind the line voltage

Q15 Part B

A circuit consists of three resistors; 15 ohms, 10 ohms, and 20 ohms. The 15-ohm resistor is in series with the parallel combination of the 10-ohm and 20-ohm resistors. If a 24 V battery is applied across the circuit, what is the total current flowing through the circuit?

- A. 3.1 A
- B. 0.1 A
- C. 1.1 A ✓
- D. 2.1 A

Q16 Part B

What is the main purpose of continuity testing in a DC generator?

- A. To detect open or broken windings ✓
- B. To test insulation resistance
- C. To measure current flow
- D. To check voltage regulation

Q17 Part B

A 220 V shunt generator has a field resistance of 110 Ω. What is the field current?

- A. 10 A
- B. 20 A
- C. 5 A
- D. 2 A ✓

Q18 Part B

For what purpose are pins and clips used in engineering drawings?

- A. To transfer dimensions and dividing lines into a number of equal parts
- B. To draw horizontal lines, parallel lines and to guide/hold the set squares
- C. To fasten the drawing sheet on to the drawing board firmly so that it does not shake ✓
- D. To support the drawing paper/tracing paper for making drawings

Q19 Part B

A transformer's open circuit test is used to determine:

- A. core losses and no load current ✓
- B. stray loss
- C. windage loss
- D. copper loss

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Q20 Part B

Which of the following types of pliers is used to shape loops in wires and to form curves in light metal strips?

- A. Flat nose pliers
- B. Round nose pliers ✓
- C. Slip-joint pliers
- D. End cutting pliers

Q21 Part B

A three-phase AC circuit is connected with star connected balanced load of 100 Ω. If phase voltage of each phase is 200 V, the current in each phase will be ____.

- A. 1 A
- B. 2 A ✓
- C. 4 A
- D. 0.5 A

Q22 Part B

Which of the following statements is NOT true if any electrical system is not properly earthed?

- A. It provides voltage constant voltage supply regardless of perturbation in load side. ✓
- B. It may lead to damage of electrical equipment.
- C. It can increase the risk of electric shock.
- D. It may cause the electric current to flow in an uncontrolled manner.

Q23 Part B

When measuring the resistance of a resistor using an ohmmeter, what does a reading of zero resistance indicate?

- A. The resistor is functioning normally.
- B. The resistor is open-circuited.
- C. The resistor is short-circuited. ✓
- D. The ohmmeter is malfunctioning.

Q24 Part B

The unit for specific gravity is _____.

- A. m/s^2
- B. g/cm^3
- C. kg/m^3
- D. no unit (dimensionless) ✓

Q25 Part B

Which of the following organisations is responsible for enforcing workplace safety regulations in India?

- A. World Health Organization (WHO)
- B. Food and Drug Administration (FDA)
- C. Directorate General of Factory Advice Service and Labour Institutes (DGFASLI) ✓
- D. Environmental Protection Agency (EPA)

Q26 Part B

What is a key advantage of using MOSFETs in electronic circuits compared to other types of transistors?

- A. High frequency response
- B. High input impedance and low power consumption ✓
- C. Ability to handle higher voltages and currents than BJTs
- D. Ability to amplify both AC and DC signals

Q27 Part B

What is the primary reason for electrical injuries when a person comes in contact with electrical equipment?

- A. Electrical equipment is not properly grounded.
- B. Current flows through the body causing harm. ✓
- C. Devices are used for too long.
- D. Electrical devices are too powerful.

Q28 Part B

Which of the following instruments is used to test the earth resistance of an earthing system?

- A. Multimeter
- B. Megger ✓
- C. Clamp meter
- D. Oscilloscope

Q29 Part B

A drawing instrument box is used to carry all _____ instruments.

- A. drawing ✓
- B. screening
- C. drilling
- D. casting

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Q30 Part B

Which of the following hand-operated drilling machines is used for drilling small diameter holes up to 6 mm?

A. Electric hand drill
B. Ratchet drilling machine
C. Breast drilling machine
D. Bevel gear type drilling machine ✓

Q31 Part B

What happens if the gate current is removed while a TRIAC is conducting?

A. The TRIAC will stop conducting.
B. The TRIAC will remain conducting until the current falls below the holding current. ✓
C. The TRIAC will not be affected.
D. The TRIAC will behave like a short circuit.

Q32 Part B

What is the basic working principle of a DC generator?

A. Electrostatic induction
B. Mutual induction
C. Faraday's law of electromagnetic induction ✓
D. Lenz's law

Q33 Part B

Where are ceramic capacitors commonly used?

A. Mobile Phones
B. High-power motors
C. TV circuits ✓
D. Transformers

Q34 Part B

Air-cored inductors are most commonly used in circuits operating at/in:

A. high frequencies from 1 MHz to several hundred MHz ✓
B. DC power supply circuits
C. low frequencies below 50 Hz
D. audio frequency range (20 Hz – 20 kHz)

Q35 Part B

Read the given statements carefully and select the correct option.

Statement 1: Plate earthing ensures a low-resistance path for fault current to safely flow into the earth.
Statement 2: The resistance of the earthing system is not affected by the soil type or moisture content.

A. Both Statement 1 and Statement 2 are correct.
B. Statement 1 is incorrect, but Statement 2 is correct.
C. Statement 1 is correct, but Statement 2 is incorrect. ✓
D. Both Statement 1 and Statement 2 are incorrect.

Q36 Part B

Which of the following vices consists of a handle and a small collet chuck at one end?

A. Hand vice
B. Pin vice ✓
C. Pipe vice
D. Toolmaker's vice

Q37 Part B

What is the advantage of giving heat treatment to a material?

A. To decrease the melting point of the material
B. To increase the weight of the material
C. To change it from one element to another element
D. To make surgical knives of sharp edges ✓

Q38 Part B

Why is armature resistance control NOT suitable for speed control in high-power DC motors?

A. It results in poor efficiency due to high power loss. ✓
B. It causes high torque fluctuations.
C. It cannot reduce the motor speed.
D. It increases field current.

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Q39 Part B

Which of the following is an important safety measure during a power failure?

- A. Using candles for lighting
- B. Continuing to use equipment without verifying power status
- C. Ensuring all machines and electrical equipment are turned off ✓
- D. Ignoring alarm systems

Q40 Part B

Where are Kit-Kat type fuses commonly used?

- A. Electronic circuits
- B. High-voltage transmission systems
- C. Domestic and small industrial electrical circuits ✓
- D. Power generation plants

Q41 Part B

Low speed diesel engine alternators employ rotor of _____ type.

- A. salient pole construction ✓
- B. cylindrical stator construction
- C. slip ring construction
- D. rotating armature construction

Q42 Part B

When using a multimeter to measure current, which of the following is correct?

- A. The multimeter is connected directly to the power source.
- B. The multimeter is connected in series with the load. ✓
- C. The multimeter is connected only across resistive components.
- D. The multimeter is connected in parallel with the load.

Q43 Part B

IEEE 80 provides recommendations for _____.

- A. standards for electrical insulation materials
- B. voltage regulation in power systems
- C. measurement of electrical power consumption
- D. proper installation of grounding and bonding systems in electrical installations ✓

Q44 Part B

Permeability of ideal transformer core is equal to:

- A. low value
- B. zero
- C. unity
- D. infinite ✓

Q45 Part B

In a lead-acid battery, what is the chemical composition of the material used for the positive plate during discharge?

- A. Sulphuric acid (H_2SO_4)
- B. Lead (Pb)
- C. Lead dioxide (PbO_2) ✓
- D. Lead sulfate ($PbSO_4$)

Q46 Part B

At what overload percentage does the solenoid attract the armature fully, causing instantaneous tripping in a MCB?

- A. 700% ✓
- B. 130%
- C. 300%
- D. 1000%

Q47 Part B

What is the effect of increasing the field current in a DC shunt motor?

- A. The motor speed increases.
- B. The torque decreases.
- C. The motor stops immediately.
- D. The motor speed decreases. ✓

Q48 Part B

If the current flowing through a conductor is 5 A and the resistance of the conductor is 10 ohms, what will be the voltage across the conductor, according to Ohm's Law?

- A. 15 V
- B. 50 V ✓
- C. 5 V
- D. 10 V

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Q49 Part B

Which of the following files is used for filing narrow grooves and angles above 10°?

- A. Knife-edge file ✓
- B. Half round file
- C. Square file
- D. Triangular file

Q50 Part B

In the open circuit test of a transformer, the supply frequency should be:

- A. higher than the rated frequency
- B. equal to the rated frequency ✓
- C. independent of the rated frequency
- D. lower than the rated frequency

Q51 Part B

What is the primary use of a Unijunction Transistor (UJT) in electronic circuits?

- A. Triggering of SCRs and TRIACs ✓
- B. Amplification of signals
- C. Frequency modulation
- D. Voltage regulation

Q52 Part B

Which of the following factors DOES NOT affect the rating of a fuse?

- A. The ambient temperature
- B. The colour of the fuse holder ✓
- C. The type of electrical load
- D. The cross-sectional area of the conductor

Q53 Part B

Which component in a magnetic hydraulic MCB holds the ferrous plunger?

- A. A non-ferrous tube ✓
- B. A bimetallic strip
- C. A thermal coil
- D. A fuse element

Q54 Part B

What should you do to ensure your personal safety at work?

- A. Wear personal protective equipment. ✓
- B. Work in a hurry without checking equipment.
- C. Ignore warning signs and instructions.
- D. Take risks to finish tasks quickly.

Q55 Part B

Arrange the following steps in the correct order to draw an equilateral triangle with each side of 35 mm.

1. Join CA and CB.
2. Draw a line and mark AB 35 mm as the side of the triangle.
3. With radius AB and center A and B, draw arcs cutting at C.
4. ABC is the required triangle.

- A. 2, 3, 1, 4 ✓
- B. 1, 2, 4, 3
- C. 2, 1, 3, 4
- D. 3, 2, 1, 4

Q56 Part B

A 20 kVA, 2500/250 V, 50 Hz, single phase transformer gave the open circuit test result (on low voltage side) as 250 V and 100 W; then core loss current is:

- A. 0.4 A ✓
- B. 0.1 A
- C. 0.3 A
- D. 0.2 A

Q57 Part B

Which of the following is a characteristic of an SCR?

- A. It is a four-layer, three-junction device. ✓
- B. It cannot control the flow of current.
- C. It is a two-terminal device.
- D. It has no gate terminal.

Q58 Part B

Why is it important for every person to follow safety procedures in the workplace?

- A. To increase overall production efficiency
- B. To minimise risks and avoid accidents ✓
- C. To reduce operational costs significantly
- D. To limit the need for frequent supervision

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Q59 Part B

Which of the following parts of a file is the part fitted to the tang for holding the file?

- A. Tip or Point
- B. Handle ✓
- C. Edge
- D. Tang

Q60 Part B

Which of the following is a key safety measure to follow when installing an earthing system?

- A. Use thin copper wires for earthing to reduce costs.
- B. Use flexible conductors for earthing connections.
- C. Ensure the earthing system is properly inspected and tested for safety compliance. ✓
- D. Ensure the earthing system is designed for maximum efficiency.

Q61 Part B

Gaskets, seals and spacers are made using:

- A. centre punch
- B. hollow punch ✓
- C. pin punch
- D. prick punch

Q62 Part B

What is the purpose of an emergency evacuation plan?

- A. To ensure safe and orderly evacuation during emergencies ✓
- B. To avoid safety drills
- C. To increase productivity
- D. To allow workers to leave early

Q63 Part B

According to BIS SP 46-2003, which of the following applications is correctly represented by a chain-thin line in engineering drawings?

- A. Center lines ✓
- B. Hidden edges
- C. Dimension lines
- D. Visible edges

Q64 Part B

Calculate the voltage regulation (in percentage) of the transformer if the no load secondary voltage is 250 V and full load secondary voltage is 200 V?

- A. 20%
- B. 100%
- C. 50%
- D. 25% ✓

Q65 Part B

The magnitude of EMF induced by an alternator is given as: (Given: B is the flux density, L is the length of the conductors, V is the velocity of the rotation and q is the angle at which the conductor cuts the line of force)

- A. BLV Sinq ✓
- B. (BL Sinq)/V
- C. (BV Cosq)L
- D. BLV Cosq

Q66 Part B

What is the primary material used in the resistance wire of wire-wound resistors?

- A. Aluminium
- B. Silver
- C. Nichrome ✓
- D. Copper

Q67 Part B

How long does a fuse element take to melt when carrying twice its rated current?

- A. 1 minute
- B. 5 minutes
- C. 30 seconds
- D. 2 minutes ✓

Q68 Part B

Which of the following best describes the construction of a mica capacitor?

- A. A thin polymer film rolled into a cylinder
- B. A ceramic disc with metal coatings
- C. Alternating layers of metal foil and mica sheets ✓
- D. A liquid electrolyte between two aluminium plates

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Q69 Part B

A TRIAC (Triode for Alternating Current) is a _____ device.

A. One-terminal device

B. Bilateral device ✓

C. Two-terminal device

D. Unilateral device

Q70 Part B

What type of components are used for tapping in the ring main system?

A. Directly from the main supply

B. Using transformers

C. Through capacitors

D. Through fuses and controlling switches ✓

Q71 Part B

$(\frac{3}{8}) + (\frac{5}{12})$

A. $\frac{17}{24}$

B. $\frac{19}{24}$ ✓

C. $\frac{8}{20}$

D. $\frac{7}{12}$

Q72 Part B

In star connected alternator, the relation between line voltage, E_L and phase voltage, E_{ph} is given by:

A. $E_L = E_{ph}$

B. $E_L = 3E_{ph}$

C. $E_L = \frac{1}{3}E_{ph}$

D. $E_L = \sqrt{3}E_{ph}$ ✓

Q73 Part B

Which of the following options is correct?

Statement 1: In a balanced three-phase system, the power delivered to the load depends on both the phase current and the phase voltage.

Statement 2: The line voltage in a star-connected system is always greater than the phase voltage by a factor of $\sqrt{3}$.

A. Both Statement 1 and Statement 2 are false.

B. Statement 1 is true, and Statement 2 is false.

C. Statement 1 is false, and Statement 2 is true.

D. Both Statement 1 and Statement 2 are true. ✓

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Q74 Part B

$\cos\theta$

A. $\frac{3}{5}$

B. $\frac{4}{5}$ ✓

C. $\frac{5}{4}$

D. $\frac{3}{4}$

Q75 Part B

If two inductors are connected in series with mutual inductance M (aiding), what is the equivalent inductance?

A. $L_{eq} = L_1 + L_2 - 2M$

B. $L_{eq} = \frac{L_1 + L_2}{2}$

C. $L_{eq} = L_1 + L_2 + 2M$ ✓

D. $L_{eq} = \frac{L_1 + L_2}{L_1 * L_2}$

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Q1 Part B

Which type of DC generator has its field winding connected in parallel with the armature?

A. Series DC generator

B. Shunt DC generator ✓

C. Separately excited DC generator

D. Compound DC generator

Q2 Part B

In parallel grouping of capacitors, what happens to the total capacitance?

A. It remains the same.

B. It increases. ✓

C. It becomes zero.

D. It decreases.

Q3 Part B

Which of the following uses of wire gauge is INCORRECT?

A. It measures the diameter of a wire.

B. It does not help determine how much current a wire can carry. ✓

C. Using the wrong wire gauge can damage appliances and electronic devices.

D. It is used in electrical installations, welding and other applications.

Q4 Part B

Which of the following is a fundamental unit?

A. newton

B. metre ✓

C. pascal

D. watt

Q5 Part B

What should be the minimum thickness of the MS clips used for fixing PVC channels under steel joints?

A. 1.2 mm ✓

B. 1.7 mm

C. 0.5 mm

D. 2.2 mm

Q6 Part B

Which of the following statements is/are correct?
Statement I - The annealing process uses heat to reduce the hardness and increase the ductility and toughness of various steels, cast iron, and alloys.
Statement II - Quenching is a rapid cooling process that alters specific properties of materials by manipulating the cooling rate.

A. Statement (I) is correct but Statement (II) is incorrect.

B. Statement (I) and (II) both are correct. ✓

C. Statement (I) is incorrect but Statement (II) is correct.

D. Statement (I) and (II) both are incorrect.

Q7 Part B

The SCR (Silicon controlled rectifier) is also called a _____.

A. transistor

B. diode

C. triac

D. thyristor ✓

Q8 Part B

If the coefficient of linear expansion of a material is 2×10^{-5} °C^{-1}, what does it mean?

A. The material expands by 2×10^{-5} times its original area per degree Celsius

B. The material expands by 2×10^{-5} times its original volume per degree Celsius

C. The material expands by 2×10^{-5} times its original length per degree Celsius ✓

D. The material always increases by 2×10^{-5} kg when temperature is increased by 1°C

Q9 Part B

What is another name for CTS wiring?

A. Conduit wiring

B. Batten wiring ✓

C. Casing and capping wiring

D. Cleat wiring

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Q10 Part B

Which of the following is an example of a p-type semiconductor?

A. Silicon doped with phosphorus

B. Silicon doped with arsenic

C. Silicon doped with boron ✓

D. Germanium doped with phosphorus

Q11 Part B

The EMF per turn of a single phase 10 kVA, 2200/220 V, 50 Hz transformer is 10 V. Calculate the number of primary and secondary turns, respectively.

A. 110 and 10

B. 220 and 22 ✓

C. 10 and 110

D. 22 and 220

Q12 Part B

If 'P' is the number of poles on a rotor of an alternator, how many cycles of EMF are completed in one revolution?

A. 2P

B. P

C. P/4

D. P/2 ✓

Q13 Part B

A device operates at 240 V and consumes 480 W of power. What is the current flowing through the device?

A. 2 A ✓

B. 1 A

C. 1.5 A

D. 2.5 A

Q14 Part B

Which power loss is assessed by open-circuit test on transformer?

A. Winding loss

B. Copper loss

C. Core loss ✓

D. Friction loss

Q15 Part B

In engineering drawing (lettering and numbering), a single stroke means that the _____.

A. thickness of the line of the letter or number is obtained in one stroke of the pencil ✓

B. thickness of the line of the letter or number is obtained in three strokes of the pencil

C. thickness of the line of the letter or number is obtained in no strokes of the pencil

D. thickness of the line of the letter or number is obtained in two strokes of the pencil

Q16 Part B

If the load on a three-phase system is unbalanced, the power calculation becomes more complex because _____.

A. the power factor becomes unity

B. the current in each phase differs, and the total power must be calculated by adding individual phase powers ✓

C. the line current becomes zero

D. the line and phase voltages become equal

Q17 Part B

In a Power MOSFET, the gate-to-source voltage (V_{gs}) controls the _____.

A. gate current

B. source current

C. drain current ✓

D. breakdown voltage

Q18 Part B

Which of the following types of wooden mallets are used for general purpose work such as flattening and bending?

A. Bossing mallets

B. Side-faked mallets

C. Standard wooden mallets ✓

D. End-faked mallets

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Q19 Part B

Select the correct statement regarding grounding and earthing in electrical system.

A. Grounding is used to protect humans from electric shocks, while earthing is used to reduce power consumption.

B. The grounding and earthing are related to single phase system.

C. Grounding and earthing are the same process with no distinction.

D. Grounding involves connecting the earth to a system's neutral or other conductors, while earthing connects the system's frame or body to the earth. ✓

Q20 Part B

What does an optical pyrometer measure?

A. The relative density of liquids

B. The temperature of the surface ✓

C. The volume of liquids

D. The pressure of gases

Q21 Part B

Match the correct length and breadth of the Trimmed sizes of sheets.

Designation	Trimmed size
A. A0	P. 297 × 420
B. A1	Q. 420× 594
C. A2	R. 594 × 841
D. A3	S. 841 × 1189

A. A - R, B - S, C - Q, D - P

B. A - P, B - R, C - Q, D - S

C. A - S, B - R, C - P, D - Q

D. A - S, B - R, C - Q, D - P ✓

Q22 Part B

Which of the following instruments is used to measure the resistance of an earthing electrode?

A. Clamp meter

B. Tachometer

C. Earth resistance tester ✓

D. Power analyser

Q23 Part B

Which of the following statements correctly describes the placement and purpose of orientation marks on a drawing sheet?

1. Orientation marks are placed at two opposite corners of the drawing sheet to indicate the correct orientation on the drawing board.
2. Orientation marks consist of arrow heads placed across the frame, with one at the shorter side and one at the longer side, coinciding with the centering marks.
3. One of the orientation marks always points towards the draughtsman, indicating the direction in which the drawing sheet should be placed.
4. Orientation marks are used to mark the midpoint of each side of the drawing sheet for accurate centering.

A. 1, 2, and 3 only

B. 1 and 4 only

C. 2 and 3 only ✓

D. 1, 2, and 4 only

Q24 Part B

A resistor has these colour bands: Brown, Black, Red and Gold. What is its resistance value?

A. 10 Ω ± 5%

B. 100 Ω ± 5%

C. 10,000 Ω (10 kΩ) ± 5%

D. 1,000 Ω (1 kΩ) ± 5% ✓

Q25 Part B

Which of the following is true for an alternator?

A. Alternator is a DC machine.

B. Alternator is an AC induction generator.

C. Alternator is a synchronous motor.

D. Alternator is a synchronous generator. ✓

Q26 Part B

In an unbalanced three-phase system, the neutral current will _____.

A. be equal to the ratio of phasor sum of phase voltage of any two phases to the total impedance of both phases

B. always be zero

C. be equal to the ratio of phase voltage of any phase to the impedance of that phase

D. be equal to the phasor sum of the unbalanced currents ✓

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Q27 Part B

Which of the following is a key advantage of using Thyristors in power control applications?

- A. High frequency switching ✓
- B. High efficiency and low power loss
- C. Small size and low cost
- D. Low voltage handling capabilities

Q28 Part B

What is waste?

- A. Natural resources for living organisms
- B. Valuable substances for agriculture
- C. Useful materials for industries
- D. Unwanted or unusable materials ✓

Q29 Part B

Which of the following maintenance practices helps prevent overheating in a DC motor?

- A. Regular lubrication of bearings ✓
- B. Reducing field current
- C. Disconnecting the load frequently
- D. Increasing armature resistance

Q30 Part B

A shunt release in an MCCB is commonly used for:

- A. overcurrent protection
- B. improving power factor
- C. remote tripping of the MCCB ✓
- D. voltage stabilisation

Q31 Part B

Which of the following parts of a hammer-head is used for shaping and forming work like riveting and bending?

- A. Face
- B. Eyehole
- C. Pein ✓
- D. Cheek

Q32 Part B

Which type of material is used to protect the transformer winding from the core?

- A. Steel
- B. Mica ✓
- C. Water
- D. Iron

Q33 Part B

Which type of wiring is used only for temporary installations?

- A. Casing and capping wiring
- B. Conduit wiring
- C. CTS wiring
- D. Cleat wiring ✓

Q34 Part B

What is the chemical effect that occurs in a battery during the charging process of a Lead Acid battery?

- A. Lead reacts with sulphur to form lead sulphate
- B. Water dissociation into hydrogen and oxygen
- C. Lead sulphate decomposes into lead and sulphuric acid ✓
- D. Sulphuric acid dissociates into hydrogen and sulphate ions

Q35 Part B

In which application is a Gate Turn-Off Thyristor (GTO) used?

- A. Audio amplifiers
- B. Power inverters and motor drives ✓
- C. Low-power digital circuits
- D. High-speed communication systems

Q36 Part B

Which type of semiconductor material is typically used to construct a DIAC?

- A. Copper
- B. Aluminium
- C. Silicon ✓
- D. Gallium Arsenide

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Q37 Part B

What is the primary purpose of implementing Lockout/Tagout (LOTO) procedures when working on a DC motor?

- A. To improve motor cooling
- B. To prevent accidental startup during maintenance ✓
- C. To measure motor speed
- D. To increase motor efficiency

Q38 Part B

Pencils are rated in engineering drawings based on the _____.

- A. hardness or softness of the lead ✓
- B. colour of the lead
- C. durability of the lead
- D. shape of the lead

Q39 Part B

What is the primary principle behind the generation of electrical energy in a piezoelectric device?

- A. Conversion of thermal energy into electrical energy
- B. Conversion of chemical energy into electrical energy
- C. Conversion of light energy into electrical energy
- D. Conversion of mechanical stress into electrical energy ✓

Q40 Part B

A DC generator delivers a load current of 25 A at 200 V. If the generated EMF is 205 V, what is the armature resistance?

- A. 0.2 Ω ✓
- B. 0.4 Ω
- C. 0.3 Ω
- D. 0.1 Ω

Q41 Part B

What does inductance (L) oppose in a circuit?

- A. Change in voltage
- B. Change in current magnitude ✓
- C. Change in frequency
- D. Change in resistance

Q42 Part B

What is the maximum allowable distance of the screw from the end point of a joint during installation of PVC channel?

- A. 15 cm ✓
- B. 10 cm
- C. 5 cm
- D. 20 cm

Q43 Part B

What is the holding current in a DIAC?

- A. The current required to break down the junction
- B. The current that flows when the device is turned off
- C. The current needed to trigger the device into conduction
- D. The current required to keep the DIAC in conduction once it starts ✓

Q44 Part B

Which of the following IEEE standards focuses on the grounding of electrical systems and equipment?

- A. IEEE 80 ✓
- B. IEEE 519
- C. IEEE 1547
- D. IEEE 1100

Q45 Part B

Which of the following punches is used to make deeper witness marks on scribed lines and make it easier for the drill to start correctly?

- A. Solid punch
- B. Centre punch ✓
- C. Pin punch
- D. Prick punch

Q46 Part B

When drawing a curved line of a specific length in an engineering drawing, which tool is most appropriate for ensuring accuracy?

- A. Protractor
- B. Straightedge
- C. French Curve ✓
- D. Compass

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Q47 Part B

When did India implement the Hazardous Wastes (Management and Handling) Rules to regulate the disposal and handling of hazardous waste?

- A. 1987
- B. 2000
- C. 1989 ✓
- D. 1982

Q48 Part B

In engineering drawing, what is defined as the path of a moving point with no thickness?

- A. Angle
- B. Curve
- C. Point
- D. Line ✓

Q49 Part B

If a machine has an efficiency of 80%, it means:

- A. the machine produces more output than input
- B. the machine has a velocity ratio and mechanical advantage both equal to 80
- C. the machine does not have any loss in input energy
- D. the machine loses 20% of the input ✓

Q50 Part B

In a single-phase transformer, which instrument is used to check continuity between the primary and secondary windings when they are not energised?

- A. Use a multimeter set to ohms ✓
- B. Use a multimeter set to voltage
- C. Use a multimeter set to current
- D. Use an energy meter

Q51 Part B

What happens to inductive reactance, when frequency increases?

- A. It becomes zero.
- B. It increases. ✓
- C. It decreases.
- D. It remains the same.

Q52 Part B

Which of the following punch marks is used for the correct location and seating of the divider point?

- A. Centre punch marks of 30°
- B. Centre punch marks of 60°
- C. Prick punch marks of 120°
- D. Prick punch marks of 30° ✓

Q53 Part B

What is the main difference between grounding and earthing in a three-phase system?

- A. Grounding provides a return path for current, while earthing provides a safe path for fault current. ✓
- B. Grounding and earthing are used interchangeably, with no major difference.
- C. Grounding is used to protect electrical appliances from surge voltages, while earthing is used to prevent system overloads.
- D. Grounding connects only the body of the electrical equipment to the earth, whereas earthing is associated with the neutral conductor.

Q54 Part B

What is the significance of the term 'equipotential bonding' in the context of IEEE regulations for earthing?

- A. It ensures that electrical systems operate at different voltage levels.
- B. It is a method to increase the resistance of the grounding system.
- C. It refers to the insulation of electrical cables.
- D. It refers to ensuring that all metallic parts of electrical systems are connected together to maintain the same electrical potential. ✓

Q55 Part B

What is the most likely cause if a DC motor runs in the wrong direction?

- A. Faulty bearings
- B. Incorrect field or armature wiring connections ✓
- C. High armature resistance
- D. Worn-out brushes

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Q56 Part B

What force (effort) will be required to push a load, initially at rest, of mass 500 g, so that at a distance of 20 m, its final velocity is 20 m/sec [Assume that there is no friction and 'g' = 10 m/s^2].

A. 5 J

B. 10 N

C. 5 N ✓

D. 10 J

Q57 Part B

A 6-pole alternator is running and producing a frequency of 50 Hz. If the frequency is decreased to 20 Hz, how many poles will be required, if the alternator is to be run at the same speed?

A. 6

B. 8

C. 4

D. 2 ✓

Q58 Part B

In a balanced three-phase system, the phase angles between the line-to-line voltages are _____.

A. 90°

B. 120° ✓

C. 0°

D. 60°

Q59 Part B

What is the recommended action if a DC motor produces excessive sparking at the brushes?

A. Reduce the motor speed

B. Increase the supply voltage

C. Replace worn-out brushes and clean the commutator ✓

D. Add resistance to the armature circuit

Q60 Part B

The total power delivered by a balanced three-phase system is _____.

A. the sum of the individual powers of any two phases

B. the average of the powers in all three phases

C. the product of the phase voltage and current of any one phase

D. the sum of the individual powers in each phase ✓

Q61 Part B

Why is it important to follow proper disposal procedures for industrial waste?

A. To allow waste to decompose anywhere

B. To reduce the number of trash bins needed

C. To save time and effort in sorting waste

D. To comply with environmental regulations and reduce pollution ✓

Q62 Part B

Which of the following processes is used to manufacture thick film resistors?

A. Pasting metal compound and powdered glass on a ceramic base ✓

B. Embedding metal wire in ceramic

C. Spraying metal powder on a ceramic base

D. Coating a metal rod with ceramic

Q63 Part B

Salient pole type alternator has a _____ diameter and a _____ axial length for low speed of operation.

A. short, large

B. short, short

C. large, large

D. large, short ✓

Q64 Part B

Which of the following statements is correct about a protractor?

Statements:
1. A protractor can be used to measure angles from both sides.
2. A protractor is typically made of a rigid metal material.

A. Neither statement is true

B. Only statement 2 is true

C. Only statement 1 is true ✓

D. Both statements are true

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Q65 Part B

Which of the following is the key difference between a fuse and a circuit breaker?

- A. A fuse can be reset after tripping, while a circuit breaker must be replaced.
- B. A fuse is used for high-voltage circuits, while a circuit breaker is used for low-voltage circuits.
- C. A fuse is a mechanical device, while a circuit breaker is an electronic device.
- D. A fuse is a one-time-use device, while a circuit breaker can be reset and reused. ✓

Q66 Part B

What determines the appropriate current rating of a fuse in a circuit?

- A. The smallest cable rating in the circuit ✓
- B. The number of electrical devices connected
- C. The length of the circuit wires
- D. The voltage supplied to the circuit

Q67 Part B

Which of the following methods is used to reduce earth resistance in an earthing system?

- A. Increasing the depth of the ground electrode ✓
- B. Using larger conductors for grounding
- C. Reducing the distance between the earth and the neutral
- D. Using insulated grounding cables

Q68 Part B

A capacitor with a capacitance of 10 μF is connected in series with a 1 MΩ resistor. How much time will it take for the capacitor to reach 90% of its final charge?

- A. 10.5 seconds
- B. 50.2 seconds
- C. 35.7 seconds
- D. 23.03 seconds ✓

Q69 Part B

Which of the following losses remains variable during normal operation of transformer?

- A. Copper loss ✓
- B. Hysteresis loss
- C. Eddy current loss
- D. Stray loss

Q70 Part B

Which of the following types of wooden mallets are used for hollowing panel beatings?

- A. Standard wooden mallets
- B. End-faked mallets
- C. Side-faked mallets
- D. Bossing mallets ✓

Q71 Part B

What will be the eddy current loss if the supply frequency of a transformer becomes double?

- A. Four times ✓
- B. No change
- C. Double
- D. Half

Q72 Part B

What is the blade length of the T1 'T' square, as per IS:1360-1989?

- A. 500 mm
- B. 1500 mm
- C. 700 mm
- D. 1000 mm ✓

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Q73 Part B

Select the option that is correct regarding the following two statements labelled Assertion (A) and Reason (R).

Assertion: The line voltage in a star-connected system is $\sqrt{3}$ times the phase voltage.

Reasoning: In a star connection, the line voltage is the vector sum of the phase voltages, resulting in a $\sqrt{3}$ factor between them.

A. Assertion is correct, but Reason is incorrect.

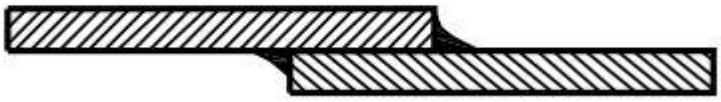
B. Assertion is incorrect, but Reason is correct.

C. Both Assertion and Reason are correct, but the Reason is not the correct explanation for the Assertion.

D. Both Assertion and Reason are correct, and the Reason is the correct explanation for the Assertion. ✓

Q74 Part B

Identify the type of brazed joint shown below.



A. Joggle Lap

B. Simple Lap ✓

C. Strapped Lap

D. Butted Flange

Q75 Part B

If 'P' is the number of poles on a rotor of an alternator, 'n' is the number of revolutions made per second by the rotor, then the frequency will be:

A. $f = 120P*n$

B. $f = P*n$

C. $f = \frac{P*n}{120}$

D. $f = \frac{P}{2}n$ ✓

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Part B

75 Questions • Answer Key

Q1 Part B

Which of the following is a major risk associated with fuel spillage?

- A. Fire hazards and environmental contamination ✓
- B. Better lubrication for workshop floors
- C. Increased productivity
- D. Reduced need for ventilation

Q2 Part B

Why is a DC compound generator preferred for industrial loads?

- A. It has no losses.
- B. It is easier to manufacture.
- C. It provides better efficiency.
- D. It has constant voltage characteristics. ✓

Q3 Part B

The accuracy of measurement by a try square is about:

- A. 0.02 mm per 10 mm length
- B. 0.001 mm per 10 mm length
- C. 0.004 mm per 10 mm length
- D. 0.002 mm per 10 mm length ✓

Q4 Part B

What are the two types of mica capacitors?

- A. Ceramic and film capacitors
- B. Electrolytic and paper capacitors
- C. Variable and fixed capacitors
- D. Stacked foil and silvered mica capacitors ✓

Q5 Part B

Which DC motor type provides the best speed regulation under varying loads?

- A. DC Series Motor
- B. Cumulative Motor
- C. DC Shunt Motor ✓
- D. Permanent Magnet DC Motor

Q6 Part B

In an N-channel MOSFET, the drain current ID increases as _____.

- A. the gate-to-source voltage increases above the threshold voltage ✓
- B. the gate-to-source voltage decreases
- C. the drain-to-source voltage increases
- D. the source-to-drain voltage decreases

Q7 Part B

What is the pinch-off voltage in a FET?

- A. The voltage where the drain-to-source voltage causes breakdown
- B. The voltage at which the channel is "pinched off" and the current saturates ✓
- C. The voltage at which the drain-to-source current is maximised
- D. The voltage at which the gate-to-source voltage is zero

Q8 Part B

Which of the following statements is/are true about Non-Functional Dimensions (NF) in engineering drawing?

Statement 1: Non-functional Dimensions are shown without limits, as they do not affect the functionality of the component or space.
Statement 2: Non-Functional Dimensions are typically used for reference purposes only, and do not impact the assembly or performance of the component or space.

- A. Only statement 2 is true ✓
- B. Only statement 1 is true
- C. Both statements are true
- D. Neither statement is true

Q9 Part B

Which electrical component is used to perform a polarity test to check whether or not the switches are connected in phase/live cable?

- A. Megger
- B. Ammeter
- C. Multimeter
- D. Test lamp ✓

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Q10 Part B

What is the primary reason for conducting a vehicle road test?

- A. To test how fast the vehicle can go
- B. To avoid the need for inspections
- C. To increase fuel efficiency
- D. To ensure the vehicle is functioning safely and correctly ✓

Q11 Part B

What is the unit of measurement for earth fault loop impedance?

- A. Amperes (A)
- B. Ohms (Ω) ✓
- C. Volts (V)
- D. Farads (F)

Q12 Part B

Which of the following is a key electrical safety tip in a workshop?

- A. Operate machines with wet hands
- B. Ignore frayed wires if the device is still working
- C. Use water to clean electrical panels
- D. Ensure electrical equipment is properly grounded ✓

Q13 Part B

The RMS value of emf per phase of alternator is given by _____.
(Given: Φ = flux per pole, f = frequency of induced emf, T is the number of coils or turns per phase and Z is the number of conductors or coil sides in series/phase in an alternator)

- A. 4.44 ΦZ
- B. 2.22 ΦfT
- C. 4.44 ΦfT ✓
- D. 4.44 ΦfZ

Q14 Part B

What is the primary purpose of preventive maintenance?

- A. To increase the workload of employees
- B. To reduce unexpected equipment failures ✓
- C. To delay repairs until breakdowns occur
- D. To eliminate the need for regular inspections

Q15 Part B

Which of the following screwdrivers has cross-shaped tips that are unlikely to slip from the cruciform slots in Philips recessed head screws?

- A. Stumpy screwdriver
- B. Offset screwdriver
- C. Cross-recess screwdriver ✓
- D. Ratchet screwdriver

Q16 Part B

Which of the following statements about a star connected three phase system is correct?

- A. There are two neutral wires in a star connected three phase system.
- B. The neutral wire carries no current in case of balanced ideal load. ✓
- C. The neutral wire is used for grounding purposes only.
- D. The neutral wire has higher voltage than the phase wires.

Q17 Part B

In pipe earthing, what is used to connect the earthing conductor to the pipe?

- A. ✓
- B.
- C.
- D.

Q18 Part B

In the context of earthing system measurement, what does 'Earth resistance' refer to?

- A. The resistance between any two points of the ground with a distance of 1 metre
- B. The resistance between the live wire and the earth
- C. The ability of the ground to resist current flow ✓
- D. The voltage required to activate the earthing system

Q19 Part B

Which of the following types of resistors is preferred for high-current applications?

- A. Film resistor
- B. Wire-wound resistor ✓
- C. Variable resistor
- D. Carbon composition resistor

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Q20 Part B

Which of the following is true for a system with an unbalanced load of a three-phase system?

A. In an unbalanced three-phase system, the neutral current is zero.

B. The sum of the line currents is not necessarily zero.

C. The sum of phase angles of each phase is always 120°.

D. The line voltages are always equal. ✓

Q21 Part B

The region of operation in a FET where the drain current is independent of the drain voltage and only depends on the gate-to-source voltage is called the _____.

A. saturation region ✓

B. active region

C. cutoff region

D. ohmic region

Q22 Part B

Which of the following methods is used for synchronising a three-phase alternator?

A. Kramer's Method

B. One Wattmeter method

C. Three Dark lamp method ✓

D. Using damper grids in pole faces

Q23 Part B

Two coils, A and B, have self-inductances of 120 µH and 300 µH, respectively. When a current of 1 A flows through coil A, it induces a flux linkage of 100 µWb turns in coil B. What is the mutual inductance between the coils?

A. 50 µH

B. 100 µH ✓

C. 120 µH

D. 300 µH

Q24 Part B

_____ recommend(s) 20 mm wide margins for sheet sizes AO and A1 in engineering drawings.

A. Borders and frames: SP: 46 (2003) ✓

B. Geographic coordinate systems

C. Custom grids

D. Grid reference system

Q25 Part B

What is the term used to describe programs that distinguish between uppercase and lowercase letters, treating "yes" and "YES" as different inputs?

A. Case-insensitive

B. Numerical

C. Case-sensitive ✓

D. Alphabetical

Q26 Part B

Why are alternators connected in parallel?

A. To meet greater power demand of load circuit ✓

B. To improve the power factor

C. To increase the starting torque

D. To increase the output frequency

Q27 Part B

A rectangular floor measuring 10 m × 8 m is to be tiled. If each tile covers 0.25 m^2, how many tiles are needed?

A. 200

B. 300

C. 320 ✓

D. 250

Q28 Part B

How should the electrode resistance be measured if multiple earthing electrodes are used in parallel?

A. Measure electrode resistance individually and then add it

B. Use a clamp meter to measure the resistance of parallel electrodes

C. Measure electrode resistance individually and then average the values

D. Measure the total resistance of the combined electrodes in parallel ✓

Q29 Part B

Connection of voltage transformer and current transformer across line are _____, respectively.

A. series and parallel ✓

B. series and series

C. parallel and series

D. parallel and parallel

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Q30 Part B

What should be the position of the 'OFF' marking on a fireman's switch?

- **A.** At the top ✓
- **B.** In the centre
- **C.** At the bottom
- **D.** On the side

Q31 Part B

The SI unit of 'ultimate stress' is _____.

- **A.** pascal (Pa) ✓
- **B.** newton (N)
- **C.** newton per meter (N/m)
- **D.** joule per square meter (J/m^2)

Q32 Part B

In a circuit with a NTC type thermistor and a fixed resistor connected in series connected to a DC power supply, what will happen to the output voltage if there is a rise in temperature?

- **A.** The output voltage will increase. ✓
- **B.** The output voltage will remain constant.
- **C.** The output voltage will fluctuate depending on the resistor value.
- **D.** The output voltage will decrease.

Q33 Part B

Why do cars have treaded tyres?

- **A.** To increase friction and grip on the road ✓
- **B.** To reduce weight
- **C.** To decrease friction
- **D.** To increase speed

Q34 Part B

Which component in an MCB is responsible for detecting a short circuit?

- **A.** Bimetallic strip
- **B.** Solenoid ✓
- **C.** Arc chute
- **D.** Handle

Q35 Part B

Which option shows the correct answer when 27°C is converted to the kelvin scale?

- **A.** – 300 K
- **B.** 246 K
- **C.** 300 K ✓
- **D.** – 246 K

Q36 Part B

In a transformer, insulation resistance test is carried out to measure:

- **A.** frequency
- **B.** magnetic flux
- **C.** the resistance of the insulation between windings and core ✓
- **D.** the inductance between different parts of the transformer

Q37 Part B

An angle greater than 180 degrees is referred to as _____.

- **A.** a right angle
- **B.** an acute angle
- **C.** an obtuse angle
- **D.** a reflex angle ✓

Q38 Part B

Sine bars are used when a high degree of accuracy less than _____ is needed for measuring angles.

- **A.** 1 degree
- **B.** 30 degrees
- **C.** 1 minute ✓
- **D.** 30 minutes

Q39 Part B

Which of the following is true when there is an unbalanced star connected load in a three-phase system?

- **A.** The magnitude of current in each phase of the load is equal.
- **B.** The power factor in each phase of the load is equal.
- **C.** The current in the neutral terminal is zero.
- **D.** Imbalance in phase voltages. ✓

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Q40 Part B

Which of the following is a primary difference between a primary and a secondary electrochemical cell?

A. A secondary cell produces more energy than a primary cell.

B. A primary cell can be recharged, while a secondary cell cannot be recharged.

C. A primary cell cannot be recharged, while a secondary cell can be recharged. ✓

D. There is no difference between primary and secondary cells.

Q41 Part B

The correct instant of synchronising is when busbar and incoming machine voltages are of _____ magnitude and have _____ frequency.

A. unequal, the same

B. unequal, unequal

C. equal, the same ✓

D. equal, unequal

Q42 Part B

Transformer oil should have _____ dielectric strength and _____ viscosity.

A. high; high

B. low; high

C. high; low ✓

D. low; low

Q43 Part B

Match the following designations of sheets with their respective trimmed sizes in length and breadth.

Designation Trimmed Size
A) A0 P) 297 × 420
B) A1 Q) 420 × 594
C) A2 R) 594 × 841
D) A3 S) 841 × 1189

A. A-S ; B-R ; C-Q ; D-P ✓

B. A-Q ; B-R ; C-S ; D-P

C. A-S ; B-P ; C-Q ; D-R

D. A-P ; B-R ; C-Q ; D-S

Q44 Part B

Which device is used to protect against electric shocks and fires caused by earth leakage currents?

A. ELCB ✓

B. MCCB

C. MCB

D. ECB

Q45 Part B

In crane and hoist applications, why is a DC series motor preferred over a DC shunt motor?

A. It requires minimal maintenance compared to other motors.

B. It maintains constant speed regardless of load variations.

C. It provides a high starting torque, which is required for lifting loads. ✓

D. It consumes less power at no load.

Q46 Part B

Which of the following types of DC motor is commonly used in electric traction applications such as trains and trams?

A. Permanent Magnet DC Motor

B. DC Compound Motor

C. DC Series Motor ✓

D. DC Shunt Motor

Q47 Part B

A statement and conclusion for pictorial drawing are given below. Determine the logical relationship between them.

Statement: Pictorial drawings are three-dimensional and provide a visual representation of an object.

Conclusion: Therefore, pictorial drawings are useful for describing the shape of a piece part or component.

A. The conclusion does not logically follow from the statement.

B. The conclusion is partially supported by the statement.

C. The conclusion is unrelated to the statement.

D. The conclusion logically follows from the statement. ✓

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Q48 Part B

Which of the following actions is a part of the emergency response team's responsibilities during an active emergency?

- A. Preparing reports on emergency incidents
- B. Rescuing persons in immediate danger ✓
- C. Conducting routine safety checks
- D. Scheduling regular evacuation drills

Q49 Part B

In a logic circuit, three SPST (Single Pole Single Throw) switches are used to implement a logic gate. The switches are connected in series. What is the output of the circuit if all switches are closed?

- A. Undefined
- B. 1 ✓
- C. The output will depend on the type of gate used
- D. 0

Q50 Part B

While performing short circuit test on a transformer to determine its parameter, instruments are placed on the:

- A. low voltage side, while the high voltage side is short circuit
- B. high voltage side, while the low voltage side is short circuit ✓
- C. high voltage side, while the low voltage side is open circuit
- D. low voltage side, while the high voltage side is open circuit

Q51 Part B

According to Ohm's Law, how is current related to voltage and resistance?

- A. It is directly proportional to voltage and inversely proportional to resistance. ✓
- B. It has no relation with voltage or resistance.
- C. It is directly proportional to voltage and resistance.
- D. It is inversely proportional to voltage and resistance.

Q52 Part B

The Insulation Resistance value for a transformer is measured in:

- A. megaohms ✓
- B. ohms
- C. KVA
- D. kiloohms

Q53 Part B

What is the maximum total current allowed in a ring circuit as per IEE regulations?

- A.
- B.
- C. ✓
- D.

Q54 Part B

Natural rubber is soft at high temperatures and brittle at low temperatures; hence raw rubber is heated with sulphur and other additives at a temperature range between 373 – 415 K to make it strong. This process is called _____ of rubber.

- A. vulcanisation ✓
- B. molding
- C. latex
- D. extrusion

Q55 Part B

Which of the following is a possible cause of an unbalanced load in a three-phase system?

- A. Balanced supply voltages
- B. Equal phase currents
- C. Symmetrical load across phases
- D. Differences in load resistance across phases ✓

Q56 Part B

What is the primary goal of the 5S concept?

- A. To replace traditional safety measures
- B. To increase the number of safety regulations
- C. To improve workplace organisation and efficiency ✓
- D. To eliminate the need for maintenance

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Q57 Part B

A three phase circuit is connected with balanced delta connected load of impedance 100 Ω. If the current in each phase is 5 A, the voltage across each load will be _____.

- A. 200 V
- B. 250 V
- C. 150 V
- D. 500 V ✓

Q58 Part B

Which type of electrolytic capacitor is generally more stable and has better performance in small sizes?

- A. Tantalum capacitor
- B. Mica capacitor
- C. Aluminium capacitor ✓
- D. Ceramic capacitor

Q59 Part B

Which of the following is INCORRECT about line standard?

- A. More accurate due to line thickness ✓
- B. Subject to parallax error
- C. Quick measurements over a wide range
- D. Used to measure the distance between two engraved lines

Q60 Part B

What is the primary reason for the heating effect in a conductor when an electric current passes through it?

- A. The electric field in the conductor causes heat generation.
- B. The movement of electrons causes heat generation. ✓
- C. The conductor absorbs heat from the surrounding environment.
- D. The movement of protons causes heat generation.

Q61 Part B

What is the purpose of measuring the electrode resistance during the installation of an earthing system?

- A. To measure the insulation resistance of the system
- B. To determine the electrical load capacity of the system
- C. To ensure the earthing system has low impedance for fault current dissipation ✓
- D. To ensure proper grounding of electrical equipment

Q62 Part B

What is the importance of following the manufacturer's guidelines for DC motor maintenance?

- A. Ensures safe and efficient operation ✓
- B. Modifies the motor's design
- C. Increases the motor's power output
- D. Saves time and resources

Q63 Part B

A 100-mm centre-punch could have a 10-mm diameter body and a 6-mm diameter point ground to an angle of _____.

- A. 120°
- B. 90° ✓
- C. 60°
- D. 30°

Q64 Part B

For which of the following calipers, a screw and nut are provided for opening and closing the caliper legs?

- A. Spring joint calipers ✓
- B. Firm joint calipers
- C. Simple calipers
- D. Leg and point calipers

Q65 Part B

IGBT (Insulated Gate Bipolar Transistor) has _____.

- A. high on-state resistance
- B. second breakdown problems
- C. low input impedance
- D. high input impedance ✓

Q66 Part B

Alternators are usually rated in:

- A. Kilo Volt Ampere ✓
- B. Horse Power
- C. Kilo Volt Ampere Reactive
- D. Kilo Watt

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Q67 Part B

What is the primary purpose of shielding in electrical cables?

A. To increase the voltage capacity of the cable

B. To increase the current-carrying capacity of the cable

C. To protect the cable from external electromagnetic interference ✓

D. To prevent heat loss from the cable

Q68 Part B

The primary difference between a FET and a BJT is that _____.

A. BJTs are more sensitive to temperature than FETs

B. FETs have a lower input impedance than BJTs

C. FETs are current-controlled devices, while BJTs are voltage-controlled devices

D. FETs are voltage-controlled devices, while BJTs are current-controlled devices ✓

Q69 Part B

What is the primary cause of sudden insulation resistance failure in a DC generator?

A. Moisture ingress or contamination ✓

B. High ambient temperature

C. Increase in rotational speed

D. Excessive armature current

Q70 Part B

Read the Assertion (A) and Reason (R) carefully, and select the correct option.

Assertion (A): The earth resistance must be kept as low as possible to ensure that the earthing system is effective during fault conditions.
Reason (R): A low resistance allows fault current to flow easily into the ground, ensuring safety by preventing electrical hazards.

A. Both Assertion (A) and Reason (R) are correct, and the reason correctly explains the assertion. ✓

B. Assertion (A) is incorrect, but Reason (R) is correct.

C. Both Assertion (A) and Reason (R) are correct, but the reason does not correctly explain the assertion.

D. Assertion (A) is correct, but Reason (R) is incorrect.

Q71 Part B

What is the objective of testing an earthing system?

A. To test the current capacity of the earthing system

B. To check the voltage levels

C. To measure the insulation resistance of cables

D. To ensure the system has a low resistance path to the earth ✓

Q72 Part B

Which of the following care and maintenance of a marking table is INCORRECT?

A. The marking table should be protected from damage.

B. The marking table should be protected from rust.

C. After use, the marking table should be cleaned with a soft cloth.

D. The surface of the marking table should not be given a thin layer of oil. ✓

Q73 Part B

Which of the following conversions are correct?

A. 1 L = 1000 dm^3 and 1 mL = 1000 cm^3

B. 1000 L = 1 dm^3 and 1000 mL = 1 cm^3

C. 1 L = 1 dm^3 and 1 mL = 1 cm^3 ✓

D. 1000 L = 1 dm^3 and 1 mL = 1000 cm^3

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Q74 Part B

The energy stored (W) in an inductor is given by the formula _____, where C = Capacitance, V= Voltage, I = Current, and L= inductance.

A. $W = \frac{1}{2}VI$

B. $W = \frac{1}{2}LI^2$ ✓

C. $W = LI$

D. $W = \frac{1}{2}CV^2$

Q75 Part B

The voltage regulation in percentage for transformer is given by:

A. $\text{Voltage regulation} = \frac{V_{noload} - V_{load}}{V_{noload}} \times 100$

B. $\text{Voltage regulation} = \frac{V_{noload} - V_{load}}{V_{load}} \times 100$ ✓

C. $\text{Voltage regulation} = \frac{V_{noload} - V_{noload}}{V_{load}} \times 100$

D. $\text{Voltage regulation} = \frac{V_{load} - V_{noload}}{V_{load}} \times 100$

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Part B

75 Questions • Answer Key

Q1 Part B

Toroidal inductors are shaped like a:

A. cone
B. ring ✓
C. cube
D. cylinder

Q2 Part B

Apart from lamp holders, where else is a cord grip or underwriter's knot used?

A. Pull switches ✓
B. Earthing systems
C. High-voltage substations
D. Circuit breaker panels

Q3 Part B

Convert 8.5% into a decimal.

A. 0.85
B. 8.5
C. 0.085 ✓
D. 85

Q4 Part B

What may happen if a flexible cable in a pendant lamp is not secured with a cord grip or underwriter's knot?

A. The lamp will consume more power.
B. The lamp will emit dim light.
C. The cable connection may come out, leading to a shock hazard. ✓
D. The ceiling will overheat.

Q5 Part B

For your safety at work, which of the following should be ensured?
1. All the required protective clothing and equipment are used.
2. Training and instruction necessary for performing tasks safely have been received.

A. Only statement 1
B. Neither statement 1 nor 2
C. Only statement 2
D. Both statements 1 and 2 ✓

Q6 Part B

Consider the following statements for a three phase AC circuit.

Statement 1: In a balanced three-phase system, the line current is always equal to the phase current in a star-connected load.
Statement 2: In a delta-connected system, the phase voltage is equal to the line voltage.

Select the correct option based on above statements.

A. Statement 1 is true, and Statement 2 is false.
B. Statement 1 is false, and Statement 2 is true.
C. Both Statement 1 and Statement 2 are true. ✓
D. Both Statement 1 and Statement 2 are false.

Q7 Part B

If inductance (L) is doubled, what happens to inductive reactance?

A. It remains the same.
B. It doubles. ✓
C. It becomes zero.
D. It becomes half.

Q8 Part B

Which type of line is used to represent hidden edges or surfaces in a technical drawing, as per BIS SP 46-2003?

A. Continuous thin line
B. Continuous thick line
C. Dashed thin line ✓
D. Chain thin line

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Q9 Part B

For which purpose is mineral oil provided in an oil-filled transformer?

A. Prevent moisture

B. Insulation purpose only

C. Both cooling and insulation purpose ✓

D. Cooling purpose only

Q10 Part B

If 50 W of power is applied to the primary of an ideal transformer with a turns ratio of 10, the power delivered to the secondary load is:

A. 500 W

B. 100 W

C. 50 W ✓

D. 5 W

Q11 Part B

What is the main reason for using a snubber circuit in IGBT-based circuits?

A. To increase the switching speed

B. To minimise the switching losses

C. To reduce the gate charge

D. To protect the IGBT from voltage spikes during switching ✓

Q12 Part B

Which parameters of two identical transformers are determined using Back-to-back test?

A. Friction loss and resistance

B. Mechanical loss and inductance

C. Efficiency and voltage regulation ✓

D. Friction loss and inductance

Q13 Part B

Match the following types of lines with their correct descriptions according to their orientation and characteristics.

Description	Type of Line
A. A line that is neither parallel to a horizontal plane nor perpendicular to it.	1. Horizontal line
B. A line that is perpendicular to horizontal lines.	2. Vertical line
C. A line that changes its direction continuously.	3. Inclined line
D. A line that is parallel to a horizontal plane.	4. Curved line

A. A - 1, B - 2, C - 3, D - 4

B. A - 2, B - 3, C - 4, D - 1

C. A - 3, B - 2, C - 4, D - 1 ✓

D. A - 2, B - 1, C - 4, D - 3

Q14 Part B

The key feature of an IGBT is that it combines the characteristics of _____.

A. a transistor and an amplifier

B. a diode and a capacitor

C. a diode and a transistor

D. a BJT and a MOSFET ✓

Q15 Part B

Which of the following statements is INCORRECT about end standard?

A. It measures the distance between two parallel flat surfaces.

B. Faces are subject to wear.

C. It is slower but more accurate.

D. It is used to measure the distance between two engraved lines. ✓

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Q16 Part B

Which of the following characteristics of a GTO is most important for its use in high-power switching applications?

- A. Its ability to be turned off by a gate signal. ✓
- B. Its high thermal stability.
- C. Its ability to handle very low currents.
- D. Its fast switching speed.

Q17 Part B

Which of the following types of chisels is used for separating metals after chain drilling?

- A. Cross-cut chisel
- B. Flat chisel
- C. Web chisel ✓
- D. Diamond point chisel

Q18 Part B

In a four-band resistor, what does the third band represent?

- A. Multiplier ✓
- B. First significant digit
- C. Tolerance
- D. Second significant digit

Q19 Part B

If the length of a resistor is doubled, what happens to its resistance, assuming all other factors remain constant?

- A. The resistance is doubled. ✓
- B. The resistance remains the same.
- C. The resistance is halved.
- D. The resistance quadruples.

Q20 Part B

A 100-mm prick punch with a 7-mm diameter body could have a 2.5-mm diameter point ground to an angle of _____.

- A. 90°
- B. 30° ✓
- C. 120°
- D. 45°

Q21 Part B

Select the INCORRECT statement with regards to a three-phase star-connected AC circuit.

- A. The line voltage is the voltage between any two line of the circuit.
- B. The phase voltage is higher than the line voltage. ✓
- C. The phase voltage is the voltage between the neutral point and any phase of the circuit.
- D. The line voltage is higher than the phase voltage.

Q22 Part B

What does the term 'Ferreed' in Ferreed relay stand for?

- A. A type of current sensing relay
- B. A combination of ferrite and reed switch ✓
- C. A voltage stabiliser component
- D. A thermally operated relay

Q23 Part B

According to IEEE 80, the resistance of the ground system should be _____.

- A. equal to the system's total load current
- B. moderate to prevent excessive current flow
- C. as high as possible to ensure efficient operation
- D. low enough to allow fault currents to safely dissipate into the earth ✓

Q24 Part B

Which of the following conditions is NOT required for parallel operation of alternator?

- A. They may have the same output voltage rating.
- B. Alternator should be of the same type.
- C. They may have different frequency. ✓
- D. Prime movers of alternator should have the same speed load characteristics.

Q25 Part B

The function of slots on stator is to:

- A. provide effective cooling
- B. excite the field system
- C. house the armature conductors ✓
- D. strengthen the core

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Q26 Part B

Which of the following is the primary reason why copper is widely used as a conductor in electrical wiring?

- A. Copper has low resistance and high conductivity. ✓
- B. Copper has a low melting point.
- C. Copper is abundant and inexpensive.
- D. Copper has high resistance to electricity.

Q27 Part B

If a DC motor fails to start, what should be checked first?

- A. Motor shaft alignment
- B. Field winding resistance
- C. Commutator polishing
- D. Power supply connections and voltage ✓

Q28 Part B

In a series circuit, three resistors of 10 ohms, 20 ohms, and R ohms are connected in series with a 12 V battery. What is the value of resistance R if current flowing in the circuit is 0.2 A?

- A. 10 ohms
- B. 20 ohms
- C. 30 ohms ✓
- D. 40 ohms

Q29 Part B

The gate current in an ideal FET is _____.

- A. zero ✓
- B. equal to the drain current
- C. very high
- D. proportional to the source current

Q30 Part B

How does an Earth Leakage Circuit Breaker (ELCB) work in an electrical system?

- A. It compares the incoming and outgoing currents to detect imbalance, indicating leakage to earth. ✓
- B. It regulates the current flowing to the earth electrode.
- C. It detects high current flow and trips to prevent overloads.
- D. It monitors the voltage drop in the system.

Q31 Part B

What is NOT an advantage of using plate earthing over other types of earthing?

- A. More suitable for high-voltage systems ✓
- B. Low installation cost
- C. Requires less maintenance
- D. Provides low resistance in high-resistivity soil

Q32 Part B

The wave set of hacksaw teeth set has a pitch of _____.

- A. 2.0 mm
- B. 0.5 mm
- C. 0.8 mm ✓
- D. 1.0 mm

Q33 Part B

Who is authorised to conduct road tests on workshop vehicles?

- A. Only trained and certified personnel ✓
- B. Visitors to the workshop
- C. Any employee
- D. The company accountant

Q34 Part B

The typical switching speed of GTOs is ____.

- A. relatively slow ✓
- B. high
- C. very fast
- D. infinity

Q35 Part B

Which of the following 'V' blocks will have one 'V' groove and two grooves (slots) on either side for clamping in two positions?

- A. Double level single groove 'V' block
- B. Matched pair 'V' block
- C. Single level double groove 'V' block ✓
- D. Single level single groove 'V' block

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Q36 Part B

Which of the following statements about title block is/are true?

Statement 1: The title block is situated in the bottom right-hand corner of the drawing sheet.
Statement 2: The contents of the title block are standardised and cannot be modified to suit individual company needs.

A. Both statements are false
B. Statement 1 is false, but statement 2 is true
C. Statement 1 is true, but statement 2 is false ✓
D. Both statements are true

Q37 Part B

When creating 10 mm single-stroke capital letters in vertical style, what does the 10 mm distance between horizontal parallel lines represent?

A. Letter width
B. Letter height ✓
C. Stroke thickness
D. Interline spacing

Q38 Part B

Find the lateral surface area of a cube with side length 5 cm.

A. 125 cm^2
B. 150 cm^2
C. 200 cm^2
D. 100 cm^2 ✓

Q39 Part B

In electrodynamometer type synchroscope, moving coil is connected:

A. in parallel with capacitor across terminals of incoming machines
B. in series with inductance across two phases of busbar
C. in series with resistance across busbars
D. between two pressure coils ✓

Q40 Part B

Rotating field type alternator is generally used for rating of up to _____.

A. 1000 VA
B. 250 KVA
C. 100 kVA
D. 1000 MVA ✓

Q41 Part B

Which of the following statements is NOT correct for using scribers?

A. Scriber points are very sharp, so they are to be handled very carefully.
B. While scribing lines, the scriber is used like a pencil.
C. Do not put the scriber in your pocket.
D. Place a cork on the point when in use to prevent accidents. ✓

Q42 Part B

What is the main purpose of the field winding in a DC generator?

A. To conduct load current
B. To produce the required magnetic field ✓
C. To reduce armature reaction
D. To convert AC to DC

Q43 Part B

For a DC motor installation with explosion-proof certification, which standard must be followed for enclosure and wiring compliance?

A. ANSI C84.1
B. ISO 9001
C. IEC 60034-1 ✓
D. NFPA 70

Q44 Part B

In a long-shunt compound DC generator, the shunt field winding is connected _____.

A. in series with the armature
B. in parallel with both armature and series field winding ✓
C. between the series field and load
D. only to the load

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Q45 Part B

Which of the following terms in the 5S concept refers to making a habit of maintaining the established procedures?

- A. Shine
- B. Set
- C. Sort
- D. Sustain ✓

Q46 Part B

Increasing which of the following will decrease the inductance of a solenoid?

- A. Core permeability
- B. Length of the coil ✓
- C. Cross-sectional area
- D. Number of turns

Q47 Part B

A voltmeter with a resistance of 10,000 ohms is connected across a circuit that has a voltage of 50 V. What is the current flowing through the voltmeter?

- A. 2 mA
- B. 1 mA
- C. 5 mA ✓
- D. 4 mA

Q48 Part B

Which component(s) is/are required to obtain a proportional DC voltage for a voltage sensing relay?

- A. Transformer and rectifier ✓
- B. Motor and generator
- C. Resistor and inductor
- D. Capacitor and diode

Q49 Part B

The SI unit of temperature is/are _____.

- A. both kelvin and celsius
- B. celsius
- C. kelvin ✓
- D. fahrenheit

Q50 Part B

In an ideal transformer, the primary and secondary windings resistance is:

- A. 1000 ohm
- B. 0 ohm ✓
- C. 100 ohm
- D. 1000000 ohm

Q51 Part B

Which of the following best describes the working of a TRIAC?

- A. It is a device used to store energy.
- B. It is a current-controlled device. ✓
- C. It switches both AC and DC currents.
- D. It is a voltage-controlled device.

Q52 Part B

In a balanced three-phase system, the power delivered by the system depends on _____.

- A. phase current only
- B. power factor only
- C. phase voltage, phase current and power factor ✓
- D. phase voltage only

Q53 Part B

Which of the following is the most common application of an Earth Leakage Circuit Breaker (ELCB)?

- A. Preventing electrical fires in buildings ✓
- B. Protecting high-voltage transmission lines
- C. Detecting voltage fluctuations in the system
- D. Protecting electrical appliances from overload

Q54 Part B

What is the minimum age for employment in factories or mines or other hazardous employment, according to Article 24 of the Indian Constitution?

- A. 14 years ✓
- B. 12 years
- C. 16 years
- D. 18 years

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Q55 Part B

Which of the following switch types is required along with an intermediate switch to control a lamp from three or more positions?

- A. Two-way switches ✓
- B. One-way switches
- C. Dimmer switches
- D. Push-button switches

Q56 Part B

According to Faraday's law, the magnitude of induced EMF in a DC generator depends on the _____.

- A. length of the conductor only
- B. resistance of the conductor
- C. material of the conductor
- D. rate of change of magnetic flux ✓

Q57 Part B

What is the SI unit of 'volume'?

- A. Litres
- B. Cubic centimetre
- C. Cubic metre ✓
- D. Millilitres

Q58 Part B

When passing stationary vehicles, keep a watch on _____ who may come out suddenly from the front of the stationary vehicle. While overtaking, it should be done on the _____ side. Always keep a good _____ between your vehicle and others.

- A. cyclists; left; interval
- B. vehicles; right; gap
- C. drivers; left; space
- D. pedestrians; right; distance ✓

Q59 Part B

Which of the following information is necessary to construct a rectangle?

- A. Length of two adjacent sides ✓
- B. Length of one side and the area of the rectangle
- C. Only the length of one side
- D. Only the length of the diagonal

Q60 Part B

Which DC motor is preferred in steel rolling mills and elevators?

- A. Permanent Magnet DC Motor
- B. DC Series Motor
- C. Cumulative Compound Motor ✓
- D. DC Shunt Motor

Q61 Part B

Transformer is a _____.

- A. moving device
- B. static device ✓
- C. synchronous motor as a rotating transformer
- D. rotating device

Q62 Part B

What is the typical temperature range of a mercury-based clinical thermometer?

- A. 0°C to 100°C
- B. 35°C to 42°C ✓
- C. 0°C to 50°C
- D. −10°C to 110°C

Q63 Part B

Which of the following statements about earth resistance in context of earthing is true?

- A. Earth resistance does not affect electrical safety.
- B. Higher earth resistance increases the effectiveness of grounding.
- C. Lower earth resistance improves the performance of an electrical system. ✓
- D. Earth resistance only affects power transmission efficiency.

Q64 Part B

In a logic circuit, two inputs A and B are applied to an AND gate, and the output of the AND gate is connected to the input of a NOT gate. If the inputs A and B are both at logic 0, what will be the output of the entire circuit?

- A. Undefined
- B. 0
- C. 1 ✓
- D. 2

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Q65 Part B

Which component in a thermal relay is responsible for detecting temperature changes?

- **A.** Bimetallic element ✓
- **B.** Transformer
- **C.** Electromagnet
- **D.** Resistor

Q66 Part B

When should the measurement of electrode resistance be conducted during the installation of an earthing system?

- **A.** After backfilling the earth electrode
- **B.** At the time of initial design
- **C.** Only when the earthing system shows signs of malfunction
- **D.** Before backfilling the earth electrode ✓

Q67 Part B

Which of the following colours is commonly used for caution signs?

- **A.** Blue
- **B.** Yellow ✓
- **C.** Red
- **D.** Green

Q68 Part B

The insulation resistance of any wiring installation should NOT be less than _____ for operating voltage 1000 volt.

- **A.** 100 ohm
- **B.** 1 mega ohm ✓
- **C.** 1 kilo ohm
- **D.** 10 ohm

Q69 Part B

Which of the following calipers are used for marking lines, parallel to inside and outside edges and for locating the centre of round bars?

- **A.** Spring joint calipers
- **B.** Leg and point calipers ✓
- **C.** Simple calipers
- **D.** Firm joint calipers

Q70 Part B

Which of the following metals has the lowest melting point?

- **A.** Mercury ✓
- **B.** Iron
- **C.** Lead
- **D.** Gold

Q71 Part B

In a three-phase system with a line-to-line voltage of 400 V and a line current of 10 A, what is the total real power in Watt, delivered to the load if the power factor is 0.9?

- **A.** $3000\sqrt{3}$ W
- **B.** $4000\sqrt{3}$ W
- **C.** $45000\sqrt{3}$ W
- **D.** $3600\sqrt{3}$ W ✓

Q72 Part B

In a three-phase system, if the phase current is 20 A in a delta connection, what is the line current?

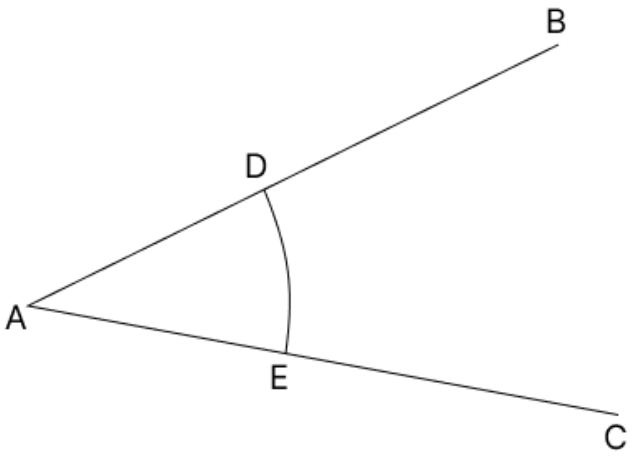
- **A.** $20\sqrt{3}$ A ✓
- **B.** 20 A
- **C.** 10 A
- **D.** $\frac{20}{\sqrt{3}}$ A

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Q73 Part B

In the process of bisecting angle BAC in the given figure, why do we draw arcs from points D and E?



A. To find midpoint AB

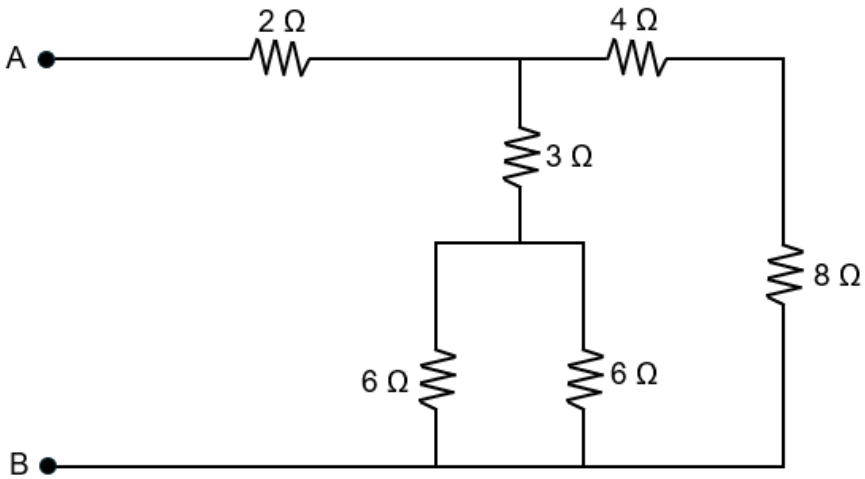
B. To mark equal lengths

C. To intersect line AC

D. To intersect above A ✓

Q74 Part B

After solving the series and parallel combinations, what is the final equivalent resistance between A and B?



A. 6 Ω ✓

B. 4 Ω

C. 8 Ω

D. 10 Ω

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Q75 Part B

What is the formula for the total capacitance of capacitors connected in parallel?

A. $C_{Total} = C_1 + C_2 + C_3 + \ldots$

B. $\frac{1}{C_{TOTAL}} = \frac{1}{C_1} + \frac{1}{C_2} + \frac{1}{C_3} + \ldots$

C. $C_{TOTAL} = \frac{(C_1 * C_2)}{(C_1 + C_2)}$

D. $C_{TOTAL} = (C_1 + C_2)^2$

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Part B — 75 Questions • Answer Key

Q1 Part B

What is the difference between a bevel gauge and a bevel protractor?

- A. There is no difference; both tools are the same.
- B. A bevel protractor is used for depth measurement, while a bevel gauge is used for height measurement.
- C. A bevel gauge is fixed, while a bevel protractor is adjustable.
- D. A bevel gauge is adjustable, while a bevel protractor provides precise angular measurements. ✓

Q2 Part B

Which of the following files is used for filing narrow grooves and angles above 10°?

- A. Knife-edge file ✓
- B. Half round file
- C. Square file
- D. Triangular file

Q3 Part B

The schedule number of a pipe is an indicator of which property?

- A. Inner Diameter
- B. Material Composition
- C. Outer Diameter
- D. Wall Thickness ✓

Q4 Part B

In a lead-acid battery, what is the chemical composition of the material used for the positive plate during discharge?

- A. Sulphuric acid (H_2SO_4)
- B. Lead (Pb)
- C. Lead dioxide (PbO_2) ✓
- D. Lead sulfate ($PbSO_4$)

Q5 Part B

When selecting a sheet size for an original drawing, what should be the primary consideration?

- A. The standard size of the drawing office.
- B. The clarity and resolution required. ✓
- C. The orientation of the drawing (horizontal or vertical).
- D. The size of the reproduction.

Q6 Part B

_____ type of lapping is used for precision finishing of engine cylinder bores.

- A. Flat lapping
- B. Internal lapping ✓
- C. Chemical lapping
- D. Belt lapping

Q7 Part B

Which component is essential in a single-acting cylinder to facilitate the return stroke?

- A. Double inlet valve
- B. Flow control valve
- C. Pressure relief valve
- D. Spring or external load ✓

Q8 Part B

When using a multimeter to measure current, which of the following is correct?

- A. The multimeter is connected directly to the power source.
- B. The multimeter is connected in series with the load. ✓
- C. The multimeter is connected only across resistive components.
- D. The multimeter is connected in parallel with the load.

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Q9 Part B

After heating, how should the workpiece be cooled in the normalising process?

- **A.** By cooling in still air ✓
- **B.** By keeping inside the furnace
- **C.** By quenching in water
- **D.** By quenching in oil

Q10 Part B

Which characteristic of cellulosic electrodes makes them unsuitable for high-strength steels?

- **A.** They produce high levels of hydrogen in the weld. ✓
- **B.** They operate only on a low-voltage DC supply.
- **C.** They have a very thin coating, causing rapid wear.
- **D.** They create excessive slag, leading to contamination.

Q11 Part B

Arrange the following steps in the correct order to draw an equilateral triangle with each side of 35 mm.

1. Join CA and CB.
2. Draw a line and mark AB 35 mm as the side of the triangle.
3. With radius AB and center A and B, draw arcs cutting at C.
4. ABC is the required triangle.

- **A.** 2, 3, 1, 4 ✓
- **B.** 1, 2, 4, 3
- **C.** 2, 1, 3, 4
- **D.** 3, 2, 1, 4

Q12 Part B

_____ type of preventive maintenance is performed based on actual machine condition rather than a fixed schedule.

- **A.** Condition-based maintenance ✓
- **B.** Breakdown maintenance
- **C.** Time-based maintenance
- **D.** Run-to-Failure maintenance

Q13 Part B

What is Pascal's Law that is fundamental to hydraulic systems?

- **A.** Force is inversely proportional to pressure.
- **B.** Fluid velocity is directly proportional to the cross-sectional area.
- **C.** Energy cannot be created or destroyed in a hydraulic system.
- **D.** Pressure in a confined fluid is constant at all points. ✓

Q14 Part B

Which of the following is an important safety measure during a power failure?

- **A.** Using candles for lighting
- **B.** Continuing to use equipment without verifying power status
- **C.** Ensuring all machines and electrical equipment are turned off ✓
- **D.** Ignoring alarm systems

Q15 Part B

Which of the following hand-operated drilling machines is used for drilling small diameter holes up to 6 mm?

- **A.** Electric hand drill
- **B.** Ratchet drilling machine
- **C.** Breast drilling machine
- **D.** Bevel gear type drilling machine ✓

Q16 Part B

In thread cutting, 'BSW' stands for _____.

- **A.** British Standard Whitworth ✓
- **B.** British Standard Weight
- **C.** Bharath Standard Whitworth
- **D.** British Stationary Whitworth

Q17 Part B

Which hardness test uses a diamond pyramid-shaped indenter?

- **A.** Brinell
- **B.** Vickers ✓
- **C.** Shore
- **D.** Rockwell

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Q18 Part B

An electronic digital caliper displays the measurement on a ____.

- A. liquid crystal display screen ✓
- B. dial gauge
- C. Vernier scale
- D. mechanical counter

Q19 Part B

In a forward Vernier scale, the size of one Vernier scale division is:

- A. equal to 1 main scale division
- B. 1 mm
- C. larger than 1 main scale division
- D. smaller than 1 main scale division ✓

Q20 Part B

What type of surfaces can a telescopic gauge measure?

- A. Only deep holes
- B. Both circular and irregular bores ✓
- C. Only circular bores
- D. Only external cylindrical surfaces

Q21 Part B

The purpose of providing a side relief angle of 1° to 2° on a grooving tool is to:

- A. reduce the cutting force
- B. increase the cutting speed
- C. prevent rubbing against the sides of the groove ✓
- D. improve the surface finish

Q22 Part B

In general, a softer material will produce an indentation that is:

- A. larger and deeper ✓
- B. smaller and shallower
- C. identical in all cases
- D. unpredictable

Q23 Part B

For what purpose are pins and clips used in engineering drawings?

- A. To transfer dimensions and dividing lines into a number of equal parts
- B. To draw horizontal lines, parallel lines and to guide/hold the set squares
- C. To fasten the drawing sheet on to the drawing board firmly so that it does not shake ✓
- D. To support the drawing paper/tracing paper for making drawings

Q24 Part B

The process of _____ involves using a cutting tool called a tap to sever internal threads in a hole.

- A. facing
- B. chamfering
- C. tapping ✓
- D. knurling

Q25 Part B

In a velocity-time graph, the negative slope represents ____.

- A. retardation ✓
- B. displacement
- C. acceleration
- D. distance

Q26 Part B

What is the purpose of an emergency evacuation plan?

- A. To ensure safe and orderly evacuation during emergencies ✓
- B. To avoid safety drills
- C. To increase productivity
- D. To allow workers to leave early

Q27 Part B

When the size of the shaft or male part of a job is more than hole or female part, the difference between the two will be known as _____.

- A. positive allowance
- B. either positive or negative allowance
- C. neither positive nor negative allowance
- D. negative allowance ✓

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Q28 Part B

Which of the following tools is NOT under the requirement to complete the Step Turning Process?

- A. Snipping tool
- B. Parting Tool
- C. Vernier Caliper ✓
- D. Turning tool

Q29 Part B

The key difference between a marking gauge and a mortise gauge is:

- A. method of adjustment
- B. material of construction
- C. number of scribing pins ✓
- D. size of the tool

Q30 Part B

In Lathe Machine operation, the act of making plain ends of a job in their actual length is called _____.

- A. knurling
- B. chamfering
- C. facing ✓
- D. step turning

Q31 Part B

When measuring the resistance of a resistor using an ohmmeter, what does a reading of zero resistance indicate?

- A. The resistor is functioning normally.
- B. The resistor is open-circuited.
- C. The resistor is short-circuited. ✓
- D. The ohmmeter is malfunctioning.

Q32 Part B

A drawing instrument box is used to carry all _____ instruments.

- A. drawing ✓
- B. screening
- C. drilling
- D. casting

Q33 Part B

What is the primary reason for electrical injuries when a person comes in contact with electrical equipment?

- A. Electrical equipment is not properly grounded.
- B. Current flows through the body causing harm. ✓
- C. Devices are used for too long.
- D. Electrical devices are too powerful.

Q34 Part B

What is single-riveted lap joint?

- A. Joint made with two row of rivets
- B. Joint made with three row of rivets
- C. Joint made with only one row of rivets ✓
- D. Joint made with four row of rivets

Q35 Part B

Toughness is the ability of a material to:

- A. resist elastic deformation
- B. resist scratches and indentation
- C. undergo plastic deformation without failure
- D. absorb energy before fracture ✓

Q36 Part B

A circuit consists of three resistors; 15 ohms, 10 ohms, and 20 ohms. The 15-ohm resistor is in series with the parallel combination of the 10-ohm and 20-ohm resistors. If a 24 V battery is applied across the circuit, what is the total current flowing through the circuit?

- A. 3.1 A
- B. 0.1 A
- C. 1.1 A ✓
- D. 2.1 A

Q37 Part B

Which of the following parts of a file is the part fitted to the tang for holding the file?

- A. Tip or Point
- B. Handle ✓
- C. Edge
- D. Tang

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Q38 Part B

Which type of hydraulic cylinder is commonly used when a long stroke is required in a compact design?

A. Double-acting cylinder
B. Rotary actuator
C. Telescopic cylinder ✓
D. Single-acting cylinder

Q39 Part B

Which of the following types of pliers is used to shape loops in wires and to form curves in light metal strips?

A. Flat nose pliers
B. Round nose pliers ✓
C. Slip-joint pliers
D. End cutting pliers

Q40 Part B

Which of the following advantages of chain drive over belt drive is INCORRECT?

A. It may be used for both long as well as short distances.
B. It gives a high transmission efficiency.
C. The production cost of chains is relatively high. ✓
D. It gives less load on the shafts.

Q41 Part B

_____ microstructure is typically obtained after normalising low-carbon steel.

A. Bainite
B. Pearlite and ferrite ✓
C. Austenite
D. Martensite

Q42 Part B

What is the purpose of hammering during normalising?

A. To harden the steel
B. To increase brittleness
C. To refine the grain structure and improve mechanical properties ✓
D. To remove oxidation

Q43 Part B

A/An _____ is provided to keep the micrometer fixed so that the reading can be done easily and without any difficulty.

A. sleeve or barrel
B. thimble
C. lock nut ✓
D. anvil

Q44 Part B

If the current flowing through a conductor is 5 A and the resistance of the conductor is 10 ohms, what will be the voltage across the conductor, according to Ohm's Law?

A. 15 V
B. 50 V ✓
C. 5 V
D. 10 V

Q45 Part B

Which of the following is NOT required for estimating materials in preventive maintenance?

A. Power consumption of the machine ✓
B. Supplier availability of spare parts
C. Equipment maintenance history
D. Standard life expectancy of components

Q46 Part B

What does 'charging' of a lapping tool mean?

A. Embedding abrasive particles into the lap surface ✓
B. Applying coolant to the tool
C. Increasing the weight of the tool for better pressure
D. Electrically energising the tool

Q47 Part B

The terms ____ and ____ refer to the greatest and smallest variance, respectively, specified on a fundamental size or nominal measurement.

A. jig; fixture
B. low limit; high limit
C. limit; fit
D. high limit; low limit ✓

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Q48 Part B

Non-functional dimensions are _____.

- A. not essential for the function of the space or component ✓
- B. essential for the function of the space or component
- C. derived from the values of the related features of a drawing
- D. directly derived from the values given on a drawing

Q49 Part B

The unit for specific gravity is ____.

- A. m/s^2
- B. g/cm^3
- C. kg/m^3
- D. no unit (dimensionless) ✓

Q50 Part B

Which of the following organisations is responsible for enforcing workplace safety regulations in India?

- A. World Health Organization (WHO)
- B. Food and Drug Administration (FDA)
- C. Directorate General of Factory Advice Service and Labour Institutes (DGFASLI) ✓
- D. Environmental Protection Agency (EPA)

Q51 Part B

Which of the following types of thread is usually found on the machine spindle?

- A. Square thread ✓
- B. Buttress thread
- C. Unified standard thread
- D. Knuckle thread

Q52 Part B

Match the following terminologies in riveted joint with their corresponding meanings.

Column I Column II
Pitch (A) distance between centres of adjoining rivets in the same row (P)
Margin (B) distance between an edge of the plate and the nearest rivet-hole (Q)
Lap joint (C) plates to be connected overlap each other (R)
Row pitch (D) distance between the rows of rivets (S)

- A. A-S, B-R, C-Q, D-P
- B. A-P, B-R, C-Q, D-S
- C. A-S, B-Q, C-R, D-P ✓
- D. A-S, B-P, C-Q, D-R

Q53 Part B

A circular hole of radius 3 cm is cut from a rectangular sheet of dimensions 12 cm × 10 cm. Find the remaining area.

(Take π = 3.14)

- A. 100 cm^2
- B. 91.74 cm^2 ✓
- C. 95.86 cm^2
- D. 75.74 cm^2

Q54 Part B

_____ strategy is best suited for critical equipment that cannot afford unexpected downtime.

- A. Run-to-failure maintenance
- B. Reactive maintenance
- C. Preventive maintenance
- D. Predictive maintenance ✓

Q55 Part B

The term _____ refers to the limit of variation allowed on either side of the correct dimension to provide the job property of interchangeability (in mass production of part).

- A. tolerance ✓
- B. low limit
- C. fit
- D. high limit

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Q56 Part B

What is a key advantage of using MOSFETs in electronic circuits compared to other types of transistors?

- A. High frequency response
- B. High input impedance and low power consumption ✓
- C. Ability to handle higher voltages and currents than BJTs
- D. Ability to amplify both AC and DC signals

Q57 Part B

What is the purpose of a split die in pipe threading?

- A. To adjust the depth of cut for external threads ✓
- B. To change pipe diameter
- C. To remove metal burrs
- D. To create internal threads

Q58 Part B

According to BIS SP 46-2003, which of the following applications is correctly represented by a chain-thin line in engineering drawings?

- A. Center lines ✓
- B. Hidden edges
- C. Dimension lines
- D. Visible edges

Q59 Part B

Why is it important for every person to follow safety procedures in the workplace?

- A. To increase overall production efficiency
- B. To minimise risks and avoid accidents ✓
- C. To reduce operational costs significantly
- D. To limit the need for frequent supervision

Q60 Part B

Threading is an operation of cutting _____ on the external cylindrical surface of the job.

- A. rectangular grooves
- B. helical grooves ✓
- C. circular grooves
- D. v-shaped grooves

Q61 Part B

Which of the following vices consists of a handle and a small collet chuck at one end?

- A. Hand vice
- B. Pin vice ✓
- C. Pipe vice
- D. Toolmaker's vice

Q62 Part B

If the basic size of the diameter of a shaft is 75 mm and variation limit of ± 0.02 mm is given, then its tolerance in mm is:

- A. −0.02
- B. −0.04
- C. +0.04 ✓
- D. +0.02

Q63 Part B

Which of the following is NOT a failure mode of ball bearings?

- A. Creep
- B. Spalling
- C. Brinelling
- D. Bending ✓

Q64 Part B

What should you do to ensure your personal safety at work?

- A. Wear personal protective equipment. ✓
- B. Work in a hurry without checking equipment.
- C. Ignore warning signs and instructions.
- D. Take risks to finish tasks quickly.

Q65 Part B

What is the unit of specifying slip gauges?

- A. Millimetres ✓
- B. Kilograms
- C. Kilometres
- D. Newtons

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Q66 Part B

What is the advantage of giving heat treatment to a material?

A. To decrease the melting point of the material

B. To increase the weight of the material

C. To change it from one element to another element

D. To make surgical knives of sharp edges ✓

Q67 Part B

Gaskets, seals and spacers are made using:

A. centre punch

B. hollow punch ✓

C. pin punch

D. prick punch

Q68 Part B

When two pulleys are more than 8 metres apart, then which of the following belt drives is used for power transmission?

A. Circular belt ✓

B. Flat belt

C. V-belt

D. Light drive

Q69 Part B

Silicon carbide as a honing abrasive is best suited for which type of material?

A. Plastic and wood

B. Soft materials like aluminium

C. Hard materials like hardened steel and cast iron ✓

D. Rubber

Q70 Part B

Which of the following is a key characteristic of a low-pressure blowpipe/torch in welding?

A. It requires an external pump to supply acetylene gas.

B. It directly mixes acetylene and oxygen in equal proportions.

C. It operates only with high-pressure acetylene cylinders.

D. It uses high-pressure oxygen to create a vacuum for acetylene suction. ✓

Q71 Part B

The type of workpieces that can be successfully held in a 4-jaw chuck, and might be difficult to hold in a 3-jaw chuck, are:

A. only round workpieces

B. only hexagonal workpieces

C. only small diameter workpieces

D. irregular or eccentric workpieces ✓

Q72 Part B

$(\frac{3}{8}) + (\frac{5}{12})$

A. $\frac{17}{24}$

B. $\frac{19}{24}$ ✓

C. $\frac{8}{20}$

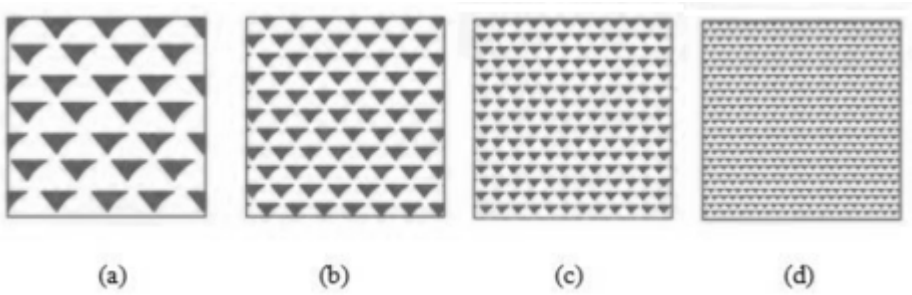
D. $\frac{7}{12}$

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Q73 Part B

Identify the rough file grade from the figures given below.



A. (b)

B. (d)

C. (c)

D. (a) ✓

Q74 Part B

$\cos\theta$

A. $\frac{3}{5}$

B. $\frac{4}{5}$ ✓

C. $\frac{5}{4}$

D. $\frac{3}{4}$

Q75 Part B

What does the given surface finish symbol represent?



A. Machining must be performed to remove material.

B. Special machining characteristics must be specified.

C. Material removal is not allowed on this surface. ✓

D. The surface should be finished using grinding only.

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Part B 75 Questions • Answer Key

Q1 Part B
Which tool can be used along with a radius gauge to check curvature of a workpiece for better accuracy?

A. Bevel protractor
B. Feeler gauge ✓
C. Surface plate
D. Micrometer

Q2 Part B
What is waste?

A. Natural resources for living organisms
B. Valuable substances for agriculture
C. Useful materials for industries
D. Unwanted or unusable materials ✓

Q3 Part B
Which of the following punch marks is used for the correct location and seating of the divider point?

A. Centre punch marks of 30°
B. Centre punch marks of 60°
C. Prick punch marks of 120°
D. Prick punch marks of 30° ✓

Q4 Part B
Pencils are rated in engineering drawings based on the _____.

A. hardness or softness of the lead ✓
B. colour of the lead
C. durability of the lead
D. shape of the lead

Q5 Part B
What is the main reason copper turns green over time?

A. Hydrogen embrittlement
B. Formation of an oxide layer ✓
C. Absorption of nitrogen from the air
D. Reaction with UV light

Q6 Part B
In multiple start threads, the relation between lead and pitch is given by which of the following?

A. There is no relation between them.
B. Lead is equal to the pitch.
C. Lead is always greater than the pitch. ✓
D. Lead is always less than the pitch.

Q7 Part B
The included angle of the tip of a standard lathe centre is ____.

A. 60° ✓
B. 30°
C. 90°
D. 45°

Q8 Part B
Why should the blade of a bevel gauge be wiped clean after use?

A. To make it look new in appearance
B. To ensure it remains flexible to use
C. To prevent rust and maintain accuracy ✓
D. To make it a multipurpose tool/gauge

Q9 Part B
What is the blade length of the T1 'T' square, as per IS:1360-1989?

A. 500 mm
B. 1500 mm
C. 700 mm
D. 1000 mm ✓

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Q10 Part B

The principle behind the vernier scale in a vernier caliper is:

- A. subtracting the vernier scale reading from the main scale reading
- B. dividing a known length into a certain number of equal divisions
- C. adding the main scale and auxiliary scale readings ✓
- D. multiplying the main scale reading

Q11 Part B

What is the primary advantage of rutile electrodes in welding?

- A. They provide good weld shape and easy slag removal. ✓
- B. They are suitable for welding high-carbon steels.
- C. They produce deep penetration for high-strength welding.
- D. They generate minimal heat during the welding process.

Q12 Part B

Which of the following statements correctly describes the placement and purpose of orientation marks on a drawing sheet?

1. Orientation marks are placed at two opposite corners of the drawing sheet to indicate the correct orientation on the drawing board.
2. Orientation marks consist of arrow heads placed across the frame, with one at the shorter side and one at the longer side, coinciding with the centering marks.
3. One of the orientation marks always points towards the draughtsman, indicating the direction in which the drawing sheet should be placed.
4. Orientation marks are used to mark the midpoint of each side of the drawing sheet for accurate centering.

- A. 1, 2, and 3 only
- B. 1 and 4 only
- C. 2 and 3 only ✓
- D. 1, 2, and 4 only

Q13 Part B

The digital interface of an electronic digital caliper improves the reliability of measurement records by:

- A. eliminating the need for manual data entry
- B. allowing direct connection to a statistical control system ✓
- C. providing secured storage for a series of readings
- D. enabling the instrument to be used as a limit gauge

Q14 Part B

Which of the following punches is used to make deeper witness marks on scribed lines and make it easier for the drill to start correctly?

- A. Solid punch
- B. Centre punch ✓
- C. Pin punch
- D. Prick punch

Q15 Part B

Which of the following shafts is an example of a machine shaft?

- A. Line shaft
- B. Overhead shaft
- C. Crank shaft ✓
- D. Counter shaft

Q16 Part B

Which of the following is a fundamental unit?

- A. newton
- B. metre ✓
- C. pascal
- D. watt

Q17 Part B

What is the coating factor range for medium-coated electrodes?

- A. 1.25 to 1.3
- B. 1.4 to 1.5 ✓
- C. 1.1 to 1.2
- D. 1.6 to 2.2

Q18 Part B

Which of the following belts is acid proof and water proof and is NOT affected by animal oils or alkalies?

- A. Cotton or fabric belts
- B. Rubber belts
- C. Balata belts ✓
- D. Leather belts

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Q19 Part B

Which of the following uses of wire gauge is INCORRECT?

- A. It measures the diameter of a wire.
- B. It does not help determine how much current a wire can carry. ✓
- C. Using the wrong wire gauge can damage appliances and electronic devices.
- D. It is used in electrical installations, welding and other applications.

Q20 Part B

The 'merit number' in toughness measurement is used for:

- A. determining a material's density
- B. finding the modulus of rigidity
- C. comparing different materials ✓
- D. measuring a material's elasticity

Q21 Part B

Which maintenance strategy includes section inspection as a critical part?

- A. Predictive maintenance (PdM)
- B. Preventive maintenance (PM) ✓
- C. Run-to-failure maintenance
- D. Corrective maintenance

Q22 Part B

In engineering drawing (lettering and numbering), a single stroke means that the _____.

- A. thickness of the line of the letter or number is obtained in one stroke of the pencil ✓
- B. thickness of the line of the letter or number is obtained in three strokes of the pencil
- C. thickness of the line of the letter or number is obtained in no strokes of the pencil
- D. thickness of the line of the letter or number is obtained in two strokes of the pencil

Q23 Part B

A device operates at 240 V and consumes 480 W of power. What is the current flowing through the device?

- A. 2 A ✓
- B. 1 A
- C. 1.5 A
- D. 2.5 A

Q24 Part B

What is the primary principle behind the generation of electrical energy in a piezoelectric device?

- A. Conversion of thermal energy into electrical energy
- B. Conversion of chemical energy into electrical energy
- C. Conversion of light energy into electrical energy
- D. Conversion of mechanical stress into electrical energy ✓

Q25 Part B

Which control valve is commonly used to control pressure in multiple actuators operating in sequence?

- A. Pressure sequence valve ✓
- B. Pressure reducing valve
- C. Pressure relief valve
- D. Check valve

Q26 Part B

When the size of a shaft is less and the size of the hole is more, the difference between the two is called _____.

- A. deviation
- B. clearance ✓
- C. tolerance
- D. interference

Q27 Part B

Which of the following types of wooden mallets are used for hollowing panel beatings?

- A. Standard wooden mallets
- B. End-faked mallets
- C. Side-faked mallets
- D. Bossing mallets ✓

Q28 Part B

Why is it important to follow proper disposal procedures for industrial waste?

- A. To allow waste to decompose anywhere
- B. To reduce the number of trash bins needed
- C. To save time and effort in sorting waste
- D. To comply with environmental regulations and reduce pollution ✓

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Q29 Part B

When the size of the hole or female part of a job is more than shaft or male part, the difference between the two will be known as _____.

A. neither positive nor negative allowance
B. either positive or negative allowance
C. positive allowance ✓
D. negative allowance

Q30 Part B

Which of the following statements is/are correct?
Statement I - The annealing process uses heat to reduce the hardness and increase the ductility and toughness of various steels, cast iron, and alloys.
Statement II - Quenching is a rapid cooling process that alters specific properties of materials by manipulating the cooling rate.

A. Statement (I) is correct but Statement (II) is incorrect.
B. Statement (I) and (II) both are correct. ✓
C. Statement (I) is incorrect but Statement (II) is correct.
D. Statement (I) and (II) both are incorrect.

Q31 Part B

What force (effort) will be required to push a load, initially at rest, of mass 500 g, so that at a distance of 20 m, its final velocity is 20 m/sec [Assume that there is no friction and 'g' = 10 m/s^2].

A. 5 J
B. 10 N
C. 5 N ✓
D. 10 J

Q32 Part B

Key way on a shaft is made with a _____ chisel.

A. side cut
B. cross cut
C. flat ✓
D. round nose

Q33 Part B

Which of the following microstructural changes occurs during the tempering of martensite?

A. Ferrite transforms into pearlite.
B. Martensite decomposes into ferrite and cementite. ✓
C. Austenite transforms into martensite.
D. Martensite transforms into pearlite.

Q34 Part B

Which of the following is a key advantage of using Thyristors in power control applications?

A. High frequency switching ✓
B. High efficiency and low power loss
C. Small size and low cost
D. Low voltage handling capabilities

Q35 Part B

When did India implement the Hazardous Wastes (Management and Handling) Rules to regulate the disposal and handling of hazardous waste?

A. 1987
B. 2000
C. 1989 ✓
D. 1982

Q36 Part B

What is the purpose of using a wiper die in rotary draw bending?

A. To cut the pipe after bending
B. To apply heat for easy bending
C. To measure the bending angle
D. To reduce wrinkling on the inner surface of the bend ✓

Q37 Part B

The property of _____ is important, while repairing a machine, if a broken part is to be replaced, we need a new part. Only if the new part is made of accurately similar measurement, it can be fitted, otherwise not.

A. allowance
B. interchangeability ✓
C. interference
D. tolerance

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Q38 Part B

If a machine has an efficiency of 80%, it means:

- A. the machine produces more output than input
- B. the machine has a velocity ratio and mechanical advantage both equal to 80
- C. the machine does not have any loss in input energy
- D. the machine loses 20% of the input ✓

Q39 Part B

Which of the following statements is correct about a protractor?

Statements:
1. A protractor can be used to measure angles from both sides.
2. A protractor is typically made of a rigid metal material.

- A. Neither statement is true
- B. Only statement 2 is true
- C. Only statement 1 is true ✓
- D. Both statements are true

Q40 Part B

In screw gauge, the term 'lead of a screw' is defined by the:

- A. material the screw is made of
- B. diameter of the screw
- C. number of threads on the screw
- D. distance the screw moves axially with one complete turn ✓

Q41 Part B

Which of the following frosting techniques is best suited for large industrial components?

- A. Electrochemical frosting
- B. Sandblasting ✓
- C. File finishing
- D. Hand scraping

Q42 Part B

Which type of rotary actuator provides limited angular movement instead of continuous rotation?

- A. Rack and pinion rotary actuator ✓
- B. Vane motor
- C. Pneumatic actuator
- D. Hydraulic motor

Q43 Part B

Which feature of a pipe wrench allows it to grip a round pipe securely?

- A. Smooth jaws
- B. A built-in ratchet mechanism
- C. Fixed jaws with a rubber grip
- D. Serrated jaws with adjustable hook ✓

Q44 Part B

Which of the following is the key difference between a fuse and a circuit breaker?

- A. A fuse can be reset after tripping, while a circuit breaker must be replaced.
- B. A fuse is used for high-voltage circuits, while a circuit breaker is used for low-voltage circuits.
- C. A fuse is a mechanical device, while a circuit breaker is an electronic device.
- D. A fuse is a one-time-use device, while a circuit breaker can be reset and reused. ✓

Q45 Part B

In the limit system, the distinction between allowance and deviation is:

- A. allowance is used for single parts, while deviation is used for assemblies
- B. allowance is the difference between the maximum material limits of the mating parts, while deviation is the difference between a size and the corresponding basic size ✓
- C. allowance is always positive, while deviation can be positive or negative
- D. allowance is the difference between a size and the corresponding basic size, while deviation is the difference between the maximum material limits of the mating parts

Q46 Part B

Which of the following is an example of a p-type semiconductor?

- A. Silicon doped with phosphorus
- B. Silicon doped with arsenic
- C. Silicon doped with boron ✓
- D. Germanium doped with phosphorus

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Q47 Part B

_____ are used to hold previously drilled or bored holes for outer surface machining.

- A. Lathe carriers
- B. Carriages
- C. Rests
- D. Lathe mandrels ✓

Q48 Part B

Which of the following factors influences the self-dressing ability of a honing stone?

- A. Workpiece surface roughness
- B. Abrasive grain size and hardness ✓
- C. Depth of cut per stroke
- D. Honing tool reciprocating speed

Q49 Part B

What type of abrasive is typically used for honing a hard material like ceramic?

- A. Steel wool
- B. Diamond ✓
- C. Copper tool
- D. Sandpaper

Q50 Part B

In engineering drawing, what is defined as the path of a moving point with no thickness?

- A. Angle
- B. Curve
- C. Point
- D. Line ✓

Q51 Part B

What is the chemical effect that occurs in a battery during the charging process of a Lead Acid battery?

- A. Lead reacts with sulphur to form lead sulphate
- B. Water dissociation into hydrogen and oxygen
- C. Lead sulphate decomposes into lead and sulphuric acid ✓
- D. Sulphuric acid dissociates into hydrogen and sulphate ions

Q52 Part B

Which of the following is an advantage of chain drives over belt drives?

- A. The production cost of chains is relatively high.
- B. The chain drive needs accurate mounting and careful maintenance, particularly lubrication and slack adjustment.
- C. The chain drive has velocity fluctuations especially when unduly stretched.
- D. It gives a high transmission efficiency. ✓

Q53 Part B

What does a green sign with a white cross indicate in a maintenance environment?

- A. High voltage zone
- B. First aid station ✓
- C. Prohibited area
- D. Flammable materials storage

Q54 Part B

What does an optical pyrometer measure?

- A. The relative density of liquids
- B. The temperature of the surface ✓
- C. The volume of liquids
- D. The pressure of gases

Q55 Part B

Which of the following parts of a hammer-head is used for shaping and forming work like riveting and bending?

- A. Face
- B. Eyehole
- C. Pein ✓
- D. Cheek

Q56 Part B

A triple-riveted butt joint with two cover-straps is used for the _____.

- A. radial joint
- B. circumferential joint
- C. longitudinal joint ✓
- D. angle joint

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Q57 Part B

What is the effect of the heat treatment process 'annealing' on steel?

- **A.** Softens the material and increases toughness ✓
- **B.** Produces martensite
- **C.** Increases hardness and strength
- **D.** Reduces ductility

Q58 Part B

Match the correct length and breadth of the Trimmed sizes of sheets.

Designation	Trimmed size
A. A0	P. 297 × 420
B. A1	Q. 420× 594
C. A2	R. 594 × 841
D. A3	S. 841 × 1189

- **A.** A - R, B - S, C - Q, D - P
- **B.** A - P, B - R, C - Q, D - S
- **C.** A - S, B - R, C - P, D - Q
- **D.** A - S, B - R, C - Q, D - P ✓

Q59 Part B

What does the red colour typically indicate in industrial colour coding?

- **A.** Low-pressure pipes
- **B.** Electrical grounding
- **C.** Safety equipment or emergency stop ✓
- **D.** Neutral zones

Q60 Part B

Which of the following types of wooden mallets are used for general purpose work such as flattening and bending?

- **A.** Bossing mallets
- **B.** Side-faked mallets
- **C.** Standard wooden mallets ✓
- **D.** End-faked mallets

Q61 Part B

Tapping is the operation of _____.

- **A.** cutting internal threads in a hole ✓
- **B.** machining flat surfaces on work pieces
- **C.** providing tapered entrance to the hole
- **D.** sizing and improving the geometry and finish of a previously drilled hole

Q62 Part B

Which type of cooling method is used in the annealing process?

- **A.** Water quenching
- **B.** Furnace cooling ✓
- **C.** Oil quenching
- **D.** Air cooling

Q63 Part B

Which of the following is NOT a correct practice when using a telescopic gauge?

- **A.** Using a micrometer to measure the gauge's expanded size
- **B.** Locking the gauge before removing it from the bore
- **C.** Measuring at multiple points for accuracy
- **D.** Measuring a rough or dirty bore without cleaning it ✓

Q64 Part B

Which of the following is the Outer operation of the lathe?

- **A.** Boring
- **B.** Tapping
- **C.** Drilling
- **D.** Facing ✓

Q65 Part B

Identify the correct combination of a rivet parts.

- **A.** Hardie hole, chipping block, pritchel hole
- **B.** Head, cylindrical body of shank, a slightly tapered tail ✓
- **C.** Anvil, stock, top fuller
- **D.** Bottom fuller, shank, horn

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Q66 Part B

_____ is a metal removal process that employs an abrasive grinding wheel (GW) whose cutting elements are grains of abrasive materials of high hardness and high refractoriness.

- A. Taper turning
- B. Step turning
- C. Boring
- D. Grinding ✓

Q67 Part B

When drawing a curved line of a specific length in an engineering drawing, which tool is most appropriate for ensuring accuracy?

- A. Protractor
- B. Straightedge
- C. French Curve ✓
- D. Compass

Q68 Part B

In resistance soldering, how is heat generated?

- A. By resistance to electrical current ✓
- B. By ultrasonic waves
- C. By direct flame
- D. By an electric arc

Q69 Part B

How are pneumatic systems used in amusement parks?

- A. To launch riders in drop towers and air-powered rides ✓
- B. To power hydraulic roller coasters
- C. To cool mechanical components
- D. To control air brakes in Ferris wheels

Q70 Part B

If the coefficient of linear expansion of a material is 2×10^{-5} $°C^{-1}$, what does it mean?

- A. The material expands by 2×10^{-5} times its original area per degree Celsius
- B. The material expands by 2×10^{-5} times its original volume per degree Celsius
- C. The material expands by 2×10^{-5} times its original length per degree Celsius ✓
- D. The material always increases by 2×10^{-5} kg when temperature is increased by 1°C

Q71 Part B

A _____ chisel is used for making an oil groove in a bearing and for cutting slits at corners.

- A. side cut
- B. flat
- C. round nose ✓
- D. cross cut

Q72 Part B

Which of the following non-metals is naturally black?

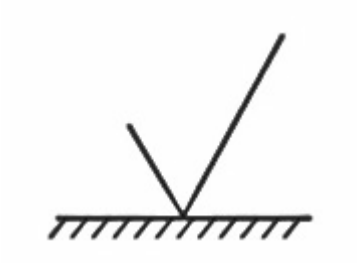
- A. Alumina
- B. Graphite ✓
- C. Silicon
- D. Quartz

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Q73 Part B

What does the surface finish symbol shown in the given figure represent?



A. The surface requires a specific finishing process

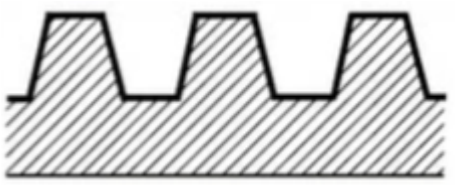
B. A general machining indication without roughness details ✓

C. Material removal is strictly prohibited

D. The surface must be left without machining

Q74 Part B

Identify the type of thread given below.



A. Acme thread ✓

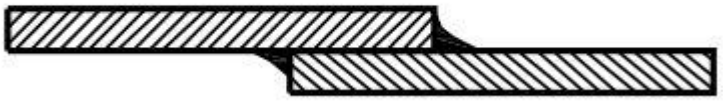
B. Knuckle thread

C. V-thread

D. Square thread

Q75 Part B

Identify the type of brazed joint shown below.



A. Joggle Lap

B. Simple Lap ✓

C. Strapped Lap

D. Butted Flange

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Q1 Part B

The main drawback of using a 4-jaw chuck compared to a 3-jaw chuck is:

A. it provides a less secure grip

B. it cannot grip work on the inside surface

C. it requires more setting time ✓

D. it can only hold regular shaped jobs

Q2 Part B

Which hardness test uses a hardened steel ball as an indenter?

A. Knoop Hardness Test

B. Vickers Hardness Test

C. Brinell Hardness Test ✓

D. Rockwell Hardness Test

Q3 Part B

The SI unit of 'ultimate stress' is _____.

A. pascal (Pa) ✓

B. newton (N)

C. newton per meter (N/m)

D. joule per square meter (J/m^2)

Q4 Part B

Which type of tap is best suited for starting a thread in a blind hole?

A. Taper Tap ✓

B. Plug Tap

C. Spiral Point Tap

D. Bottoming Tap

Q5 Part B

What is the primary purpose of preventive maintenance?

A. To increase the workload of employees

B. To reduce unexpected equipment failures ✓

C. To delay repairs until breakdowns occur

D. To eliminate the need for regular inspections

Q6 Part B

The accuracy of measurement by a try square is about:

A. 0.02 mm per 10 mm length

B. 0.001 mm per 10 mm length

C. 0.004 mm per 10 mm length

D. 0.002 mm per 10 mm length ✓

Q7 Part B

A shaft with a basic size of 40 mm has an allowance of 0.06 mm for clearance. The design size of the shaft is _____.

A. 39.94 mm ✓

B. 40.00 mm

C. 40.06 mm

D. 39.04 mm

Q8 Part B

Which valve is used to control a double-acting cylinder?

A. 3/2 directional control valve

B. 5/2 directional control valve ✓

C. Pressure relief valve

D. 2/2 directional control valve

Q9 Part B

What is the primary purpose of countersinking?

A. To make a hole deeper without changing its shape

B. To increase the depth of a drilled hole

C. To reduce the hole diameter

D. To create a conical recess at the entrance of the hole ✓

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Q10 Part B

Match the following columns.

Column I Column II
Hinge (A) Reinforcing the downward projecting sand mass (P)
Welding (B) Finishing flat surfaces and joints (Q)
Trowels (C) Permanent joint (R)
Gaggers (D) Movable joint (S)

A. A-R, B-S, C-Q, D-P
B. A-S, B-R, C-P, D-Q
C. A-S, B-R, C-Q, D-P ✓
D. A-S, B-P, C-Q, D-R

Q11 Part B

Which of the following materials is most malleable?

A. Glass
B. Copper
C. Gold ✓
D. Cast iron

Q12 Part B

_____ is the line of zero deviation and represents the basic size.

A. Zero line
B. Actual size
C. Nominal size ✓
D. Tolerable size

Q13 Part B

What is the term used to describe programs that distinguish between uppercase and lowercase letters, treating "yes" and "YES" as different inputs?

A. Case-insensitive
B. Numerical
C. Case-sensitive ✓
D. Alphabetical

Q14 Part B

Which of the following is a key electrical safety tip in a workshop?

A. Operate machines with wet hands
B. Ignore frayed wires if the device is still working
C. Use water to clean electrical panels
D. Ensure electrical equipment is properly grounded ✓

Q15 Part B

On a digital vernier caliper, the purpose of pressing the zero button is to:

A. change the units of measurement
B. lock the jaws in a fixed position
C. set the reading to zero ✓
D. turn the LCD display on or off

Q16 Part B

How is the height of a planer gauge adjusted?

A. By rotating a vernier scale
B. By tightening a micrometer screw
C. By using slip gauges ✓
D. By applying pressure manually

Q17 Part B

The primary function of 'ferrule' is _____ in tube fitting.

A. to create a leak-proof seal between the tube and fitting ✓
B. to prevent corrosion
C. to increase the flow rate in the tube
D. to reduce pressure losses

Q18 Part B

What is the primary goal of the 5S concept?

A. To replace traditional safety measures
B. To increase the number of safety regulations
C. To improve workplace organisation and efficiency ✓
D. To eliminate the need for maintenance

Q19 Part B

A statement and conclusion for pictorial drawing are given below. Determine the logical relationship between them.

Statement: Pictorial drawings are three-dimensional and provide a visual representation of an object.

Conclusion: Therefore, pictorial drawings are useful for describing the shape of a piece part or component.

A. The conclusion does not logically follow from the statement.
B. The conclusion is partially supported by the statement.
C. The conclusion is unrelated to the statement.
D. The conclusion logically follows from the statement. ✓

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Q20 Part B

When one side of a job with parallel diameter is cut turned completely or partially to reduce its diameter by the lathe machine, it is called _____.

A. knurling
B. chamfering
C. taper turning
D. turning ✓

Q21 Part B

Which of the following statements is/are true about Non-Functional Dimensions (NF) in engineering drawing?

Statement 1: Non-functional Dimensions are shown without limits, as they do not affect the functionality of the component or space.
Statement 2: Non-Functional Dimensions are typically used for reference purposes only, and do not impact the assembly or performance of the component or space.

A. Only statement 2 is true ✓
B. Only statement 1 is true
C. Both statements are true
D. Neither statement is true

Q22 Part B

Match the following designations of sheets with their respective trimmed sizes in length and breadth.

Designation Trimmed Size
A) A0 P) 297 × 420
B) A1 Q) 420 × 594
C) A2 R) 594 × 841
D) A3 S) 841 × 1189

A. A-S ; B-R ; C-Q ; D-P ✓
B. A-Q ; B-R ; C-S ; D-P
C. A-S ; B-P ; C-Q ; D-R
D. A-P ; B-R ; C-Q ; D-S

Q23 Part B

Sine bars are used when a high degree of accuracy less than _____ is needed for measuring angles.

A. 1 degree
B. 30 degrees
C. 1 minute ✓
D. 30 minutes

Q24 Part B

Natural rubber is soft at high temperatures and brittle at low temperatures; hence raw rubber is heated with sulphur and other additives at a temperature range between 373 – 415 K to make it strong. This process is called _____ of rubber.

A. vulcanisation ✓
B. molding
C. latex
D. extrusion

Q25 Part B

What type of valve is used to prevent backflow in a pneumatic system?

A. Flow control valve
B. Check valve ✓
C. Directional control valve
D. Pressure relief valve

Q26 Part B

What is the primary reason for the heating effect in a conductor when an electric current passes through it?

A. The electric field in the conductor causes heat generation.
B. The movement of electrons causes heat generation. ✓
C. The conductor absorbs heat from the surrounding environment.
D. The movement of protons causes heat generation.

Q27 Part B

Which option shows the correct answer when 27°C is converted to the kelvin scale?

A. – 300 K
B. 246 K
C. 300 K ✓
D. – 246 K

Q28 Part B

Why do cars have treaded tyres?

A. To increase friction and grip on the road ✓
B. To reduce weight
C. To decrease friction
D. To increase speed

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Q29 Part B

Which of the following methods is NOT a case hardening process?

- A. Nitriding
- B. Carburising
- C. Cyaniding
- D. Tempering ✓

Q30 Part B

In a lathe machine with a 3-jaw chuck, the jaws are moved:

- A. by pneumatic pressure
- B. by magnetic force
- C. simultaneously in a radial direction by rotating a pinion ✓
- D. independently using individual levers

Q31 Part B

A rectangular floor measuring 10 m × 8 m is to be tiled. If each tile covers 0.25 m^2, how many tiles are needed?

- A. 200
- B. 300
- C. 320 ✓
- D. 250

Q32 Part B

_____ recommend(s) 20 mm wide margins for sheet sizes AO and A1 in engineering drawings.

- A. Borders and frames: SP: 46 (2003) ✓
- B. Geographic coordinate systems
- C. Custom grids
- D. Grid reference system

Q33 Part B

In Total Productive Maintenance (TPM), what does the term 'Six Big Losses' refer to?

- A. Categories of equipment-related inefficiencies ✓
- B. Losses due to defective raw materials
- C. Reduced employee productivity due to training sessions
- D. Major financial losses in maintenance costs

Q34 Part B

Which of the following instruments is used to draw mutually perpendicular lines over a plane surface?

- A. Bevel square
- B. Try Square ✓
- C. Straight edge
- D. Folding rule

Q35 Part B

Which of the following conversions are correct?

- A. 1 L = 1000 dm^3 and 1 mL = 1000 cm^3
- B. 1000 L = 1 dm^3 and 1000 mL = 1 cm^3
- C. 1 L = 1 dm^3 and 1 mL = 1 cm^3 ✓
- D. 1000 L = 1 dm^3 and 1 mL = 1000 cm^3

Q36 Part B

Which standard specifies dimensions and tolerances for butt-weld pipe fittings in India?

- A. IS 554
- B. IS 6392 ✓
- C. IS 1879
- D. IS 1239

Q37 Part B

The _____ is commonly used to assess hardenability of steel.

- A. Vickers hardness test
- B. Rockwell hardness test
- C. Brinell hardness test
- D. Jominy end-quench test ✓

Q38 Part B

Which of the following is a primary difference between a primary and a secondary electrochemical cell?

- A. A secondary cell produces more energy than a primary cell.
- B. A primary cell can be recharged, while a secondary cell cannot be recharged.
- C. A primary cell cannot be recharged, while a secondary cell can be recharged. ✓
- D. There is no difference between primary and secondary cells.

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Q39 Part B

As per the BS standards, the Environment Management code is:

A. BS ISO 45001

B. BS EN ISO 14001 ✓

C. BS EN ISO/IEC 27001

D. BS EN ISO 9001

Q40 Part B

_____ work best for cutting soft materials like wood and plastic.

A. Bi-metal blades

B. Coarse-toothed blades ✓

C. Fine-toothed blades

D. High-carbon steel blades

Q41 Part B

What type of surfaces can be checked using a radius gauge?

A. Both internal and external curved surfaces ✓

B. Only flat surfaces

C. Only internal curved surfaces

D. Only external curved surfaces

Q42 Part B

Which of the following actions is a part of the emergency response team's responsibilities during an active emergency?

A. Preparing reports on emergency incidents

B. Rescuing persons in immediate danger ✓

C. Conducting routine safety checks

D. Scheduling regular evacuation drills

Q43 Part B

Which of the following is a major risk associated with fuel spillage?

A. Fire hazards and environmental contamination ✓

B. Better lubrication for workshop floors

C. Increased productivity

D. Reduced need for ventilation

Q44 Part B

Identify the roughness grade number for a roughness value of 0.025 µm.

A. N1 ✓

B. N4

C. N3

D. N2

Q45 Part B

Which of the following flat belt drives is provided to obtain high velocity ratio and when the required belt tension cannot be obtained by other means?

A. Crossed or twist belt drive

B. Belt drive with idler pulleys ✓

C. Quarter turn belt drive

D. Open belt drive

Q46 Part B

In a circuit with a NTC type thermistor and a fixed resistor connected in series connected to a DC power supply, what will happen to the output voltage if there is a rise in temperature?

A. The output voltage will increase. ✓

B. The output voltage will remain constant.

C. The output voltage will fluctuate depending on the resistor value.

D. The output voltage will decrease.

Q47 Part B

Force fit will give _____ type of allowance.

A. positive

B. negative ✓

C. neither positive nor negative

D. either positive or negative

Q48 Part B

Which of the following screwdrivers has cross-shaped tips that are unlikely to slip from the cruciform slots in Philips recessed head screws?

A. Stumpy screwdriver

B. Offset screwdriver

C. Cross-recess screwdriver ✓

D. Ratchet screwdriver

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Q49 Part B

In riveted joint, diameter (d) for a given thickness of the plates is given by _____, where t = thickness of plates in mm.

- A. $d = 6 (t)^{1/2}$ ✓
- B. $d = 3.5 (t)^{1/2}$
- C. $d = 15 (t)^{1/2}$
- D. $d = 12 (t)^{1/2}$

Q50 Part B

Which of the following is INCORRECT about line standard?

- A. More accurate due to line thickness ✓
- B. Subject to parallax error
- C. Quick measurements over a wide range
- D. Used to measure the distance between two engraved lines

Q51 Part B

Why is acetylene gas not stored in its gaseous form under pressure above 1 kg/cm^2 in cylinders?

- A. Because it loses its flammability and becomes ineffective
- B. Because it reacts with the cylinder's material and causes corrosion
- C. Because it becomes unstable and may explode under high pressure ✓
- D. Because it condenses into a liquid and reduces efficiency

Q52 Part B

What is the relationship between surface roughness and dimensional tolerance in machining?

- A. Tighter tolerances require finer surface finishes. ✓
- B. Surface roughness does not affect dimensional tolerances.
- C. Finer surface finish always leads to tighter tolerances.
- D. Rougher surfaces always provide better tolerance control.

Q53 Part B

Which of the following is NOT a component of twist drill?

- A. Flutes
- B. Shank
- C. Body
- D. Neck ✓

Q54 Part B

Heavy belt drives are used to transmit large powers at belt speeds _____.

- A. between 15 m/s and 22 m/s
- B. above 22 m/s ✓
- C. up to about 10 m/s
- D. between 10 m/s and 15 m/s

Q55 Part B

A 100-mm centre-punch could have a 10-mm diameter body and a 6-mm diameter point ground to an angle of _____.

- A. 120°
- B. 90° ✓
- C. 60°
- D. 30°

Q56 Part B

Malleability is most important for which type of industrial application?

- A. Bearing production
- B. Cutting tool manufacturing
- C. Wire manufacturing
- D. Sheet metal fabrication ✓

Q57 Part B

Which of the following is an INCORRECT statement for belt-pulley system?

- A. Arc of contact on the smaller pulley may be as small as possible. ✓
- B. A long belt tends to swing from side to side, causing the belt to run out of the pulleys.
- C. The pulleys should not be too far apart.
- D. The pulleys should not be too close together.

Q58 Part B

Which of the following instruments is commonly used along with a planer gauge for precise height measurement?

- A. Vernier caliper
- B. Depth gauge
- C. Micrometer
- D. Dial indicator ✓

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Q59 Part B

When is the use of a sensitive measuring instrument necessary?

- A. When working with large surfaces
- B. When machining soft materials
- C. When comparing colours
- D. When high accuracy is required ✓

Q60 Part B

What is the primary reason for conducting a vehicle road test?

- A. To test how fast the vehicle can go
- B. To avoid the need for inspections
- C. To increase fuel efficiency
- D. To ensure the vehicle is functioning safely and correctly ✓

Q61 Part B

An angle greater than 180 degrees is referred to as _____.

- A. a right angle
- B. an acute angle
- C. an obtuse angle
- D. a reflex angle ✓

Q62 Part B

Which of the following is NOT a component of the Vernier caliper?

- A. Locking screw
- B. Vernier scale
- C. Anvil ✓
- D. Main scale

Q63 Part B

Why is Prussian blue applied to the surface plate before scraping?

- A. To lubricate the surface for easy movement
- B. To protect the surface plate from scratches
- C. To identify high spots on the workpiece for accurate scraping ✓
- D. To create a permanent marking on the job

Q64 Part B

How can poor service conditions contribute to equipment failure?

- A. By improving material durability
- B. By increasing compatibility between material and environment
- C. By exposing components to extreme conditions, they were not designed for ✓
- D. By reducing the rate of loading on components

Q65 Part B

Which type of roller bearing is best suited for automobile application for carrying both radial and axial loads in a single direction?

- A. Cylindrical roller bearing
- B. Needle roller bearing
- C. Tapered roller bearing ✓
- D. Spherical roller bearing

Q66 Part B

In a logic circuit, three SPST (Single Pole Single Throw) switches are used to implement a logic gate. The switches are connected in series. What is the output of the circuit if all switches are closed?

- A. Undefined
- B. 1 ✓
- C. The output will depend on the type of gate used
- D. 0

Q67 Part B

_____ is a measuring device that uses the difference between two separate measuring instrument scales to determine a job's measurement.

- A. Either the principle of Vernier caliper or micrometer
- B. The principle of the micrometer
- C. Neither the principle of Vernier caliper nor micrometer
- D. The principle of Vernier caliper ✓

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Q68 Part B

Which of the following statements best describes the application of oxy-other fuel gas welding?

A. It is used for welding metals requiring high heat input.

B. It is mainly used for welding thick steel plates.

C. It produces a higher flame temperature than oxy-acetylene welding.

D. It is preferred for welding metals with lower heat requirements. ✓

Q69 Part B

Which of the following care and maintenance of a marking table is INCORRECT?

A. The marking table should be protected from damage.

B. The marking table should be protected from rust.

C. After use, the marking table should be cleaned with a soft cloth.

D. The surface of the marking table should not be given a thin layer of oil. ✓

Q70 Part B

For which of the following calipers, a screw and nut are provided for opening and closing the caliper legs?

A. Spring joint calipers ✓

B. Firm joint calipers

C. Simple calipers

D. Leg and point calipers

Q71 Part B

_____ material is commonly used for blue matching in scraping.

A. Chalk powder

B. Graphite powder

C. Prussian blue ✓

D. Sandpaper

Q72 Part B

What is the primary purpose of shielding in electrical cables?

A. To increase the voltage capacity of the cable

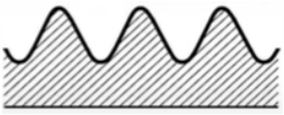
B. To increase the current-carrying capacity of the cable

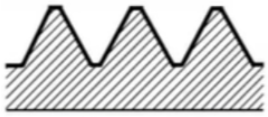
C. To protect the cable from external electromagnetic interference ✓

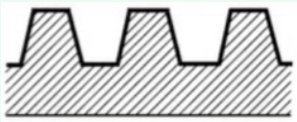
D. To prevent heat loss from the cable

Q73 Part B

Identify the ACME thread.

A. 

B. 

C.  ✓

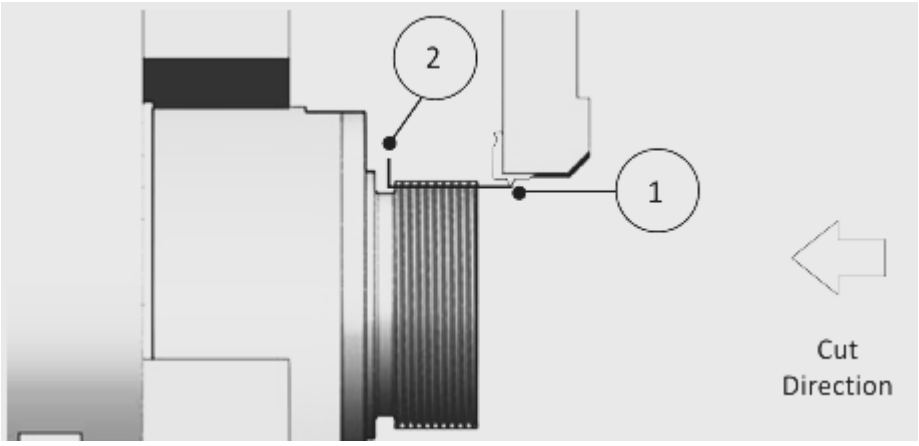
D. 

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Q74 Part B

In a thread cutting operation, symbols 1 and 2 indicate _____ and _____.



A. Pull Off; Start Cut

B. Start Cut; Start Cut

C. Start Cut; Pull Off ✓

D. Pull Off; Pull Off

Q75 Part B

From the following relation, select relation for taper angle (θ) in taper turning, where l = Length of taper, D = Large diameter and d = small diameter.

A. $\tan\theta = \frac{(D-d)}{21}$ ✓

B. $\tan\theta = \frac{(D+d)}{21}$

C. $\frac{1}{2\tan\theta} = \frac{(D+d)}{21}$

D. $\frac{1}{2\tan\theta} = \frac{(D-d)}{21}$

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Part B 75 Questions • Answer Key

Q1 Part B

What is the typical temperature range of a mercury-based clinical thermometer?

A. 0°C to 100°C

B. 35°C to 42°C ✓

C. 0°C to 50°C

D. −10°C to 110°C

Q2 Part B

Which of the following statements is NOT correct for using scribers?

A. Scriber points are very sharp, so they are to be handled very carefully.

B. While scribing lines, the scriber is used like a pencil.

C. Do not put the scriber in your pocket.

D. Place a cork on the point when in use to prevent accidents. ✓

Q3 Part B

A voltmeter with a resistance of 10,000 ohms is connected across a circuit that has a voltage of 50 V. What is the current flowing through the voltmeter?

A. 2 mA

B. 1 mA

C. 5 mA ✓

D. 4 mA

Q4 Part B

During the turning operation on lathe, if D is the initial diameter and d is the final diameter of the work piece, the depth of cut, t, is calculated by _____.

A. t = D − d

B. t = (D − d) / 2 ✓

C. t = (D + d) / 2

D. t = D / d

Q5 Part B

Match the following types of lines with their correct descriptions according to their orientation and characteristics.

Description	Type of Line
A. A line that is neither parallel to a horizontal plane nor perpendicular to it.	1. Horizontal line
B. A line that is perpendicular to horizontal lines.	2. Vertical line
C. A line that changes its direction continuously.	3. Inclined line
D. A line that is parallel to a horizontal plane.	4. Curved line

A. A - 1, B - 2, C - 3, D - 4

B. A - 2, B - 3, C - 4, D - 1

C. A - 3, B - 2, C - 4, D - 1 ✓

D. A - 2, B - 1, C - 4, D - 3

Q6 Part B

From normalising heat treatment, which of the following materials benefit(s) the most in terms of improving mechanical properties?

A. Stainless steel

B. Low and medium-carbon steel ✓

C. Grey cast iron

D. Copper alloys

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Q7 Part B

For your safety at work, which of the following should be ensured?
1. All the required protective clothing and equipment are used.
2. Training and instruction necessary for performing tasks safely have been received.

A. Only statement 1
B. Neither statement 1 nor 2
C. Only statement 2
D. Both statements 1 and 2 ✓

Q8 Part B

In a logic circuit, two inputs A and B are applied to an AND gate, and the output of the AND gate is connected to the input of a NOT gate. If the inputs A and B are both at logic 0, what will be the output of the entire circuit?

A. Undefined
B. 0
C. 1 ✓
D. 2

Q9 Part B

When creating 10 mm single-stroke capital letters in vertical style, what does the 10 mm distance between horizontal parallel lines represent?

A. Letter width
B. Letter height ✓
C. Stroke thickness
D. Interline spacing

Q10 Part B

As we know from the graduation of micrometer, if we give one full round to thimble, its spindle moves ½ mm forward or backward. A buck part can be divided into 0 to 50 parts. The least count of the micrometer is ___ mm.

A. 0.05
B. 0.10
C. 0.01 ✓
D. 0.50

Q11 Part B

Which of the following statements about slip gauges is true?

A. Slip gauges do not require calibration.
B. Slip gauges are used only for rough measurements.
C. Slip gauges are flexible and can bend easily.
D. Slip gauges are used for setting measuring instruments. ✓

Q12 Part B

Which of the following colours is commonly used for caution signs?

A. Blue
B. Yellow ✓
C. Red
D. Green

Q13 Part B

What is the minimum age for employment in factories or mines or other hazardous employment, according to Article 24 of the Indian Constitution?

A. 14 years ✓
B. 12 years
C. 16 years
D. 18 years

Q14 Part B

Which type of honing tool is best suited for high-speed automated honing operations?

A. Multi-stone honing tool ✓
B. Portable honing tool
C. Bench honing tool
D. Single-stone hand honing tool

Q15 Part B

If the basic size of the diameter of a shaft is 80 mm and the variation limit of ±0.07 mm is given, then its high limit and low limit are _____ and _____.

A. 79.93, 80.07
B. 80.07, 79.93 ✓
C. 80.00, 79.93
D. 79.00, 80.07

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Q16 Part B

_____ are the greatest option for experts due to their durability and flexibility.

A. Coarse-toothed blades
B. Bi-metal blades ✓
C. Fine-toothed blades
D. High-carbon steel blades

Q17 Part B

Which of the following terms in the 5S concept refers to making a habit of maintaining the established procedures?

A. Shine
B. Set
C. Sort
D. Sustain ✓

Q18 Part B

Which of the following factors does NOT affect the efficiency of a power hammer?

A. Operator skill
B. Number of cooling fans ✓
C. Hammering frequency
D. Anvil mass

Q19 Part B

Find the lateral surface area of a cube with side length 5 cm.

A. 125 cm^2
B. 150 cm^2
C. 200 cm^2
D. 100 cm^2 ✓

Q20 Part B

Which of the following tools is used to remove burrs from the inner surface of a pipe after cutting?

A. Pipe Cutter
B. Threading Die
C. Pipe Reamer ✓
D. Pipe Tap

Q21 Part B

Fine-toothed blades are better suited for:

A. infrequent use
B. cutting metals ✓
C. experts due to their durability and flexibility
D. cutting wood and plastic

Q22 Part B

Which of the following is NOT a part of the micrometer?

A. Spindle
B. Anvil
C. Jam ✓
D. Frame

Q23 Part B

What is the purpose of the porous structure of honing stones?

A. To reduce friction
B. To make the tool lighter
C. To help in chip clearance ✓
D. To increase hardness

Q24 Part B

What does the symbol of a circle with a small arrow inside it represent?

A. Pump
B. Accumulator
C. Motor ✓
D. Filter

Q25 Part B

_____ must be ascribed for the sake of convenience and is the size of a part in relation to which all limits of variation are determined.

A. Actual size
B. Nominal size ✓
C. Basic size or zero size
D. Basic size alone

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Q26 Part B

Which of the following is the primary reason why copper is widely used as a conductor in electrical wiring?

- **A.** Copper has low resistance and high conductivity. ✓
- **B.** Copper has a low melting point.
- **C.** Copper is abundant and inexpensive.
- **D.** Copper has high resistance to electricity.

Q27 Part B

How does the grain size of a grinding wheel affect material removal rate (MRR) and surface finish?

- **A.** Coarse grain wheel provides high MRR and rough finish, while fine grain wheel provides low MRR and fine finish. ✓
- **B.** Coarse grain wheel provides low MRR and fine finish.
- **C.** Fine grain wheel provides high MRR and rough finish.
- **D.** Grain size does not affect MRR or finish.

Q28 Part B

Which of the following best describes the application of Atomic Hydrogen Welding (AHW)?

- **A.** It generates a lower temperature arc than other arc welding processes.
- **B.** It is commonly used over modern welding methods due to its efficiency.
- **C.** It is used for all ferrous and non-ferrous metals with a high-temperature arc. ✓
- **D.** It is mainly preferred for low-temperature welding of soft metals.

Q29 Part B

Which of the following correctly differentiates a cutting blowpipe/torch from a welding blowpipe/torch?

- **A.** A cutting blowpipe has 3 control valves, while a welding blowpipe has 1.
- **B.** A cutting blowpipe has 2 control valves and 1 lever, while a welding blowpipe has 2 control valves. ✓
- **C.** A cutting blowpipe has 2 levers, while a welding blowpipe has 1 lever.
- **D.** A cutting blowpipe has 1 control valve, while a welding blowpipe has 2 control valves.

Q30 Part B

Who is authorised to conduct road tests on workshop vehicles?

- **A.** Only trained and certified personnel ✓
- **B.** Visitors to the workshop
- **C.** Any employee
- **D.** The company accountant

Q31 Part B

A file that is flat on one side and curved on the other side is known as a _____ file.

- **A.** half-round ✓
- **B.** triangular
- **C.** rectangular
- **D.** square

Q32 Part B

Convert 8.5% into a decimal.

- **A.** 0.85
- **B.** 8.5
- **C.** 0.085 ✓
- **D.** 85

Q33 Part B

The SI unit of temperature is/are ____.

- **A.** both kelvin and celsius
- **B.** celsius
- **C.** kelvin ✓
- **D.** fahrenheit

Q34 Part B

What is the primary objective of preventive maintenance?

- **A.** To prevent equipment failures through regular inspections and upkeep ✓
- **B.** To eliminate the need for maintenance altogether
- **C.** To repair equipment only after failure occurs
- **D.** To increase production speed

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Q35 Part B

Which property is the most important for materials used in automobile crash zones?

A. High hardness
B. High stiffness
C. High brittleness
D. High toughness ✓

Q36 Part B

Tapering of a small part of a job at its edge or corner is known as _____.

A. knurling
B. chamfering ✓
C. step turning
D. facing

Q37 Part B

Which tool is used to create threads on the outer surface of a pipe?

A. Pipe Tap
B. Pipe Reamer
C. Pipe Die ✓
D. Flaring Tool

Q38 Part B

_____ type of check valve is best for handling slurries and viscous fluids.

A. Lift check valve
B. Diaphragm check valve ✓
C. Ball check valve
D. Swing check valve

Q39 Part B

A 100-mm prick punch with a 7-mm diameter body could have a 2.5-mm diameter point ground to an angle of _____.

A. 90°
B. 30° ✓
C. 120°
D. 45°

Q40 Part B

_____ is a type of turning where a workpiece is turned into a sequence of steps with varying diameters.

A. Knurling
B. Step turning ✓
C. Chamfering
D. Facing

Q41 Part B

In an ISO system of Limits and Fits (ISO:286-1:1998), the tolerance size is designated as:

A. basic value followed by a letter
B. basic value followed by a number
C. basic value alone
D. basic value followed by symbol composed of a letter and number ✓

Q42 Part B

When passing stationary vehicles, keep a watch on _____ who may come out suddenly from the front of the stationary vehicle. While overtaking, it should be done on the _____ side. Always keep a good _____ between your vehicle and others.

A. cyclists; left; interval
B. vehicles; right; gap
C. drivers; left; space
D. pedestrians; right; distance ✓

Q43 Part B

Which of the following calipers are used for marking lines, parallel to inside and outside edges and for locating the centre of round bars?

A. Spring joint calipers
B. Leg and point calipers ✓
C. Simple calipers
D. Firm joint calipers

Q44 Part B

Which of the following metals has the lowest melting point?

A. Mercury ✓
B. Iron
C. Lead
D. Gold

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Q45 Part B

When used for fits between shaft and hole, _____ is specified or both shaft and hole.

A. the shaft size is more than the hole size

B. the same basic size ✓

C. the hole size is more than the shaft size

D. different size

Q46 Part B

Which of the following types of chisels is used for separating metals after chain drilling?

A. Cross-cut chisel

B. Flat chisel

C. Web chisel ✓

D. Diamond point chisel

Q47 Part B

Which of the following tap wrenches allow one-handed operation?

A. Double-End Tap Wrench

B. Ratchet Tap Wrench ✓

C. Sliding T-handle Tap Wrench

D. Adjustable Tap Wrench

Q48 Part B

Which type of line is used to represent hidden edges or surfaces in a technical drawing, as per BIS SP 46-2003?

A. Continuous thin line

B. Continuous thick line

C. Dashed thin line ✓

D. Chain thin line

Q49 Part B

The wave set of hacksaw teeth set has a pitch of _____.

A. 2.0 mm

B. 0.5 mm

C. 0.8 mm ✓

D. 1.0 mm

Q50 Part B

During a lathe operation, the influence of machining allowance on the total depth of cut taken is that:

A. it directly determines the feed rate corresponding to the speed

B. it has no influence on the depth of cut

C. it directly determines the depth of cut in each pass

D. it sets the total material to be removed, which is then divided into multiple cuts ✓

Q51 Part B

As we know from the graduation of micrometer, if we give one full round to thimble, its spindle moves ½ mm forward or backward. Therefore, one part of the thimble is its _____.

A. Pitch

B. Least count ✓

C. MSR

D. Lead

Q52 Part B

In a hydraulic filter, what does the term 'beta ratio' refer to?

A. The pressure drop across the filter

B. The area of the filter element

C. The filtration efficiency of the filter ✓

D. The percentage of fluid filtered

Q53 Part B

If the length of a resistor is doubled, what happens to its resistance, assuming all other factors remain constant?

A. The resistance is doubled. ✓

B. The resistance remains the same.

C. The resistance is halved.

D. The resistance quadruples.

Q54 Part B

In a series circuit, three resistors of 10 ohms, 20 ohms, and R ohms are connected in series with a 12 V battery. What is the value of resistance R if current flowing in the circuit is 0.2 A?

A. 10 ohms

B. 20 ohms

C. 30 ohms ✓

D. 40 ohms

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Q55 Part B

The type of feed primarily used for grooving operations on a lathe is _____ feed.

- **A.** cross ✓
- **B.** angular
- **C.** rotary
- **D.** longitudinal

Q56 Part B

Why are wheel guards provided on a bench grinder?

- **A.** To protect the user from flying debris and wheel breakage ✓
- **B.** To increase grinding speed
- **C.** To reduce motor vibrations
- **D.** To support the workpiece

Q57 Part B

Why is the maintenance of machinery and equipment important?

- **A.** To eliminate the need for inspections
- **B.** To prevent breakdowns and ensure smooth production flow ✓
- **C.** To reduce the need for skilled labour
- **D.** To increase the complexity of operations

Q58 Part B

Why is a Vernier height gauge preferred over a simple steel rule for height measurement?

- **A.** It does not require a surface plate.
- **B.** It provides more precise measurements. ✓
- **C.** It is comparatively more portable.
- **D.** It is cheaper than steel rule.

Q59 Part B

What is the unit of measurement used for thread pitch in the metric system?

- **A.** Newtons
- **B.** Degrees
- **C.** Threads per inch (TPI)
- **D.** Millimetres (mm) ✓

Q60 Part B

A material with high toughness must have:

- **A.** low strength and low ductility
- **B.** high strength and high ductility ✓
- **C.** high strength and low ductility
- **D.** high ductility and low strength

Q61 Part B

Select the correct representation as Tolerance size for a hole from the given options.

- **A.** 50H8- c7
- **B.** 50 H8/g7
- **C.** 50H8 ✓
- **D.** 50g7

Q62 Part B

Which of the following statements is INCORRECT about end standard?

- **A.** It measures the distance between two parallel flat surfaces.
- **B.** Faces are subject to wear.
- **C.** It is slower but more accurate.
- **D.** It is used to measure the distance between two engraved lines. ✓

Q63 Part B

Wrong setting of machine, wrong use of a tool, defect in measuring tools, defective metal, and carelessness of the mechanic have no effect in the utility of the part. This is an advantage of _____.

- **A.** deviation
- **B.** tolerance
- **C.** limit
- **D.** interchangeability ✓

Q64 Part B

Which of the following information is necessary to construct a rectangle?

- **A.** Length of two adjacent sides ✓
- **B.** Length of one side and the area of the rectangle
- **C.** Only the length of one side
- **D.** Only the length of the diagonal

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Q65 Part B

On what basis is a joint said to be double-riveted lap joint or triple riveted lap joint?

- A. Based on number of rows of rivets in joint ✓
- B. Based on strength of joint
- C. Based on type of joint
- D. Based on number of columns of rivets in joint

Q66 Part B

_____ abrasive material is best suited for lapping high-speed steel (HSS) tools.

- A. Diamond
- B. Boron carbide ✓
- C. Aluminum oxide
- D. Silicon carbide

Q67 Part B

What is the SI unit of 'volume'?

- A. Litres
- B. Cubic centimetre
- C. Cubic metre ✓
- D. Millilitres

Q68 Part B

Which of the following 'V' blocks will have one 'V' groove and two grooves (slots) on either side for clamping in two positions?

- A. Double level single groove 'V' block
- B. Matched pair 'V' block
- C. Single level double groove 'V' block ✓
- D. Single level single groove 'V' block

Q69 Part B

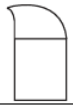
Which of the following statements about title block is/are true?

Statement 1: The title block is situated in the bottom right-hand corner of the drawing sheet.
Statement 2: The contents of the title block are standardised and cannot be modified to suit individual company needs.

- A. Both statements are false
- B. Statement 1 is false, but statement 2 is true
- C. Statement 1 is true, but statement 2 is false ✓
- D. Both statements are true

Q70 Part B

Match the following.

(A)	Threading tool	(P)	
(B)	Profile tool	(Q)	
(C)	Facing tool	(R)	
(D)	Knurling tool	(S)	

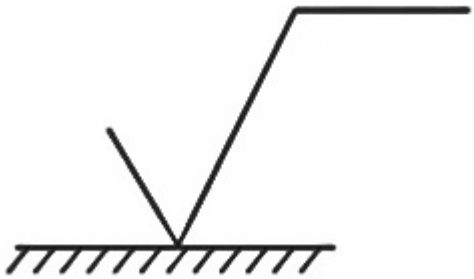
- A. A - S, B - R, C - Q, D - P ✓
- B. A - P, B - R, C - Q, D - S
- C. A - S, B - Q, C - R, D - P
- D. A - S, B - R, C - P, D - Q

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Q71 Part B

What does the surface finish symbol shown in the given figure represent?



- **A.** A specific surface texture requirement is indicated. ✓
- **B.** The surface must be left in its cast or forged state.
- **C.** The surface should be coated without material removal.
- **D.** No machining is required on this surface.

Q72 Part B

In a Full Lap joint, diagonal pitch is given by ____, where p_d - diagonal pitch, p - pitch, d - diameter of rivets

- **A.** $p_d = \frac{(2p+d)}{3}$ ✓
- **B.** $p_d = \frac{(2p+6d)}{4}$
- **C.** $p_d = \frac{(2p \times d)}{3}$
- **D.** $p_d = \frac{(2p-d)}{3}$

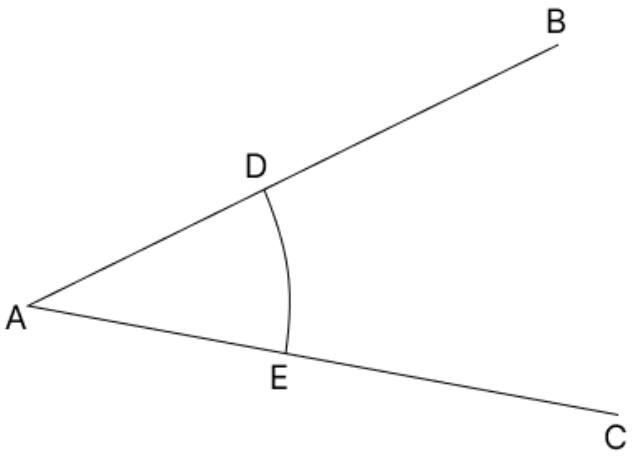
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Q73 Part B

In the process of bisecting angle BAC in the given figure, why do we draw arcs from points D and E?



A. To find midpoint AB

B. To mark equal lengths

C. To intersect line AC

D. To intersect above A ✓

Q74 Part B

Identify the below tool used on the Lathe.



A. Threading tool ✓

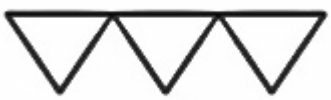
B. Knurling tool

C. Parting tool

D. Boring tool

Q75 Part B

Observe the given roughness grade symbol and identify the corresponding roughness grade number whose corresponding roughness value is 0.2 µm.



A. N1

B. N3

C. N4 ✓

D. N2

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Part B — 75 Questions • Answer Key

Q1 Part B

A drawing instrument box is used to carry all _____ instruments.

- A. drawing ✓
- B. screening
- C. drilling
- D. casting

Q2 Part B

Which component operates the shift lever in the solenoid switch?

- A. Hold-in winding
- B. The plunger ✓
- C. Electrical relay
- D. A solid core

Q3 Part B

A type of internal spring force expands a piston ring based on the design and properties of the material used. It is determined by _____.

- A. forced piston ring gap
- B. compressed spring ring gap
- C. compressed ring gap
- D. free piston ring gap ✓

Q4 Part B

Which of the following systems is used to transmit engine torque to the driving wheels to drive a vehicle on the road?

- A. Transmission system ✓
- B. Steering system
- C. Differential gear mechanism
- D. Four bar chain mechanism

Q5 Part B

When using a multimeter to measure current, which of the following is correct?

- A. The multimeter is connected directly to the power source.
- B. The multimeter is connected in series with the load. ✓
- C. The multimeter is connected only across resistive components.
- D. The multimeter is connected in parallel with the load.

Q6 Part B

In a lead-acid battery, what is the chemical composition of the material used for the positive plate during discharge?

- A. Sulphuric acid (H_2SO_4)
- B. Lead (Pb)
- C. Lead dioxide (PbO_2) ✓
- D. Lead sulfate ($PbSO_4$)

Q7 Part B

What is the correct name of the top portion of the valve that interacts with the camshaft during operation of the engine?

- A. Tip ✓
- B. Puppet
- C. Mushroom
- D. Butterfly

Q8 Part B

Which of the following methods helps the easier assembly and disassembly by providing a more efficient way to fit the connecting rod around the crankshaft journal, particularly in tight engine compartment, in an internal combustion engine?

- A. Small end trimming linearly on a connecting rod
- B. Big end split orthogonally on a connecting rod
- C. Big end split obliquely on a connecting rod ✓
- D. Small end union linearly on a connecting rod

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Q9 Part B

A vital component of a car's clutch system positioned on the clutch housing, which slides along a hollow shaft and moves through the clutch fork aided by hydraulic or cable pressure, is known as:

A. cushion spring

B. clutch release bearing ✓

C. lever

D. fork arm

Q10 Part B

What is the advantage of giving heat treatment to a material?

A. To decrease the melting point of the material

B. To increase the weight of the material

C. To change it from one element to another element

D. To make surgical knives of sharp edges ✓

Q11 Part B

What does NVH stand for in the Quiet diesel technology of engine technology?

A. Noise, Vibration, Harshness ✓

B. Non-Volatile Heat

C. Normal Vibration Handling

D. Noise, Velocity, Heat

Q12 Part B

Which of the following statements is correct about engine valves?

A. The camshaft and its associated parts control the flame of sparks during ignition of the enigne.

B. The valve's head is perfectly positioned at a 30-45 degree angle that ideally fits with the valve seat, creating a firm seal. ✓

C. Valves with their conical shapes control the flow of the entry of gasses into an engine.

D. Poppet or mushroom valves are commonly found in two stroke engines for their remarkable features.

Q13 Part B

Why is it important for every person to follow safety procedures in the workplace?

A. To increase overall production efficiency

B. To minimise risks and avoid accidents ✓

C. To reduce operational costs significantly

D. To limit the need for frequent supervision

Q14 Part B

For what purpose are pins and clips used in engineering drawings?

A. To transfer dimensions and dividing lines into a number of equal parts

B. To draw horizontal lines, parallel lines and to guide/hold the set squares

C. To fasten the drawing sheet on to the drawing board firmly so that it does not shake ✓

D. To support the drawing paper/tracing paper for making drawings

Q15 Part B

Which of the following files is used for filing narrow grooves and angles above 10°?

A. Knife-edge file ✓

B. Half round file

C. Square file

D. Triangular file

Q16 Part B

Which of the following is NOT the correct characteristic of an I-head combustion chamber used in a petrol engine?

A. I-head has higher surface to volume ratio and therefore there is a high amount of heat loss. ✓

B. I-head is superior to an L-head engine at high compression ratios.

C. I-head has a higher volumetric efficiency from larger valves or valve lifts.

D. I-head has less flame travel length and hence there is a greater freedom from knock.

Q17 Part B

What is the primary reason for electrical injuries when a person comes in contact with electrical equipment?

A. Electrical equipment is not properly grounded.

B. Current flows through the body causing harm. ✓

C. Devices are used for too long.

D. Electrical devices are too powerful.

Q18 Part B

In a velocity-time graph, the negative slope represents ____.

A. retardation ✓

B. displacement

C. acceleration

D. distance

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Q19 Part B

Which part of the diesel induction system provides a passage for fresh air flow from the air cleaner to the engine cylinder?

- **A.** Induction manifold ✓
- **B.** Turbocharger
- **C.** Inlet valve
- **D.** Intake port

Q20 Part B

A circuit consists of three resistors; 15 ohms, 10 ohms, and 20 ohms. The 15-ohm resistor is in series with the parallel combination of the 10-ohm and 20-ohm resistors. If a 24 V battery is applied across the circuit, what is the total current flowing through the circuit?

- **A.** 3.1 A
- **B.** 0.1 A
- **C.** 1.1 A ✓
- **D.** 2.1 A

Q21 Part B

A tube-like structure lies between a piston and cylinder wall that regulates the flow of air and fuel inside the cylinder. This valve has a small hole in the side that promptly lines up with the hole of a cylinder. This valve is known as:

- **A.** butterfly valve
- **B.** sleeve valve ✓
- **C.** valve in form of port
- **D.** poppet valve

Q22 Part B

What material is filled into the evaporative emission control (EVAP) canister to absorb fuel vapours?

- **A.** Activated charcoal ✓
- **B.** Foam sponge
- **C.** Silica gel
- **D.** Metal mesh

Q23 Part B

Which of the following hand-operated drilling machines is used for drilling small diameter holes up to 6 mm?

- **A.** Electric hand drill
- **B.** Ratchet drilling machine
- **C.** Breast drilling machine
- **D.** Bevel gear type drilling machine ✓

Q24 Part B

Which of the following verifies that a double-acting hydraulic cylinder can perform work in both the directions?

- **A.** Two oil ports; one on each end ✓
- **B.** Air instead of hydraulic fluid
- **C.** Only one oil port
- **D.** A larger piston

Q25 Part B

If the current flowing through a conductor is 5 A and the resistance of the conductor is 10 ohms, what will be the voltage across the conductor, according to Ohm's Law?

- **A.** 15 V
- **B.** 50 V ✓
- **C.** 5 V
- **D.** 10 V

Q26 Part B

When does a vacuum booster create a vacuum?

- **A.** When the engine is off, and brake is applied
- **B.** When the engine is running, and the brake is not applied ✓
- **C.** When the fuel level is low
- **D.** When the brake is applied

Q27 Part B

Which of the following options is correct when the pressure plate position is such that the cushion spring of clutch is NOT compressed?

- **A.** It is in the engagement phase.
- **B.** It is in the partial engagement phase.
- **C.** The clutch is closed.
- **D.** The clutch is open. ✓

Q28 Part B

Which type of gear applies in a car when the engine is running and the clutch is engaged, and the clutch shaft gear drives the drive gear of the lay shaft and thus lay shaft also rotates and the main shaft remains stationary as no gears in main shaft are engaged with lay shaft gears?

- **A.** Top gear
- **B.** First gear
- **C.** Neutral gear ✓
- **D.** Reverse gear

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Q29 Part B

According to Boyle's law, at a constant temperature, if the absolute pressure of a gas increases, what is the effect on its volume?

- A. It fluctuates unpredictably.
- B. It remains the same.
- C. It increases.
- D. It decreases. ✓

Q30 Part B

Which of the following instruments works on the principle of the magnification of the small movement of the plunger or stylus that is converted into a rotary motion of the pointer on a circular scale?

- A. Pressure gauge
- B. Micrometer
- C. Vernier caliper
- D. Dial test indicator ✓

Q31 Part B

The unit for specific gravity is _____.

- A. m/s^2
- B. g/cm^3
- C. kg/m^3
- D. no unit (dimensionless) ✓

Q32 Part B

In which part of the IC engine are the cylinder liners fitted?

- A. Piston
- B. Cylinder head
- C. Cylinder block ✓
- D. Crankcase

Q33 Part B

How does water circulate in the thermosyphon cooling system of an engine?

- A. Due to difference in densities of hot and cold water ✓
- B. Due to engine speed
- C. Due to pump pressure
- D. Due to radiator fan

Q34 Part B

Which of the following types of pliers is used to shape loops in wires and to form curves in light metal strips?

- A. Flat nose pliers
- B. Round nose pliers ✓
- C. Slip-joint pliers
- D. End cutting pliers

Q35 Part B

Which of the following parts of a file is the part fitted to the tang for holding the file?

- A. Tip or Point
- B. Handle ✓
- C. Edge
- D. Tang

Q36 Part B

Which of the following steps is INCORRECT for micrometer adjustment?

- A. Insert the large end of wrench in the hole on the external cylinder.
- B. Use the wrench to rotate the cylinder until zero is aligned.
- C. Find set screw and loosen it.
- D. Open the micrometer using friction stop. ✓

Q37 Part B

Which special tool is used to fit piston pins during piston pin assembly?

- A. Piston ring compressor
- B. Arbor press
- C. Copper drift ✓
- D. Hydraulic press

Q38 Part B

What is the remedy for excessive carbon deposit causing engine overheating?

- A. Decarbonise the engine. ✓
- B. Clean the exhaust port.
- C. Repair valve seating.
- D. Replace the gasket.

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Q39 Part B

Which of the following is an important safety measure during a power failure?

- A. Using candles for lighting
- B. Continuing to use equipment without verifying power status
- C. Ensuring all machines and electrical equipment are turned off ✓
- D. Ignoring alarm systems

Q40 Part B

Arrange the following steps in the correct order to draw an equilateral triangle with each side of 35 mm.

1. Join CA and CB.
2. Draw a line and mark AB 35 mm as the side of the triangle.
3. With radius AB and center A and B, draw arcs cutting at C.
4. ABC is the required triangle.

- A. 2, 3, 1, 4 ✓
- B. 1, 2, 4, 3
- C. 2, 1, 3, 4
- D. 3, 2, 1, 4

Q41 Part B

What should you do to ensure your personal safety at work?

- A. Wear personal protective equipment. ✓
- B. Work in a hurry without checking equipment.
- C. Ignore warning signs and instructions.
- D. Take risks to finish tasks quickly.

Q42 Part B

What is the limiting value of compression ratio on which usually a petrol engine works?

- A. Compression ratio = 6
- B. Compression ratio = 8 ✓
- C. Compression ratio = 22
- D. Compression ratio = 14

Q43 Part B

How do electronic mufflers achieve noise cancellation?

- A. By absorbing sound waves
- B. By generating opposite sound waves ✓
- C. By physically blocking sound waves
- D. By redirecting sound waves

Q44 Part B

In some systems, the fuel feed pump is also known as the _____ pump.

- A. pressure
- B. lift ✓
- C. electric
- D. cooling

Q45 Part B

Which of the following organisations is responsible for enforcing workplace safety regulations in India?

- A. World Health Organization (WHO)
- B. Food and Drug Administration (FDA)
- C. Directorate General of Factory Advice Service and Labour Institutes (DGFASLI) ✓
- D. Environmental Protection Agency (EPA)

Q46 Part B

Which of the following instruments is used for the measurement of piston ring end gap in the cylinder?

- A. Micrometer
- B. Vernier caliper
- C. Dial gauge
- D. Feeler gauge ✓

Q47 Part B

How does the piston-and-rod assembly move in a single-acting cylinder during the working stroke?

- A. By gravity
- B. By spring force
- C. By hydraulic pressure ✓
- D. By an external mechanical force

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Q48 Part B

The temperature of the air after compression stroke in a CI engine is:

- A. less than ambient temperature
- B. ambient temperature only
- C. high but not enough to ignite the fuel as spark plug is used to ignite the fuel
- D. high enough to auto-ignite the fuel without any external ignition source ✓

Q49 Part B

A circular hole of radius 3 cm is cut from a rectangular sheet of dimensions 12 cm × 10 cm. Find the remaining area.

(Take π = 3.14)

- A. 100 cm^2
- B. 91.74 cm^2 ✓
- C. 95.86 cm^2
- D. 75.74 cm^2

Q50 Part B

What is a key advantage of using MOSFETs in electronic circuits compared to other types of transistors?

- A. High frequency response
- B. High input impedance and low power consumption ✓
- C. Ability to handle higher voltages and currents than BJTs
- D. Ability to amplify both AC and DC signals

Q51 Part B

In an F-shaped combustion chamber, which of the following parts is generally NOT located on the extended side of the combustion chamber in a petrol engine?

- A. Inlet valve
- B. Spark plug
- C. Outlet valve
- D. Camshaft ✓

Q52 Part B

In a diesel engine, heat is supplied at which of the following thermodynamic processes?

- A. At constant pressure process ✓
- B. At constant volume process
- C. At constant temperature process
- D. At adiabatic compression process

Q53 Part B

What is the main function of a master cylinder in a braking system?

- A. To build up hydraulic pressure to operate the brakes ✓
- B. To measure the brake fluid level
- C. To control the engine speed
- D. To absorb vibrations from the road

Q54 Part B

When measuring the resistance of a resistor using an ohmmeter, what does a reading of zero resistance indicate?

- A. The resistor is functioning normally.
- B. The resistor is open-circuited.
- C. The resistor is short-circuited. ✓
- D. The ohmmeter is malfunctioning.

Q55 Part B

Gaskets, seals and spacers are made using:

- A. centre punch
- B. hollow punch ✓
- C. pin punch
- D. prick punch

Q56 Part B

What is the name of the tool used for force amplification?

- A. Wheel
- B. Allen key
- C. Screw driver
- D. Lever ✓

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Q57 Part B

Which of the following elements is used in lubrication oil as an anti-wear additive?

- A. Copper (Cu) ✓
- B. Barium (Ba)
- C. Boron (B)
- D. Calcium (Ca)

Q58 Part B

Which of the following metals is NOT used for manufacturing of piston bearing?

- A. Copper
- B. Lead
- C. Cast iron ✓
- D. Silicon

Q59 Part B

Non-functional dimensions are _____.

- A. not essential for the function of the space or component ✓
- B. essential for the function of the space or component
- C. derived from the values of the related features of a drawing
- D. directly derived from the values given on a drawing

Q60 Part B

Which of the following statements is INCORRECT about the four-stroke diesel engine?

- A. Cycles in both petrol and diesel engines consist of suction, compression, ignition, expansion and exhaust.
- B. In C.I. engines, air-fuel mixture is sucked during the stroke and the fuel is injected in the cylinder near the end of the compression stroke. ✓
- C. In C.I. engines, only air is sucked during the stroke and the fuel is injected in the cylinder near the end of the compression stroke.
- D. The operation of C.I. engines (or diesel engines) is practically the same as those of S.I. engines.

Q61 Part B

According to BIS SP 46-2003, which of the following applications is correctly represented by a chain-thin line in engineering drawings?

- A. Center lines ✓
- B. Hidden edges
- C. Dimension lines
- D. Visible edges

Q62 Part B

A mechanism that can split the power of a propeller shaft to the rear axle and produce variation in the speed of rear wheels when the vehicle takes a turn is called a/an:

- A. integral unit
- B. automatic clutch unit
- C. torque convertor
- D. differential unit ✓

Q63 Part B

Which of the following type of lubricants are used as solid particles?

- A. Solid wax
- B. Grease
- C. Graphite ✓
- D. Silica

Q64 Part B

Which of the following types of lube oils are used in airline industries?

- A. Grease and bee wax lubricants
- B. Natural petroleum lubricants
- C. Synthetic lubricants ✓
- D. Biodiesel lubricants

Q65 Part B

When selecting a sheet size for an original drawing, what should be the primary consideration?

- A. The standard size of the drawing office.
- B. The clarity and resolution required. ✓
- C. The orientation of the drawing (horizontal or vertical).
- D. The size of the reproduction.

Q66 Part B

Which gas remains unaffected in the 'perfect' combustion process?

- A. Nitrogen ✓
- B. Carbon dioxide
- C. Water vapour
- D. Oxygen

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Q67 Part B

Which material is used to make the cellular radiator core?

A. Aluminum

B. Steel

C. Copper and Brass ✓

D. Plastic

Q68 Part B

Which of the following vices consists of a handle and a small collet chuck at one end?

A. Hand vice

B. Pin vice ✓

C. Pipe vice

D. Toolmaker's vice

Q69 Part B

What is the purpose of an emergency evacuation plan?

A. To ensure safe and orderly evacuation during emergencies ✓

B. To avoid safety drills

C. To increase productivity

D. To allow workers to leave early

Q70 Part B

What is the recommended remedy for low oil pressure due to low oil viscosity?

A. Replace the oil pump gear.

B. Replace the oil. ✓

C. Tighten the strainer pipe mounting.

D. Clean the oil strainer.

Q71 Part B

The percentage of energy loss per unit deformation from friction happening inside the rubber, which creates heat build-up in the rubber, and is measured as in terms of the temperature, is known as _____.

A. creep

B. resilience

C. stress-strain test

D. hysteresis ✓

Q72 Part B

Which of the following designs have the advantage of effectively preventing contact slippage and axial misplacement of the connecting rod cover and connecting rod body?

A. Straight cut design

B. Oval cut design

C. Obliquely cut design ✓

D. Curvilinear cut design

Q73 Part B

$(\frac{3}{8}) + (\frac{5}{12})$

A. $\frac{17}{24}$

B. $\frac{19}{24}$ ✓

C. $\frac{8}{20}$

D. $\frac{7}{12}$

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Q74 Part B

Which of the following is the correct expression for power developed at the crankshaft in terms of mechanical efficiency?

Consider BP - brake power, IP - Indicated power

A. $\mathrm{BP} = \mathrm{IP} \times \text{Mechanial efficiency}$ ✓

B. $\mathrm{IP} = \text{Mechanical efficiency} \times \mathrm{PB}$

C. $\mathrm{BP} = \frac{(\text{Mechanical efficiency} + \mathrm{IP})}{100}$

D. $\mathrm{BP} = \frac{\text{Mechanical Efficiency}}{\mathrm{IP}}$

Q75 Part B

$\cos\theta$

A. $\frac{3}{5}$

B. $\frac{4}{5}$ ✓

C. $\frac{5}{4}$

D. $\frac{3}{4}$

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Q1 Part B

What conditions lead to the formation of oxides of nitrogen during combustion in the exhaust gases of an IC engine?

A. High temperature and low pressure

B. High temperature and high pressure ✓

C. Low temperature and high pressure

D. Low temperature and low pressure

Q2 Part B

How is the alternating current (AC) converted to direct current (DC) in an alternator?

A. Using a transformer

B. Using silicon diodes ✓

C. Using an inverter

D. Using a capacitor

Q3 Part B

What does an optical pyrometer measure?

A. The relative density of liquids

B. The temperature of the surface ✓

C. The volume of liquids

D. The pressure of gases

Q4 Part B

Which component assists the pneumatic governor of FIP in diesel engines?

A. Exhauster ✓

B. Turbocharger

C. Fuel injector

D. Intercooler

Q5 Part B

Pencils are rated in engineering drawings based on the _____.

A. hardness or softness of the lead ✓

B. colour of the lead

C. durability of the lead

D. shape of the lead

Q6 Part B

What is the primary principle behind the generation of electrical energy in a piezoelectric device?

A. Conversion of thermal energy into electrical energy

B. Conversion of chemical energy into electrical energy

C. Conversion of light energy into electrical energy

D. Conversion of mechanical stress into electrical energy ✓

Q7 Part B

What force (effort) will be required to push a load, initially at rest, of mass 500 g, so that at a distance of 20 m, its final velocity is 20 m/sec [Assume that there is no friction and 'g' = 10 m/s^2].

A. 5 J

B. 10 N

C. 5 N ✓

D. 10 J

Q8 Part B

The basic function of the connecting rod is to convert:

A. the reciprocating motion of piston to the rotary motion of the crankshaft ✓

B. the curvilinear motion of piston to the linear motion of the camshaft

C. the reciprocating motion of piston head to the rotary motion of the camshaft

D. the linear motion of the crankshaft into rotary motion of piston

Q9 Part B

What type of bearing is fitted into the connecting rod, allowing the gudgeon pin to provide bearing for the oscillating small end of the connecting rod?

A. Needle bearing ✓

B. Tapper roller bearing

C. Journal bearing

D. Ball bearing

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Q10 Part B

What is waste?

A. Natural resources for living organisms

B. Valuable substances for agriculture

C. Useful materials for industries

D. Unwanted or unusable materials ✓

Q11 Part B

What should be done if the starter motor pinion gear teeth are worn out?

A. Replace the pinion. ✓

B. Clean the plunger contact point

C. Repair the pinion.

D. Tighten the starter motor mounting.

Q12 Part B

_____ is a type of spring that is often used as part of the vehicle clutch assembly, and its main function is to engage and disengage the pressure plate and the driven plate (clutch disk).

A. Spiral spring

B. Leaf spring

C. Diaphragm spring ✓

D. Laminated spring

Q13 Part B

What component in an adjustable flow control (throttle) valve controls the flow?

A. Needle-shaped plunger ✓

B. Ball poppet

C. Check valve

D. Spring-loaded piston

Q14 Part B

Why are metal dispersants or detergents used as additives in lubrication oil?

A. These are used to control the formation of sedimentation of particles throughout the system

B. These are used to control bubbles formation and mist throughout the system

C. These are used to control viscosity index and wax formation throughout the system at high temperature

D. These are used to control deposit formation throughout the system ✓

Q15 Part B

If the coefficient of linear expansion of a material is $2 \times 10^{-5}\ °C^{-1}$, what does it mean?

A. The material expands by 2×10^{-5} times its original area per degree Celsius

B. The material expands by 2×10^{-5} times its original volume per degree Celsius

C. The material expands by 2×10^{-5} times its original length per degree Celsius ✓

D. The material always increases by 2×10^{-5} kg when temperature is increased by 1°C

Q16 Part B

What is the function of non-return valve (NRV) in a hydraulic system?

A. To control the pressure in both directions

B. To increase system temperature

C. To allow flow in one direction ✓

D. To control the viscosity of the fluid

Q17 Part B

Which of the following types of wooden mallets are used for hollowing panel beatings?

A. Standard wooden mallets

B. End-faked mallets

C. Side-faked mallets

D. Bossing mallets ✓

Q18 Part B

What is the function of cooling fins in a tubular-type radiator core?

A. To strengthen structure

B. To circulate water

C. To absorb and radiate heat ✓

D. To support tubes

Q19 Part B

Which of the following is a fundamental unit?

A. newton

B. metre ✓

C. pascal

D. watt

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Q20 Part B

A constant mesh gearbox usually comes with how many manual transmission configurations?

A. It comes with a 5-speed 1-reverse manual transmission configuration.

B. It comes with a 4-speed 1-reverse manual transmission configuration. ✓

C. It comes with a 3-speed 1-reverse manual transmission configuration.

D. It comes with a 6-speed 1-reverse manual transmission configuration.

Q21 Part B

A torsion bar is a steel bar operated by:

A. both compressive stress and twisting stress

B. both tensile and compressive stresses

C. both shear strain and longitudinal strain

D. both twisting and shear stresses ✓

Q22 Part B

What is the primary purpose of applying brakes in a vehicle?

A. To increase the speed of the vehicle

B. To improve fuel efficiency

C. To stop or slow down the vehicle ✓

D. To open the fuel tank

Q23 Part B

Which of the following statements is/are correct?
Statement I - The annealing process uses heat to reduce the hardness and increase the ductility and toughness of various steels, cast iron, and alloys.
Statement II - Quenching is a rapid cooling process that alters specific properties of materials by manipulating the cooling rate.

A. Statement (I) is correct but Statement (II) is incorrect.

B. Statement (I) and (II) both are correct. ✓

C. Statement (I) is incorrect but Statement (II) is correct.

D. Statement (I) and (II) both are incorrect.

Q24 Part B

Which of the following statements correctly describes the placement and purpose of orientation marks on a drawing sheet?

1. Orientation marks are placed at two opposite corners of the drawing sheet to indicate the correct orientation on the drawing board.
2. Orientation marks consist of arrow heads placed across the frame, with one at the shorter side and one at the longer side, coinciding with the centering marks.
3. One of the orientation marks always points towards the draughtsman, indicating the direction in which the drawing sheet should be placed.
4. Orientation marks are used to mark the midpoint of each side of the drawing sheet for accurate centering.

A. 1, 2, and 3 only

B. 1 and 4 only

C. 2 and 3 only ✓

D. 1, 2, and 4 only

Q25 Part B

Which of the following parts of a dial bore gauge is used to hold all the components together and contains a mechanism for transmitting the plunger motion to the dial?

A. Sliding plunger

B. Anvil

C. Stem ✓

D. Extension rings

Q26 Part B

_____ brakes are a type of brake in which the fluid from the master cylinder is forced into a caliper where it presses against a piston. The piston in turn squeezes two brake pads against the disc (rotor), which is attached to wheel, forcing it to slow down or stop.

A. Vacuum

B. Electrical

C. Disk ✓

D. Drum

Q27 Part B

Which of the following is true for a given fixed compression ratio?

A. Both Otto and Diesel cycles are equally efficient.

B. Otto cycle is the most efficient. ✓

C. Dual cycle is the most efficient.

D. Diesel cycle is the most efficient.

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Q28 Part B

Which of the following methods is implemented for locking a semi floating type piston pin?

- A. Riveting
- B. Gluing
- C. Screw ✓
- D. Welding

Q29 Part B

What is the role of baffles in the fuel tank?

- A. To store more fuel
- B. To minimise fuel slushing ✓
- C. To indicate fuel level
- D. To filter impurities

Q30 Part B

What does SCR stand for in the diesel exhaust treatment?

- A. Selective Carbon Reduction
- B. Solid Catalytic Reduction
- C. Selective Catalytic Reduction ✓
- D. Standard Catalytic Reaction

Q31 Part B

As the piston moves up to create a compression force, which of the following parts movements leads to inlet valve closure in engine?

- A. Connecting rod movement
- B. Helical spring movement
- C. Crankshaft movement
- D. Camshaft movement ✓

Q32 Part B

The exhaust gases in a two stroke engine are driven out by:

- A. fresh charge of fuel entering the cylinder nearly at the end of the compression stroke
- B. fresh air entering the casing nearly at the end of the suction stroke
- C. fresh charge of fuel entering the cylinder nearly at the end of the working stroke ✓
- D. left out charge of fuel from exhaust entering the cylinder nearly at the end of the working stroke

Q33 Part B

Match the correct length and breadth of the Trimmed sizes of sheets.

Designation	Trimmed size
A. A0	P. 297 × 420
B. A1	Q. 420× 594
C. A2	R. 594 × 841
D. A3	S. 841 × 1189

- A. A - R, B - S, C - Q, D - P
- B. A - P, B - R, C - Q, D - S
- C. A - S, B - R, C - P, D - Q
- D. A - S, B - R, C - Q, D - P ✓

Q34 Part B

Which of the following statements is NOT correct about the steering system in vehicles?

- A. It should multiply the turning effort applied on the steering wheel by the driver.
- B. It should minimise the turning effort applied on the steering wheel by the driver by use of overdamped damper. ✓
- C. The function of the steering system is to convert the rotary movement of the steering wheel into the angular turn of the front wheels.
- D. It should not transmit the shocks of the road surface encountered by wheels to the driver hands.

Q35 Part B

Which of the following statements is correct about a diesel cycle and its air standard efficiency with respect to the compression ratio?

- A. The air standard efficiency of a diesel cycle increases with the increase in the compression ratio. ✓
- B. The maximum compression ratio for the diesel engine is limited by detonation.
- C. The air standard efficiency decreases with the increase in the compression ratio.
- D. For a given compression ratio, Otto cycle is the least efficient while the diesel cycle is the most efficient.

Q36 Part B

Why is it important to follow proper disposal procedures for industrial waste?

- A. To allow waste to decompose anywhere
- B. To reduce the number of trash bins needed
- C. To save time and effort in sorting waste
- D. To comply with environmental regulations and reduce pollution ✓

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Q37 Part B

Why do diesel engines generally produce more noise, vibration, and harshness (NVH) compared to petrol engines?

- A. Due to simpler combustion method
- B. Due to less efficient fuel usage
- C. Due to rapid combustion pressure and high pressure ✓
- D. Due to lower combustion temperature

Q38 Part B

Which of the following punch marks is used for the correct location and seating of the divider point?

- A. Centre punch marks of 30°
- B. Centre punch marks of 60°
- C. Prick punch marks of 120°
- D. Prick punch marks of 30° ✓

Q39 Part B

Which of the following is an example of a p-type semiconductor?

- A. Silicon doped with phosphorus
- B. Silicon doped with arsenic
- C. Silicon doped with boron ✓
- D. Germanium doped with phosphorus

Q40 Part B

What do the SAE viscosity rating numbers denote, such as 0W or 5W?

- A. Denotes thicker oil that better resists viscosity breakdown when hot
- B. High viscosity oil and difficult flow for cold starting
- C. Easier oil flow for cold starting ✓
- D. Denotes thicker oil that better resists viscosity breakdown when cold

Q41 Part B

As per the SAE viscosity rating, which of the following numbers reflects thicker oil that better resists viscosity breakdown in the summer season?

- A. 0W to 5W
- B. −6W to −70W
- C. 100W to 160W
- D. 40W to 50W ✓

Q42 Part B

What is the chemical effect that occurs in a battery during the charging process of a Lead Acid battery?

- A. Lead reacts with sulphur to form lead sulphate
- B. Water dissociation into hydrogen and oxygen
- C. Lead sulphate decomposes into lead and sulphuric acid ✓
- D. Sulphuric acid dissociates into hydrogen and sulphate ions

Q43 Part B

Which of the following uses of wire gauge is INCORRECT?

- A. It measures the diameter of a wire.
- B. It does not help determine how much current a wire can carry. ✓
- C. Using the wrong wire gauge can damage appliances and electronic devices.
- D. It is used in electrical installations, welding and other applications.

Q44 Part B

Which of the following is NOT a correct statement about the torsion spring?

- A. This spring needs less space.
- B. It is lighter than leaf spring system.
- C. It takes the driving or braking torque, and additional link mechanisms are not required for this purpose. ✓
- D. This spring provides very neat and compact design.

Q45 Part B

What component blows air across the intercooler fins?

- A. Exhaust fan
- B. Engine cooling fan ✓
- C. Turbocharger
- D. Air filter

Q46 Part B

What happens when the brake pedal is pressed in a pedal-assisted type brake?

- A. The power cylinder is activated. ✓
- B. The engine shuts down.
- C. The clutch is released.
- D. The accelerator is engaged.

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Q47 Part B

The distance a cam lobe rises away from the base circle of the camshaft is known as:

A. mushroom valve lift
B. rocker arm lift
C. gross lift
D. lobe lift ✓

Q48 Part B

Which of the following parts of a hammer-head is used for shaping and forming work like riveting and bending?

A. Face
B. Eyehole
C. Pein ✓
D. Cheek

Q49 Part B

Which of the following punches is used to make deeper witness marks on scribed lines and make it easier for the drill to start correctly?

A. Solid punch
B. Centre punch ✓
C. Pin punch
D. Prick punch

Q50 Part B

Which of the following types of wooden mallets are used for general purpose work such as flattening and bending?

A. Bossing mallets
B. Side-faked mallets
C. Standard wooden mallets ✓
D. End-faked mallets

Q51 Part B

When did India implement the Hazardous Wastes (Management and Handling) Rules to regulate the disposal and handling of hazardous waste?

A. 1987
B. 2000
C. 1989 ✓
D. 1982

Q52 Part B

In engineering drawing (lettering and numbering), a single stroke means that the _____.

A. thickness of the line of the letter or number is obtained in one stroke of the pencil ✓
B. thickness of the line of the letter or number is obtained in three strokes of the pencil
C. thickness of the line of the letter or number is obtained in no strokes of the pencil
D. thickness of the line of the letter or number is obtained in two strokes of the pencil

Q53 Part B

Final drive is the last stage of power transmission from the propeller shaft to rear axles and then to the wheels. To which of the following angles does it turn the propeller shaft motion?

A. Right angle to drive the rear axle ✓
B. 45 degree angle to drive the rear axle
C. −45 degree to drive the front axle
D. Equal and opposite angle to drive the rear axle

Q54 Part B

Which of the following statements is correct about a protractor?

Statements:
1. A protractor can be used to measure angles from both sides.
2. A protractor is typically made of a rigid metal material.

A. Neither statement is true
B. Only statement 2 is true
C. Only statement 1 is true ✓
D. Both statements are true

Q55 Part B

How does the EGR valve help control NOx formation and engine knock?

A. By raising the intake air temperature
B. By limiting the exhaust flow
C. By adding exhaust gas to the intake mixture ✓
D. By improving the fuel injection timing

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Q56 Part B

Which of the following is a correct function of the indirect injection combustion chamber?

- A. It accommodates the port (Inlet and Outlet) for In & Out of air.
- B. There is a confined space in it, in which the air and fuel mixtures are burned. ✓
- C. It does not have properties to withstand temperature variations.
- D. It houses and guides the crankshaft.

Q57 Part B

Which of the following emission control devices is a charcoal filled device?

- A. EGR valve
- B. EVAP canister ✓
- C. Oxygen sensor
- D. Catalytic converter

Q58 Part B

Which of the following types of shafts allows easy implementation of a 4 valve per cylinder configuration?

- A. Single overhead cam setup
- B. Dual overhead cam setup ✓
- C. Crankshaft of multicylinder engine setup
- D. Cam and follower rocker arm setup

Q59 Part B

Why are fins provided over the cylinder in air-cooled engines?

- A. For direct air flow
- B. To increase cooling surface ✓
- C. To provide structural support
- D. To reduce engine noise

Q60 Part B

In which part of the IC engine does a piston move during operation?

- A. Cylinder head
- B. Cylinder liner ✓
- C. Sump
- D. Crankcase

Q61 Part B

A device operates at 240 V and consumes 480 W of power. What is the current flowing through the device?

- A. 2 A ✓
- B. 1 A
- C. 1.5 A
- D. 2.5 A

Q62 Part B

Which of the following parts of an engine adjusts the opening times of the valves to suit all operating conditions and ensures ideal charge cycles within a wide range of engine speeds and loads?

- A. Rocker arm
- B. Crankshaft
- C. Camshaft ✓
- D. Crank

Q63 Part B

Which of the following is the key difference between a fuse and a circuit breaker?

- A. A fuse can be reset after tripping, while a circuit breaker must be replaced.
- B. A fuse is used for high-voltage circuits, while a circuit breaker is used for low-voltage circuits.
- C. A fuse is a mechanical device, while a circuit breaker is an electronic device.
- D. A fuse is a one-time-use device, while a circuit breaker can be reset and reused. ✓

Q64 Part B

A type of chamber in which the combustion space is essentially a single cavity with little restriction on one part of the chamber to the other, and hence with no large difference in pressure between parts of the chamber during the combustion process is known as:

- A. air-cell combustion chamber
- B. open combustion chamber ✓
- C. pre-combustion chamber
- D. shallow depth combustion chamber

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Q65 Part B

What is the accuracy level of a vernier caliper that can be read?

- A. 0.02 mm ✓
- B. 0.01 mm
- C. 0.2 mm
- D. 0.1 mm

Q66 Part B

If a machine has an efficiency of 80%, it means:

- A. the machine produces more output than input
- B. the machine has a velocity ratio and mechanical advantage both equal to 80
- C. the machine does not have any loss in input energy
- D. the machine loses 20% of the input ✓

Q67 Part B

A cylinder head gasket is incorporated between which of the following two parts of the engine?

- A. Puppet valve and cylinder block
- B. Piston ring and cylinder head
- C. Cylinder head and water jacket
- D. Cylinder block and cylinder head ✓

Q68 Part B

Which of the following types of valves is NOT used in the four stroke engine?

- A. Butterfly valves ✓
- B. Rotary valves
- C. Reed valves
- D. Poppet valves

Q69 Part B

Which of the following types of engines has irregular operation that occurs because the amount of fresh mixture entering the cylinder is not enough to clear all the exhaust gases and a part of it remains in the cylinder to contaminate the charge?

- A. Four-stroke petrol engine
- B. Two-stroke diesel engine
- C. Four-stroke diesel cycle
- D. Two-stroke petrol engine ✓

Q70 Part B

In engineering drawing, what is defined as the path of a moving point with no thickness?

- A. Angle
- B. Curve
- C. Point
- D. Line ✓

Q71 Part B

When drawing a curved line of a specific length in an engineering drawing, which tool is most appropriate for ensuring accuracy?

- A. Protractor
- B. Straightedge
- C. French Curve ✓
- D. Compass

Q72 Part B

What is the blade length of the T1 'T' square, as per IS:1360-1989?

- A. 500 mm
- B. 1500 mm
- C. 700 mm
- D. 1000 mm ✓

Q73 Part B

Which of the following is a cause of high oil consumption in the engine cylinder?

- A. Oil reaching to combustion ✓
- B. Worn out oil pump gear
- C. High oil level in the sump
- D. Blocked oil strainer

Q74 Part B

Which of the following is a key advantage of using Thyristors in power control applications?

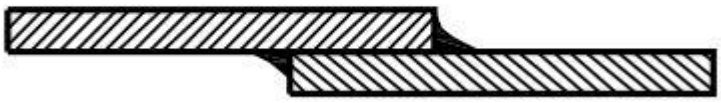
- A. High frequency switching ✓
- B. High efficiency and low power loss
- C. Small size and low cost
- D. Low voltage handling capabilities

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Q75 Part B

Identify the type of brazed joint shown below.



A. Joggle Lap

B. Simple Lap ✓

C. Strapped Lap

D. Butted Flange

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Q1 Part B

Weak compression can cause high fuel consumption. What is the suggested solution?

- A. Replace the piston ring. ✓
- B. Replace the air filter.
- C. Repair the fuel leakage.
- D. Adjust the idle speed screw.

Q2 Part B

What is the function of the vacuum valve in the pressure cap of a radiator?

- A. To let air into the system during vacuum ✓
- B. To allow coolant evaporation
- C. To release excess pressure
- D. To increase pressure during expansion

Q3 Part B

Which of the following causes leads to incomplete combustion in a 4-stroke gasoline engine?

- A. Perfect air-fuel ratio
- B. High spark energy
- C. Misfiring ignition ✓
- D. Operating at optimal temperature

Q4 Part B

In a two stroke petrol engine, during the upward stroke of the piston, the gases are compressed in the piston, and at the same time, which of the following is also performed during the operation?

- A. Fresh fuel enters in the cylinder from the crank chamber through the valve.
- B. Fresh air for petrol engine enters the cylinder from the chamber through the valve exhaust port.
- C. Fresh air and fuel (petrol) mixture enters the crank chamber through the valve. ✓
- D. Exhaust gases enter the crank chamber through the valve.

Q5 Part B

The function of a steering system is to convert the rotary movement of the steering wheel into:

- A. angular velocity of the front wheels
- B. angular turn of the front wheels ✓
- C. linear motion of the front wheels
- D. angular turns of the rear wheels

Q6 Part B

Which of the following care and maintenance of a marking table is INCORRECT?

- A. The marking table should be protected from damage.
- B. The marking table should be protected from rust.
- C. After use, the marking table should be cleaned with a soft cloth.
- D. The surface of the marking table should not be given a thin layer of oil. ✓

Q7 Part B

Why do cars have treaded tyres?

- A. To increase friction and grip on the road ✓
- B. To reduce weight
- C. To decrease friction
- D. To increase speed

Q8 Part B

What is the primary reason for the heating effect in a conductor when an electric current passes through it?

- A. The electric field in the conductor causes heat generation.
- B. The movement of electrons causes heat generation. ✓
- C. The conductor absorbs heat from the surrounding environment.
- D. The movement of protons causes heat generation.

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Q9 Part B

For which of the following calipers, a screw and nut are provided for opening and closing the caliper legs?

- A. Spring joint calipers ✓
- B. Firm joint calipers
- C. Simple calipers
- D. Leg and point calipers

Q10 Part B

In contexts such as automotive clutches, the spring is used to absorb shock during engagement. It is often referred to as a:

- A. leaf spring of circular shape
- B. tensile spring in helical shape
- C. cushion spring in flat shape ✓
- D. spiral spring of rectangular shape

Q11 Part B

Which of the following is one of the reasons for engine noise?

- A. Big end bearing worn out ✓
- B. Broken valve timing chain
- C. Clogged fuel filter
- D. High oil level

Q12 Part B

Natural rubber is soft at high temperatures and brittle at low temperatures; hence raw rubber is heated with sulphur and other additives at a temperature range between 373 – 415 K to make it strong. This process is called _____ of rubber.

- A. vulcanisation ✓
- B. molding
- C. latex
- D. extrusion

Q13 Part B

Which of the following components in the axle is the most likely to fail if there is an unusual loud clanking or clunking as you put your vehicle into gear, or if a vehicle seems to struggle to get power as it starts to move?

- A. Bearing at the wheel is damaged
- B. Bending in the shaft induced
- C. There is a crack initiated in the axle at cross sectional area perpendicular to axis
- D. Axle-joint damage ✓

Q14 Part B

What is the term used to describe programs that distinguish between uppercase and lowercase letters, treating "yes" and "YES" as different inputs?

- A. Case-insensitive
- B. Numerical
- C. Case-sensitive ✓
- D. Alphabetical

Q15 Part B

What is the primary reason for conducting a vehicle road test?

- A. To test how fast the vehicle can go
- B. To avoid the need for inspections
- C. To increase fuel efficiency
- D. To ensure the vehicle is functioning safely and correctly ✓

Q16 Part B

The accuracy of the dial bore gauge instrument depends on which of the following parts?

- A. A dot indicator on a linear scale
- B. An arrow on a semi-circular scale
- C. A pointer on a graduated dial ✓
- D. A marking on a logarithmic dial

Q17 Part B

What is the benefit of using structured clean diesel technology in road transport?

- A. Increases the speed of vehicles
- B. Reduces CO_2 emissions ✓
- C. Eliminates the need for emissions controls
- D. Makes diesel fuel cheaper

Q18 Part B

What is the primary goal of the 5S concept?

- A. To replace traditional safety measures
- B. To increase the number of safety regulations
- C. To improve workplace organisation and efficiency ✓
- D. To eliminate the need for maintenance

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Q19 Part B

Which of the following types of piston ring is placed at the top of the piston in an IC engine?

- A. Oil ring
- B. Compression ring ✓
- C. Wiper ring
- D. Pressure ring

Q20 Part B

_____ is a type of single thin sheet of metal that yields when pressure is applied and is widely used in most modern cars. When pressure is removed, the metal springs back to its original shape.

- A. Spiral spring
- B. Diaphragm spring ✓
- C. Leaf spring
- D. Cushion spring

Q21 Part B

The accuracy of measurement by a try square is about:

- A. 0.02 mm per 10 mm length
- B. 0.001 mm per 10 mm length
- C. 0.004 mm per 10 mm length
- D. 0.002 mm per 10 mm length ✓

Q22 Part B

The SI unit of 'ultimate stress' is _____.

- A. pascal (Pa) ✓
- B. newton (N)
- C. newton per meter (N/m)
- D. joule per square meter (J/m^2)

Q23 Part B

An angle greater than 180 degrees is referred to as _____.

- A. a right angle
- B. an acute angle
- C. an obtuse angle
- D. a reflex angle ✓

Q24 Part B

Which of the following statements is NOT correct about the functions of a lube oil pump?

- A. Maintains consistent oil circulation throughout the engine.
- B. Provides direction for the oil's passage through the galleries and to various areas.
- C. The movement of engine lubricant around the engine is made difficult ✓
- D. Oil is transferred to the engine's key components under high pressure,.

Q25 Part B

What is the purpose of the air bleed on the jet tube in the carburettor?

- A. To regulate the air temperature
- B. To control the engine speed
- C. To increase the fuel flow
- D. To break fuel into fine particles ✓

Q26 Part B

Which of the following terms is associated with the cams that control the valves and directly influence the breathing process of the engine?

- A. Shape and timing of the cams ✓
- B. Speed of the cams
- C. Material of construction of the cams
- D. Location and length of the cams

Q27 Part B

Which of the following components is a part of a diesel engine only?

- A. Spray nozzle ✓
- B. Fuel tank
- C. Carburetor
- D. Spark plug

Q28 Part B

The process of aligning a principal inertia axis with the geometric axis of rotation of the shaft through the addition or removal of material in a shaft is known as:

- A. balancing ✓
- B. parallel alignment
- C. equilibrium
- D. angular alignment

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Q29 Part B

A type of brake has a diaphragm operating in a cylinder. For application of brakes on one side, a diaphragm is subjected to atmospheric pressure while the other is applied negative pressure by exhausting air known as ____ brake.

A. air
B. electric
C. vacuum ✓
D. hydraulic

Q30 Part B

A 100-mm centre-punch could have a 10-mm diameter body and a 6-mm diameter point ground to an angle of _____.

A. 120°
B. 90° ✓
C. 60°
D. 30°

Q31 Part B

Which of the following statements is NOT correct about the parts associated with the cylinder head?

A. Space enclosed between the cylinder head and piston top during combustion is the combustion chamber.
B. Through the metal screw the spark plug is fitted in the cylinder head plug.
C. The fuel injector is used to spray fuel into the engine cylinder. It is fixed to the cylinder head.
D. The combustion of fuel and the consequent release of thermal energy results in the building up of pressure in the casing. ✓

Q32 Part B

Sine bars are used when a high degree of accuracy less than _____ is needed for measuring angles.

A. 1 degree
B. 30 degrees
C. 1 minute ✓
D. 30 minutes

Q33 Part B

Which material is used in the second stage of a diesel fuel water separator to remove small water particles?

A. Silicone-treated nylon ✓
B. Plated paper
C. Plastic mesh
D. Metal mesh

Q34 Part B

Which of the statements is correct about a compression ignition engine?

A. Diesel engine produces less noise compared to petrol engine.
B. Operating speed range is less compared to petrol engine. ✓
C. Starting is easy for diesel engine since less cranking effort is required compared to petrol engine.
D. Initial and maintenance costs of diesel engine is less compared to petrol engine.

Q35 Part B

Which of the following statements is/are true about Non-Functional Dimensions (NF) in engineering drawing?

Statement 1: Non-functional Dimensions are shown without limits, as they do not affect the functionality of the component or space.
Statement 2: Non-Functional Dimensions are typically used for reference purposes only, and do not impact the assembly or performance of the component or space.

A. Only statement 2 is true ✓
B. Only statement 1 is true
C. Both statements are true
D. Neither statement is true

Q36 Part B

Which of the following locations is correct for installing the oil filter in the engine?

A. After lines going to supply the oil to the bearing after coolers
B. In between coolers and the oil lines coming from sump
C. Downstream of coolers in order to filter if any solid part from coolers enters the oil lines ✓
D. Up stream of coolers in order to filter if any solid part from coolers lives the oil lines

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Q37 Part B

Which category of vehicles does the European emission standards for passenger cars fall under?

A. Category N

B. Category M ✓

C. Category H

D. Category L

Q38 Part B

Which of the following processes is used to fit a bearing into the connecting rod, allowing the gudgeon pin to provide the oscillating movement at the small end of the connecting rod?

A. Interference fit

B. Press fit ✓

C. Autofrettage fit

D. Loose fit

Q39 Part B

In a logic circuit, three SPST (Single Pole Single Throw) switches are used to implement a logic gate. The switches are connected in series. What is the output of the circuit if all switches are closed?

A. Undefined

B. 1 ✓

C. The output will depend on the type of gate used

D. 0

Q40 Part B

Which of the following is INCORRECT about line standard?

A. More accurate due to line thickness ✓

B. Subject to parallax error

C. Quick measurements over a wide range

D. Used to measure the distance between two engraved lines

Q41 Part B HINDI

जब दहन के दौरान सिलेंडर के भीतर बहुत उच्च तापमान उत्पन्न होता है, तो इंजन के भागों पर क्या प्रभाव पड़ता है?

A. वे प्रसारित होते हैं और जाम होने लगते हैं। ✓

B. उनका घनत्व बढ़ जाता है।

C. वे कम आघातवर्ध्य हो जाते हैं।

D. वे अधिक चालकीय हो जाते हैं।

Q42 Part B

Which of the following is a primary difference between a primary and a secondary electrochemical cell?

A. A secondary cell produces more energy than a primary cell.

B. A primary cell can be recharged, while a secondary cell cannot be recharged.

C. A primary cell cannot be recharged, while a secondary cell can be recharged. ✓

D. There is no difference between primary and secondary cells.

Q43 Part B

Match the following designations of sheets with their respective trimmed sizes in length and breadth.

Designation Trimmed Size
A) A0 P) 297 × 420
B) A1 Q) 420 × 594
C) A2 R) 594 × 841
D) A3 S) 841 × 1189

A. A-S ; B-R ; C-Q ; D-P ✓

B. A-Q ; B-R ; C-S ; D-P

C. A-S ; B-P ; C-Q ; D-R

D. A-P ; B-R ; C-Q ; D-S

Q44 Part B

Diesel fuel is generally used in which of the following types of vehicles?

A. Aerospace vehicles

B. Scooters

C. Cars

D. Heavy trucks and buses ✓

Q45 Part B

Which of the following screwdrivers has cross-shaped tips that are unlikely to slip from the cruciform slots in Philips recessed head screws?

A. Stumpy screwdriver

B. Offset screwdriver

C. Cross-recess screwdriver ✓

D. Ratchet screwdriver

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Q46 Part B

Which of the following processes is carried out on connecting rods to locate the two halves relative to one another?

- A. Dimples are created on the surface
- B. Tapper threads are used
- C. Mirror finishing is done by diamond turning machine
- D. Serrations are used ✓

Q47 Part B

Which of the following statements is NOT correct about the procedure of calculating balancing of crankshaft of an engine?

- A. To balance a crankshaft, metal can be added by welding material deposition on the 'heavy' side until balance is achieved. ✓
- B. To balance a crankshaft, metal can be removed by drilling holes on the 'heavy' side until balance is achieved.
- C. Crankshaft balancing involves calculating the rotating and reciprocating masses of a crankshaft.
- D. It involves determining the balancing couple and counterweight mass required to balance the crankshaft.

Q48 Part B

Which of the following types of brakes can be used with drum, disc or a combination, with air pressure providing the power instead of hydraulic fluid?

- A. Air brakes ✓
- B. Electric brakes
- C. Pneumatic brakes
- D. Magnetic brakes

Q49 Part B

What is the primary purpose of preventive maintenance?

- A. To increase the workload of employees
- B. To reduce unexpected equipment failures ✓
- C. To delay repairs until breakdowns occur
- D. To eliminate the need for regular inspections

Q50 Part B

Which option shows the correct answer when 27°C is converted to the kelvin scale?

- A. – 300 K
- B. 246 K
- C. 300 K ✓
- D. – 246 K

Q51 Part B

Which of the following materials is used as a binding agent in organic brake linings?

- A. Metal powder
- B. Rubber
- C. Cotton
- D. Resin ✓

Q52 Part B

Which of the following is NOT the correct statement when fitting rings in an internal combustion (IC) engine?

- A. Cleaning the piston head sealing surface area thoroughly is required. ✓
- B. This is vital for maintaining proper combustion pressure and preventing oil consumption issues.
- C. Use of specialised tools to install the rings without twisting or damaging them is essential.
- D. The most crucial precaution is to ensure proper ring gap and alignment by carefully checking the end gap of each ring.

Q53 Part B

Which of the following is a major risk associated with fuel spillage?

- A. Fire hazards and environmental contamination ✓
- B. Better lubrication for workshop floors
- C. Increased productivity
- D. Reduced need for ventilation

Q54 Part B

Which of the following types of seats is made of hardened alloys and pressed or shrunk into the cylinder head, often used in aluminium engines for better durability?

- A. Integral valve seats
- B. Ring valve seats
- C. Butterfly valve seats
- D. Insert valve seats ✓

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Q55 Part B

Which of the following stages of an automatic transmission system locks the transmission, restricting a vehicle from moving?

- A. Park (P) stage ✓
- B. Drive (D) stage
- C. Low (L) stage
- D. Neutral (N) stage

Q56 Part B

In a circuit with a NTC type thermistor and a fixed resistor connected in series connected to a DC power supply, what will happen to the output voltage if there is a rise in temperature?

- A. The output voltage will increase. ✓
- B. The output voltage will remain constant.
- C. The output voltage will fluctuate depending on the resistor value.
- D. The output voltage will decrease.

Q57 Part B

What is the primary purpose of shielding in electrical cables?

- A. To increase the voltage capacity of the cable
- B. To increase the current-carrying capacity of the cable
- C. To protect the cable from external electromagnetic interference ✓
- D. To prevent heat loss from the cable

Q58 Part B

A statement and conclusion for pictorial drawing are given below. Determine the logical relationship between them.

Statement: Pictorial drawings are three-dimensional and provide a visual representation of an object.

Conclusion: Therefore, pictorial drawings are useful for describing the shape of a piece part or component.

- A. The conclusion does not logically follow from the statement.
- B. The conclusion is partially supported by the statement.
- C. The conclusion is unrelated to the statement.
- D. The conclusion logically follows from the statement. ✓

Q59 Part B

A rectangular floor measuring 10 m × 8 m is to be tiled. If each tile covers 0.25 m^2, how many tiles are needed?

- A. 200
- B. 300
- C. 320 ✓
- D. 250

Q60 Part B

The space enclosed in the upper part of a cylinder, by the cylinder head and the piston top, during the combustion process is called:

- A. combustion chamber ✓
- B. fuel digestion chamber
- C. air suction zone
- D. compression ratio

Q61 Part B

Which of the following actions is a part of the emergency response team's responsibilities during an active emergency?

- A. Preparing reports on emergency incidents
- B. Rescuing persons in immediate danger ✓
- C. Conducting routine safety checks
- D. Scheduling regular evacuation drills

Q62 Part B

When the crank is at the dead centre, what will be the magnitude of bending moment and twisting moment at the crankshaft?

- A. Bending moment on the shaft is maximum and the twisting moment is zero. ✓
- B. Both bending moment and the twisting moment are zero in the shaft
- C. Bending moment on the shaft is minimum and the twisting moment is maximum.
- D. Both bending moment and twisting moment on the shaft are maximum

Q63 Part B

How many divisions are there on a vernier scale as used in a modern vernier caliper for metric measurement?

- A. 50 ✓
- B. 25
- C. 75
- D. 100

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Q64 Part B

How does a turbocharger affect the engine power?

- A. By reducing the air intake
- B. By decreasing the air intake and increasing the fuel burn
- C. By increasing the air intake and increasing the fuel burn ✓
- D. It has no effect on the engine power.

Q65 Part B

The clutch slave cylinder disengages the clutch from the engine by moving the:

- A. spline shaft
- B. pressure plate ✓
- C. cushion spring
- D. leaf spring

Q66 Part B

Which component of a reciprocating piston compressor opens to allow air to be discharged from the cylinder?

- A. Inlet valve
- B. Outlet valve ✓
- C. Crankshaft
- D. Piston ring

Q67 Part B

_____ recommend(s) 20 mm wide margins for sheet sizes AO and A1 in engineering drawings.

- A. Borders and frames: SP: 46 (2003) ✓
- B. Geographic coordinate systems
- C. Custom grids
- D. Grid reference system

Q68 Part B

What does the primary filter in a two-stage fuel filter system mainly remove from the diesel fuel?

- A. Only liquid contaminants
- B. Small solid contaminants
- C. Large solid contaminants ✓
- D. Air from the fuel

Q69 Part B

Which of the following is a key electrical safety tip in a workshop?

- A. Operate machines with wet hands
- B. Ignore frayed wires if the device is still working
- C. Use water to clean electrical panels
- D. Ensure electrical equipment is properly grounded ✓

Q70 Part B

The piston rings are placed in the ring groove and provide sealing between which of the following two parts to prevents leakage of high-pressure gases?

- A. Piston and the cylinder liner ✓
- B. Piston and the cylinder block
- C. Piston and the cylinder head
- D. Piston and the cylinder fins

Q71 Part B HINDI

उत्प्रेरक परिवर्तक अभिक्रिया के अंतिम उत्पाद क्या हैं ?

- A. HC, CO, NOx
- B. SO_2, NO_2, O_3
- C. CH_4, C_2H_6, C_3H_8
- D. H_2O, CO_2, N_2 ✓

Q72 Part B

What is the role of the air cleaner during engine backfires?

- A. It increases the engine power.
- B. It ignites the fuel mixture.
- C. It cools the engine.
- D. It acts as a flame arrester. ✓

Q73 Part B

Which of the following types of materials is NOT used in an oil filter as a strainer?

- A. Thin aluminum foil ✓
- B. Felt
- C. Cloth
- D. Wire screen

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Q74 Part B

Which of the following conversions are correct?

A. 1 L = 1000 dm^3 and 1 mL = 1000 cm^3

B. 1000 L = 1 dm^3 and 1000 mL = 1 cm^3

C. 1 L = 1 dm^3 and 1 mL = 1 cm^3 ✓

D. 1000 L = 1 dm^3 and 1 mL = 1000 cm^3

Q75 Part B

How does a pressure relief valve protect the hydraulic system?

A. By limiting maximum working pressure ✓

B. By increasing the pressure for better performance

C. By monitoring the fluid temperature

D. By controlling the flow direction

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Part B — 75 Questions • Answer Key

Q1 Part B

Which of the following devices is used to insert a micrometer in the hole of an external cylinder for zero aligning?

- A. Spanner
- B. Allen key
- C. Screw driver
- D. Wrench ✓

Q2 Part B

What is the best method of manufacturing of connecting rod used in an engine?

- A. Drop forging ✓
- B. Investment casting
- C. Sand casting
- D. Machining operation

Q3 Part B

Which of the following types of engine classifications is based on the thermodynamic cycle?

- A. In-line cylinder engine
- B. V-engine
- C. Radial engine
- D. Otto cycle engine ✓

Q4 Part B

Which of the following parts of the engine is used to compress the charge during compression stroke and to transmit the gas force to the connecting rod and then to the crankshaft during power stroke?

- A. Crankcase
- B. Cylinder head
- C. Cylinder block
- D. Piston ✓

Q5 Part B

Which of the following statements is INCORRECT about end standard?

- A. It measures the distance between two parallel flat surfaces.
- B. Faces are subject to wear.
- C. It is slower but more accurate.
- D. It is used to measure the distance between two engraved lines. ✓

Q6 Part B

In gasoline direct injection, what type of control adjusts the air-to-fuel ratio in real time based on oxygen sensor data?

- A. Indirect control
- B. Feedforward control
- C. Open-loop control
- D. Closed-loop control ✓

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Q7 Part B

Match the following types of lines with their correct descriptions according to their orientation and characteristics.

Description	Type of Line
A. A line that is neither parallel to a horizontal plane nor perpendicular to it.	1. Horizontal line
B. A line that is perpendicular to horizontal lines.	2. Vertical line
C. A line that changes its direction continuously.	3. Inclined line
D. A line that is parallel to a horizontal plane.	4. Curved line

A. A - 1, B - 2, C - 3, D - 4

B. A - 2, B - 3, C - 4, D - 1

C. A - 3, B - 2, C - 4, D - 1 ✓

D. A - 2, B - 1, C - 4, D - 3

Q8 Part B

Convert 8.5% into a decimal.

A. 0.85

B. 8.5

C. 0.085 ✓

D. 85

Q9 Part B

Which of the following symptom or indicator does NOT show the failure of an oil pump?

A. When the engine oil flow slows or stops, the components continue to be lubricated by hot oil that is not permitted to flow

B. When the engine runs at a normal temperature and oil flow is steady. ✓

C. If a hydraulic lifter in a vehicle creates noise

D. Able to push oil through the system adequately and with low pressure in oil lines

Q10 Part B

What happens if air is NOT removed from a hydraulic brake system?

A. The fuel efficiency improves.

B. The engine runs smoother.

C. The tires wear out faster.

D. The brakes feel spongy and less effective. ✓

Q11 Part B

The camshaft is driven by the crankshaft through which of the following types of power transmission techniques?

A. Flat belt transmission drive

B. Timing gears drive ✓

C. Chain drive

D. Epicyclic gear train drive

Q12 Part B

Which of the following is the primary reason why copper is widely used as a conductor in electrical wiring?

A. Copper has low resistance and high conductivity. ✓

B. Copper has a low melting point.

C. Copper is abundant and inexpensive.

D. Copper has high resistance to electricity.

Q13 Part B

Where is the air cleaner mounted in an engine?

A. Under the engine block

B. On the top of the air inlet manifold ✓

C. Inside the cylinder bore

D. Next to the fuel injector

Q14 Part B

When passing stationary vehicles, keep a watch on _____ who may come out suddenly from the front of the stationary vehicle. While overtaking, it should be done on the _____ side. Always keep a good _____ between your vehicle and others.

A. cyclists; left; interval

B. vehicles; right; gap

C. drivers; left; space

D. pedestrians; right; distance ✓

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Q15 Part B

What is the function of the lubricator in an FRL or air service unit?

- A. Regulate pressure
- B. Remove moisture
- C. Filter particles
- D. Add oil mist ✓

Q16 Part B

Which of the following terms in the 5S concept refers to making a habit of maintaining the established procedures?

- A. Shine
- B. Set
- C. Sort
- D. Sustain ✓

Q17 Part B

How much clearance is to be provided for compression ring fitted into the piston of an IC engine?

- A. Approximately 0.035 – 0.080 mm for compression rings
- B. Approximately 0.095 – 1.80 mm for compression rings
- C. 0.002 D to 0.004 D where D is the cylinder bore ✓
- D. Approximately 0.9 – 1.80 mm for compression rings

Q18 Part B

What are the emissions called when fuel evaporates and escapes into the atmosphere?

- A. Combustion emissions
- B. Crankcase emissions
- C. Exhaust emissions
- D. Evaporative emissions ✓

Q19 Part B

Which of the following metals has the lowest melting point?

- A. Mercury ✓
- B. Iron
- C. Lead
- D. Gold

Q20 Part B

What is the function of the compression spring in a 2/2-way directional control hydraulic valve?

- A. To move the spool to the actuated position
- B. To return spool to the normal position ✓
- C. To increase the pressure at working port
- D. To assist fluid flow

Q21 Part B

Which of the following provisions is provided in the cylinder head during design for increasing the air cooling effect?

- A. Fins or extended surfaces are provided on the cylinder walls and cylinder blocks. ✓
- B. Cylinder head is provided with water jackets.
- C. Cylinder block is provided with high speed cooling air flow.
- D. Dimple like shapes on surfaces are provided on the cylinder walls.

Q22 Part B

Which type of line is used to represent hidden edges or surfaces in a technical drawing, as per BIS SP 46-2003?

- A. Continuous thin line
- B. Continuous thick line
- C. Dashed thin line ✓
- D. Chain thin line

Q23 Part B

What is the accuracy level of metric micrometer reading?

- A. 0.5 mm
- B. 1.0 mm
- C. 0.1 mm
- D. 0.01 mm ✓

Q24 Part B

A single plate friction clutch consists of a clutch disk between the:

- A. differential gear and transmission gear box
- B. pressure plate and driving shaft
- C. driving shaft and differential gear
- D. flywheel and a pressure plate ✓

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Q25 Part B

Which of the following calipers are used for marking lines, parallel to inside and outside edges and for locating the centre of round bars?

A. Spring joint calipers
B. Leg and point calipers ✓
C. Simple calipers
D. Firm joint calipers

Q26 Part B

Which of the following statements about title block is/are true?

Statement 1: The title block is situated in the bottom right-hand corner of the drawing sheet.
Statement 2: The contents of the title block are standardised and cannot be modified to suit individual company needs.

A. Both statements are false
B. Statement 1 is false, but statement 2 is true
C. Statement 1 is true, but statement 2 is false ✓
D. Both statements are true

Q27 Part B

Burning of _____ inside the combustion chamber leaves particulates in the CI engine.

A. petrol
B. hydraulic oil
C. coolant
D. lubricating oil ✓

Q28 Part B

In a hydraulic brake booster system, where is the hydraulic pressure stored before it is used to assist braking?

A. Power steering pump
B. Master cylinder
C. Accumulator ✓
D. Brake caliper

Q29 Part B

For your safety at work, which of the following should be ensured?
1. All the required protective clothing and equipment are used.
2. Training and instruction necessary for performing tasks safely have been received.

A. Only statement 1
B. Neither statement 1 nor 2
C. Only statement 2
D. Both statements 1 and 2 ✓

Q30 Part B

Which of the following parts is NOT associated with camshaft responsible for the opening and closing of engine valves?

A. Tappets
B. Connecting rod ✓
C. Rocker arms
D. Push rods

Q31 Part B

Who is authorised to conduct road tests on workshop vehicles?

A. Only trained and certified personnel ✓
B. Visitors to the workshop
C. Any employee
D. The company accountant

Q32 Part B

A type of piston which provides an even distribution of the air-fuel mixture, consistent flame front during combustion and it has the smallest surface area on top is known as:

A. semi-spherical piston
B. dish piston
C. flat piston ✓
D. dome piston

Q33 Part B

When creating 10 mm single-stroke capital letters in vertical style, what does the 10 mm distance between horizontal parallel lines represent?

A. Letter width
B. Letter height ✓
C. Stroke thickness
D. Interline spacing

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Q34 Part B

A carburetor used in a petrol engine is designed so as to fit in which of the following parts of the engine?

- A. Piston
- B. Casing
- C. Cylinder head ✓
- D. Connecting rod

Q35 Part B

What happens if the coolant removes too much heat from the engine?

- A. Increase in fuel consumption
- B. Overheating of engine
- C. Corrosion in the cooling system
- D. Decrease in thermal efficiency ✓

Q36 Part B

A crucial engine component that ensures proper sealing of the intake and exhaust valves is known as:

- A. valve barrier
- B. valve gasket
- C. valve seat ✓
- D. valve ring

Q37 Part B

Which type of air cleaner uses oil to absorb heavy dust particles?

- A. Dry-type
- B. Cyclonic-type
- C. Wet-type ✓
- D. Electronic-type

Q38 Part B

In a logic circuit, two inputs A and B are applied to an AND gate, and the output of the AND gate is connected to the input of a NOT gate. If the inputs A and B are both at logic 0, what will be the output of the entire circuit?

- A. Undefined
- B. 0
- C. 1 ✓
- D. 2

Q39 Part B

For the given tire size, as per specification as 205/55R16, what is the width of the tire?

- A. 205/55 mm
- B. 550 mm
- C. 205 mm ✓
- D. 880 mm

Q40 Part B

Which of the following statements is NOT correct for using scribers?

- A. Scriber points are very sharp, so they are to be handled very carefully.
- B. While scribing lines, the scriber is used like a pencil.
- C. Do not put the scriber in your pocket.
- D. Place a cork on the point when in use to prevent accidents. ✓

Q41 Part B

The process in which an oil pump housing is first filled with oil, especially for oil pumps that are driven by the crankshaft, is known as:

- A. alignment of a pump
- B. ferrography of a pump
- C. priming of a new oil pump ✓
- D. cavitation of a pump

Q42 Part B

Find the lateral surface area of a cube with side length 5 cm.

- A. 125 cm^2
- B. 150 cm^2
- C. 200 cm^2
- D. 100 cm^2 ✓

Q43 Part B

Which of the following 'V' blocks will have one 'V' groove and two grooves (slots) on either side for clamping in two positions?

- A. Double level single groove 'V' block
- B. Matched pair 'V' block
- C. Single level double groove 'V' block ✓
- D. Single level single groove 'V' block

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Q44 Part B

Where is a typical clutch actuated by a number of coil springs?

- A. On a pitch circle near the central axis of the shaft
- B. On a base circle near the centre of the circle
- C. On an addendum circle near the centre of the radius
- D. On a pitch circle near the periphery ✓

Q45 Part B

Which of the following information is necessary to construct a rectangle?

- A. Length of two adjacent sides ✓
- B. Length of one side and the area of the rectangle
- C. Only the length of one side
- D. Only the length of the diagonal

Q46 Part B

What is the SI unit of 'volume'?

- A. Litres
- B. Cubic centimetre
- C. Cubic metre ✓
- D. Millilitres

Q47 Part B

What is the reason that cam lobe causes the engine to make a ticking or tapping noise, especially when idling, and is often rhythmic and varies in loudness?

- A. When the cam lobe is subjected to higher load.
- B. When the cam lobe wears out. ✓
- C. When the cam lobe is hot.
- D. When cam lobe is has insufficient lubrication.

Q48 Part B

Which of the following is one cause of high oil pressure in the lubrication system of an engine?

- A. Worn-out oil pump gear
- B. External oil leakage
- C. Low oil level
- D. High oil viscosity ✓

Q49 Part B

Which of the following statements is correct about the clutch used in vehicles?

- A. It allows the driver to couple or decouple the power transmission at will without stopping the engine. ✓
- B. It allows the driver to lift and unload the bulk material from engine and transmission.
- C. It allows the driver to change the drive of engine in any direction.
- D. It allows the driver to change the speed of engine.

Q50 Part B

The wave set of hacksaw teeth set has a pitch of _____.

- A. 2.0 mm
- B. 0.5 mm
- C. 0.8 mm ✓
- D. 1.0 mm

Q51 Part B

A 100-mm prick punch with a 7-mm diameter body could have a 2.5-mm diameter point ground to an angle of _____.

- A. 90°
- B. 30° ✓
- C. 120°
- D. 45°

Q52 Part B

Which of the following is NOT the purpose of lubrication oil in an engine?

- A. Separation of lighter boiling materials such as gasoline, jet fuel, diesel, etc.
- B. Finishing to improve oxidation and heat stability
- C. Mixing of impurities uniformly that include aromatics and polar compounds ✓
- D. Dewaxing to improve low-temperature fluidity

Q53 Part B

Which of the following types of engine classifications is based on cylinder arrangement?

- A. Diesel cycle enigne
- B. Dual cycle engine
- C. V-engine ✓
- D. Otto cycle engine

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Q54 Part B

What is the typical temperature range of a mercury-based clinical thermometer?

A. 0°C to 100°C

B. 35°C to 42°C ✓

C. 0°C to 50°C

D. −10°C to 110°C

Q55 Part B

What is the purpose of the heat control valve in the exhaust manifold?

A. To increase fuel consumption

B. To cool the exhaust gases

C. To reduce exhaust noise

D. To direct hot gases around the inlet manifold ✓

Q56 Part B

The SI unit of temperature is/are _____.

A. both kelvin and celsius

B. celsius

C. kelvin ✓

D. fahrenheit

Q57 Part B

Which of the following types of chisels is used for separating metals after chain drilling?

A. Cross-cut chisel

B. Flat chisel

C. Web chisel ✓

D. Diamond point chisel

Q58 Part B

The emergency brake locks the wheels by bypassing which system?

A. Electric brake system

B. Air pressure system

C. Hydraulic brake system ✓

D. Fuel injection system

Q59 Part B

In a series circuit, three resistors of 10 ohms, 20 ohms, and R ohms are connected in series with a 12 V battery. What is the value of resistance R if current flowing in the circuit is 0.2 A?

A. 10 ohms

B. 20 ohms

C. 30 ohms ✓

D. 40 ohms

Q60 Part B

Which of the following is considered an important factor in determining the quality of diesel fuel?

A. Brand name

B. Cetane number ✓

C. Colour

D. Packaging size

Q61 Part B

Which of the following cooling mediums is used in heat transfer in an engine cooling system?

A. Oil

B. Lubricant

C. Water ✓

D. Fuel

Q62 Part B

What is the minimum age for employment in factories or mines or other hazardous employment, according to Article 24 of the Indian Constitution?

A. 14 years ✓

B. 12 years

C. 16 years

D. 18 years

Q63 Part B

A voltmeter with a resistance of 10,000 ohms is connected across a circuit that has a voltage of 50 V. What is the current flowing through the voltmeter?

A. 2 mA

B. 1 mA

C. 5 mA ✓

D. 4 mA

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Q64 Part B

In two-stroke engines, one power cycle is completed in how many revolutions of the crankshaft?

- A. Two revolutions
- B. Four revolutions
- C. Three revolutions
- D. One revolution ✓

Q65 Part B

Which of the following types of additives are blended with the lubricant to reduce the surface tension of the oil?

- A. Tackiness agents
- B. Demulsifiers
- C. Mist suppressors
- D. Emulsifiers ✓

Q66 Part B

Which harmful emissions are converted by the catalytic converter?

- A. HC, CO, and NOx ✓
- B. CO_2, H_2O, and N_2
- C. CH_4, C_2H_6, and C_3H_8
- D. O_2, Ar, and He

Q67 Part B

Which of the following is NOT the correct function of the front axle?

- A. It transmits the torque of a vehicle through springs to the front wheels. ✓
- B. It absorbs torque applied on it due to braking of vehicle.
- C. An axle is a central shaft for a rotating wheel or gear.
- D. It supports the weight of the front part of the vehicle.

Q68 Part B

The turbocharger compressor housing inlet is connected to:

- A. the air cleaner ✓
- B. the exhaust manifold
- C. the fuel injector
- D. the engine block

Q69 Part B

Which of the following is NOT a part of the gear changing mechanism in an automatic transmission system?

- A. Universal coupling ✓
- B. Epicyclic gear arrangement
- C. Fluid coupling
- D. Torque converter

Q70 Part B

Which of the following colours is commonly used for caution signs?

- A. Blue
- B. Yellow ✓
- C. Red
- D. Green

Q71 Part B

Which component in a multi-cylinder diesel engine directly drives the plunger-type fuel feed pump?

- A. F.I. pump camshaft ✓
- B. Alternator
- C. Crankshaft
- D. Starter Motor

Q72 Part B

Which of the following types of valve seats are commonly used in cast iron head of the engine?

- A. Integral valve seats ✓
- B. Insert valve seats
- C. Elliptical valve seats
- D. Two piece valve seats

Q73 Part B

If the length of a resistor is doubled, what happens to its resistance, assuming all other factors remain constant?

- A. The resistance is doubled. ✓
- B. The resistance remains the same.
- C. The resistance is halved.
- D. The resistance quadruples.

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Q74 Part B

For the given tire size, as per specification as 205/55R16, what is the width of the tire?

A. $880\ \text{mm}$

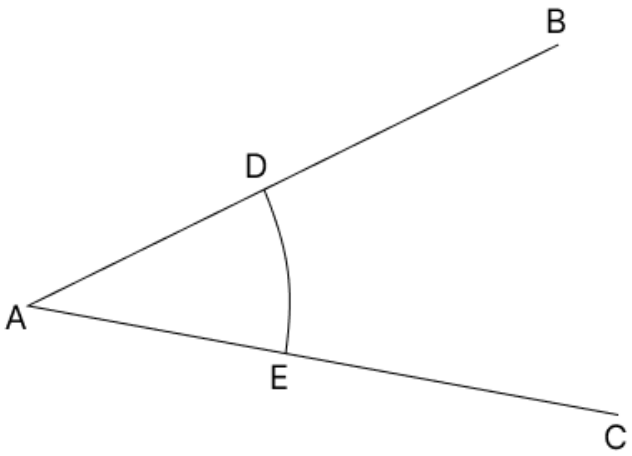
B. $550\ \text{mm}$

C. $\frac{205}{55}\ \text{mm}$

D. $205\ \text{mm}$ ✓

Q75 Part B

In the process of bisecting angle BAC in the given figure, why do we draw arcs from points D and E?



A. To find midpoint AB

B. To mark equal lengths

C. To intersect line AC

D. To intersect above A ✓

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Part B — 75 Questions • Answer Key

Q1 Part B

In a velocity-time graph, the negative slope represents _____.

- A. retardation ✓
- B. displacement
- C. acceleration
- D. distance

Q2 Part B

How many parallel I/O ports are available in the 8051 microcontrollers?

- A. Five
- B. Three
- C. Two
- D. Four ✓

Q3 Part B

Which of the following organisations is responsible for enforcing workplace safety regulations in India?

- A. World Health Organization (WHO)
- B. Food and Drug Administration (FDA)
- C. Directorate General of Factory Advice Service and Labour Institutes (DGFASLI) ✓
- D. Environmental Protection Agency (EPA)

Q4 Part B

Which of the following parts of a file is the part fitted to the tang for holding the file?

- A. Tip or Point
- B. Handle ✓
- C. Edge
- D. Tang

Q5 Part B

What is a key advantage of using MOSFETs in electronic circuits compared to other types of transistors?

- A. High frequency response
- B. High input impedance and low power consumption ✓
- C. Ability to handle higher voltages and currents than BJTs
- D. Ability to amplify both AC and DC signals

Q6 Part B

A drawing instrument box is used to carry all _____ instruments.

- A. drawing ✓
- B. screening
- C. drilling
- D. casting

Q7 Part B

When selecting a sheet size for an original drawing, what should be the primary consideration?

- A. The standard size of the drawing office.
- B. The clarity and resolution required. ✓
- C. The orientation of the drawing (horizontal or vertical).
- D. The size of the reproduction.

Q8 Part B

When using a multimeter to measure current, which of the following is correct?

- A. The multimeter is connected directly to the power source.
- B. The multimeter is connected in series with the load. ✓
- C. The multimeter is connected only across resistive components.
- D. The multimeter is connected in parallel with the load.

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Q9 Part B

In the IC 555 block diagram, which type of flip-flop is used?

- A. D flip-flop
- B. RS flip-flop ✓
- C. T flip-flop
- D. JK flip-flop

Q10 Part B

Which of the following is a switching error in electrical measuring instruments?

- A. Error due to wrong calculation of subdivisions
- B. Wrong connection of the meter ✓
- C. Error due to heat
- D. Error due to vibration

Q11 Part B

What is the role of the LC oscillator in an inductive proximity switch?

- A. It converts AC voltage to DC voltage.
- B. It measures temperature changes.
- C. It detects light intensity.
- D. It generates a high-frequency electromagnetic field. ✓

Q12 Part B

How can the range of an ammeter be extended?

- A. By using a step-up transformer
- B. By increasing the applied voltage
- C. By connecting a shunt resistor in parallel with the ammeter ✓
- D. By connecting a resistor in series with the ammeter

Q13 Part B

How can one avoid a parallax error while taking a reading from a moving iron type voltmeter?

- A. By seeing the needle at an angle of 90°
- B. By seeing the image of the pointer on the mirror
- C. By seeing straight on the needle ✓
- D. By seeing the needle at an angle of 45°

Q14 Part B

Why is a high-impedance input preferred in a frequency meter?

- A. To allow better voltage regulation
- B. To increase the power consumption of the meter
- C. To reduce display brightness fluctuations
- D. To prevent voltage drop across the circuit being measured ✓

Q15 Part B

Which of the following Boolean expressions represents the behaviour of a 3-input OR gate?

- A. A + B + C ✓
- B. (A + B) * C
- C. A * B * C
- D. (A * B) + C

Q16 Part B

What is the role of a capacitor in an op-amp integrator circuit?

- A. It blocks AC signals and passes DC signals.
- B. It stores charge and accumulates voltage over time. ✓
- C. It amplifies the input signal.
- D. It acts as a voltage divider.

Q17 Part B

Which of the following files is used for filing narrow grooves and angles above 10°?

- A. Knife-edge file ✓
- B. Half round file
- C. Square file
- D. Triangular file

Q18 Part B

In the 8051, how does the interrupt enable (IE) SFR and the interrupt priority (IP) SFR work together to manage interrupt handling?

- A. IE sets the global interrupt enable, while IP sets the address of the interrupt service routine.
- B. IE sets the priority levels, while IP enables or disables individual interrupts.
- C. IE enables or disables individual interrupts, while IP sets the global interrupt enable.
- D. IE enables or disables individual interrupts, while IP sets the priority level for each interrupt source. ✓

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Q19 Part B

For what purpose are pins and clips used in engineering drawings?

- A. To transfer dimensions and dividing lines into a number of equal parts
- B. To draw horizontal lines, parallel lines and to guide/hold the set squares
- C. To fasten the drawing sheet on to the drawing board firmly so that it does not shake ✓
- D. To support the drawing paper/tracing paper for making drawings

Q20 Part B

Gaskets, seals and spacers are made using:

- A. centre punch
- B. hollow punch ✓
- C. pin punch
- D. prick punch

Q21 Part B

Which type of transformer is used in a full wave rectifier circuit with two diodes?

- A. Auto-transformer
- B. Center-tapped transformer ✓
- C. Step-up transformer
- D. Current transformer

Q22 Part B

A/an _____ is connected in series with the voltmeter to increase the range of the voltmeter.

- A. inductor
- B. capacitor
- C. resistor ✓
- D. inductor and capacitor in series

Q23 Part B

A circular hole of radius 3 cm is cut from a rectangular sheet of dimensions 12 cm × 10 cm. Find the remaining area.

(Take π = 3.14)

- A. 100 cm^2
- B. 91.74 cm^2 ✓
- C. 95.86 cm^2
- D. 75.74 cm^2

Q24 Part B

According to BIS SP 46-2003, which of the following applications is correctly represented by a chain-thin line in engineering drawings?

- A. Center lines ✓
- B. Hidden edges
- C. Dimension lines
- D. Visible edges

Q25 Part B

What type of oscillator uses a capacitive voltage divider as the feedback network?

- A. Crystal oscillator
- B. Colpitts oscillator ✓
- C. RC oscillator
- D. Hartley oscillator

Q26 Part B

In a non-inverting amplifier, what is the ideal input impedance?

- A. Zero
- B. Equal to Rf (Feedback Resistor)
- C. Infinite ✓
- D. Equal to Rin (Input Resistor)

Q27 Part B

What is the Boolean expression for the carry-out (Cout) output of a Full Adder?

- A. $Cout=(A \cdot B) \oplus Cin$
- B. $Cout=A \oplus B \oplus Cin$
- C. $Cout=(A \cdot B)+(B \cdot Cin)+(Cin \cdot A)$ ✓
- D. $Cout=(A \cdot B) \cdot Cin$

Q28 Part B

What is the advantage of using a transistor as a switch in a power electronic circuit?

- A. High current gain
- B. High power gain
- C. High voltage gain
- D. High switching frequency and low switching losses ✓

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Q29 Part B

When measuring the resistance of a resistor using an ohmmeter, what does a reading of zero resistance indicate?

- A. The resistor is functioning normally.
- B. The resistor is open-circuited.
- C. The resistor is short-circuited. ✓
- D. The ohmmeter is malfunctioning.

Q30 Part B

What is the primary action that occurs in the base region of an NPN transistor when a small positive voltage is applied to the base with respect to the emitter?

- A. The collector current is reduced.
- B. Holes are created in the base region.
- C. Electrons from the emitter are attracted to the base region. ✓
- D. The base-emitter junction is reverse-biased.

Q31 Part B

In an ideal op-amp, what would happen if there were no feedback in the circuit?

- A. The output would remain at zero.
- B. The output would saturate to supply limits. ✓
- C. The output would be unpredictable.
- D. The gain would become unity.

Q32 Part B

Minimum gate required to implement XOR gate using NOR gate only are:

- A. 5 ✓
- B. 3
- C. 4
- D. 2

Q33 Part B

Which of the following is NOT the correct truth table output for an OR gate?

- A. 1 if either input is 1
- B. 1 if both inputs are 1
- C. 0 if both inputs are 0
- D. 0 if either of input is 1 ✓

Q34 Part B

The unit for specific gravity is _____.

- A. m/s^2
- B. g/cm^3
- C. kg/m^3
- D. no unit (dimensionless) ✓

Q35 Part B

Which type of circuit is used to amplify low-level signals, such as those from sensors or microphones, to a level that is sufficient to drive a load?

- A. Power amplifier
- B. Voltage amplifier ✓
- C. Operations-based Schmitt trigger
- D. Current amplifier

Q36 Part B

What is the output waveform of a half-wave rectifier considering input as a sinusoidal AC signal?

- A. Square wave
- B. Pulsating DC wave ✓
- C. Triangular wave
- D. Perfect sine wave

Q37 Part B

Which of the following types of pliers is used to shape loops in wires and to form curves in light metal strips?

- A. Flat nose pliers
- B. Round nose pliers ✓
- C. Slip-joint pliers
- D. End cutting pliers

Q38 Part B

A circuit consists of three resistors; 15 ohms, 10 ohms, and 20 ohms. The 15-ohm resistor is in series with the parallel combination of the 10-ohm and 20-ohm resistors. If a 24 V battery is applied across the circuit, what is the total current flowing through the circuit?

- A. 3.1 A
- B. 0.1 A
- C. 1.1 A ✓
- D. 2.1 A

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Q39 Part B

What happens when an object enters the sensing range of a capacitive proximity switch?

- A. The resistance of the circuit increases.
- B. The capacitance of the LC circuit changes. ✓
- C. The inductance of the LC circuit changes.
- D. The circuit stops oscillating permanently.

Q40 Part B

What should be the current rating of an induction type watt meter, in general, if a current transformer is used for measurement of power?

- A. 2 A
- B. 10 A
- C. 30 A
- D. 5 A ✓

Q41 Part B

What is the condition for a transistor to operate in the saturation region?

- A. The base-emitter junction is reverse-biased and the collector-emitter junction is forward-biased.
- B. The base-emitter junction is forward-biased and the collector-emitter junction is reverse-biased.
- C. The base-emitter junction is reverse-biased.
- D. The base-emitter junction is forward-biased and the collector-emitter junction is also forward-biased. ✓

Q42 Part B

A message signal made of multiple frequency components has a maximum frequency value of 4 KHz. Find the minimum sampling frequency required according to the sampling theorem.

- A. 8 KHz ✓
- B. 6 KHz
- C. 2 KHz
- D. 4 KHz

Q43 Part B

Why is it important for every person to follow safety procedures in the workplace?

- A. To increase overall production efficiency
- B. To minimise risks and avoid accidents ✓
- C. To reduce operational costs significantly
- D. To limit the need for frequent supervision

Q44 Part B

What is the advantage of giving heat treatment to a material?

- A. To decrease the melting point of the material
- B. To increase the weight of the material
- C. To change it from one element to another element
- D. To make surgical knives of sharp edges ✓

Q45 Part B

Which type of light source is commonly used in photoelectric switches?

- A. Fluorescent lamp
- B. Infrared LED ✓
- C. Halogen lamp
- D. Incandescent bulb

Q46 Part B

What is the effect of a decrease in base area region due to a rise in base width modulation on the collector current in a PNP transistor?

- A. The collector current becomes zero.
- B. The collector current increases. ✓
- C. The collector current remains the same.
- D. The collector current decreases.

Q47 Part B

What is the primary advantage of the bit-addressable area in the 8051's internal RAM?

- A. It allows bit-level access to data memory, providing precise control for applications like I/O operations. ✓
- B. It is used for storing large amounts of data in a compressed format.
- C. It increases the overall size of the internal RAM.
- D. It reduces the power consumption by allowing individual bits to be turned off.

Q48 Part B

How are flip flops used in digital counters?

- A. Flip-flops store the count value in binary form and change state with each clock pulse. ✓
- B. Flip-flops convert analogue input signals to a digital count.
- C. Flip-flops perform addition operations for the counter.
- D. Flip-flops generate a clock signal for the counter.

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Q49 Part B

The loading effect of a voltmeter is determined by _____.

- A. the input resistance of the voltmeter ✓
- B. the weight of the voltmeter
- C. the frequency of the circuit
- D. the size of the voltmeter display

Q50 Part B

Which of the following hand-operated drilling machines is used for drilling small diameter holes up to 6 mm?

- A. Electric hand drill
- B. Ratchet drilling machine
- C. Breast drilling machine
- D. Bevel gear type drilling machine ✓

Q51 Part B

Manganese is used as a shunt resistor for extension of range in an Ammeter because _____.

- A. manganese is a highly resistive material
- B. manganese is a superior conductor
- C. there won't be any variation in resistance due to temperature ✓
- D. there won't be any magnetic loss

Q52 Part B

In a lead-acid battery, what is the chemical composition of the material used for the positive plate during discharge?

- A. Sulphuric acid (H_2SO_4)
- B. Lead (Pb)
- C. Lead dioxide (PbO_2) ✓
- D. Lead sulfate ($PbSO_4$)

Q53 Part B

What is the typical sensitivity of commercially available LVDTs?

- A. 0.1 to 0.5 mV/mm
- B. 50 to 300 mV/mm ✓
- C. 5 to 10 mV/mm
- D. 0.5 to 5 mV/mm

Q54 Part B

What is the significance of beta (β) in a transistor?

- A. Current gain in common base configuration
- B. Power gain in common base configuration
- C. Power gain in common emitter configuration
- D. Current gain in common emitter configuration ✓

Q55 Part B

What should you do to ensure your personal safety at work?

- A. Wear personal protective equipment. ✓
- B. Work in a hurry without checking equipment.
- C. Ignore warning signs and instructions.
- D. Take risks to finish tasks quickly.

Q56 Part B

Select the correct statement regarding amplitude modulation.

- A. The modulation index of AM is inversely proportional to peak amplitude of the analog modulating signal and the carrier signal.
- B. The modulation index of AM is directly proportional to peak amplitude of the analog modulating signal and the carrier signal.
- C. The modulation index of AM is directly proportional to peak amplitude of the carrier signal and inversely proportional to the peak amplitude of the analog modulating signal.
- D. The modulation index of AM is directly proportional to peak amplitude of the analog modulating signal and inversely proportional to the peak amplitude of the carrier signal. ✓

Q57 Part B

What is the primary reason for electrical injuries when a person comes in contact with electrical equipment?

- A. Electrical equipment is not properly grounded.
- B. Current flows through the body causing harm. ✓
- C. Devices are used for too long.
- D. Electrical devices are too powerful.

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Q58 Part B

If the current flowing through a conductor is 5 A and the resistance of the conductor is 10 ohms, what will be the voltage across the conductor, according to Ohm's Law?

- A. 15 V
- B. 50 V ✓
- C. 5 V
- D. 10 V

Q59 Part B

Which of the following vices consists of a handle and a small collet chuck at one end?

- A. Hand vice
- B. Pin vice ✓
- C. Pipe vice
- D. Toolmaker's vice

Q60 Part B

Non-functional dimensions are _____.

- A. not essential for the function of the space or component ✓
- B. essential for the function of the space or component
- C. derived from the values of the related features of a drawing
- D. directly derived from the values given on a drawing

Q61 Part B

Which of the following configurations, commonly used in audio amplifiers, has a high current gain and a good voltage gain?

- A. Common Emitter (CE) ✓
- B. Common Base (CB)
- C. Common Drain (CD)
- D. Common Collector (CC)

Q62 Part B

To implement an OR gate using only NAND gates, how many NAND gates are required?

- A. 1
- B. 3 ✓
- C. 2
- D. 4

Q63 Part B

The purpose of copper shading rings in an induction type single phase energy meter is:

- A. to produce phase difference between flux and voltage in a pressure coil ✓
- B. to produce magnetic force
- C. to produce controlling force
- D. to produce eddy current damping

Q64 Part B

While using a pulse code modulator circuit, the output of the quantizer is fed to the _____.

- A. decoder
- B. encoder ✓
- C. mixer
- D. multiplexer

Q65 Part B

The pointer of the dynamo meter type power factor meter moved to the left of the centre. Which of the following does it indicate?

- A. Capacitive load and power factor lagging
- B. Inductive load and power factor lagging ✓
- C. Capacitive load and power factor leading
- D. Inductive load and power factor leading

Q66 Part B

Arrange the following steps in the correct order to draw an equilateral triangle with each side of 35 mm.

1. Join CA and CB.
2. Draw a line and mark AB 35 mm as the side of the triangle.
3. With radius AB and center A and B, draw arcs cutting at C.
4. ABC is the required triangle.

- A. 2, 3, 1, 4 ✓
- B. 1, 2, 4, 3
- C. 2, 1, 3, 4
- D. 3, 2, 1, 4

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Q67 Part B

Which of the following is an important safety measure during a power failure?

- A. Using candles for lighting
- B. Continuing to use equipment without verifying power status
- C. Ensuring all machines and electrical equipment are turned off ✓
- D. Ignoring alarm systems

Q68 Part B

The 8051 microcontroller supports the bit-addressable memory feature that is located at the memory locations ____.

- A. RAM addresses 0x20 to 0x2F ✓
- B. RAM addresses 0x0 to 0x1F
- C. RAM addresses 0x30 to 0x7F
- D. RAM addresses 0x80 to 0xFF

Q69 Part B

What is the purpose of an emergency evacuation plan?

- A. To ensure safe and orderly evacuation during emergencies ✓
- B. To avoid safety drills
- C. To increase productivity
- D. To allow workers to leave early

Q70 Part B

What is the sum output of a Full Adder when the inputs A = 1, B = 1, and Cin = 0?

- A. 1
- B. 2
- C. 0 ✓
- D. 3

Q71 Part B

In a JK Flip-Flop, if J = 0, K = 0 and the clock pulse occurs, what will happen to the output Q?

- A. The output will remain unchanged. ✓
- B. The output will be set to 1.
- C. The output will toggle.
- D. The output will be reset to 0.

Q72 Part B

If a 1 : 4 demux has an input of logic 1 and the select lines (S1, S0) are set to 01, what will be the output?

- A. Output 1 will be 1. ✓
- B. Output 2 will be 1.
- C. Output 3 will be 1.
- D. Output 0 will be 1.

Q73 Part B

How many minimum number of NAND gates will be required to implement the Boolean expression $F = A.\overline{B} + C$ using only NAND gate?

- A. 3
- B. 4 ✓
- C. 5
- D. 6

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Q74 Part B

$(\frac{3}{8}) + (\frac{5}{12})$

A. $\frac{17}{24}$

B. $\frac{19}{24}$ ✓

C. $\frac{8}{20}$

D. $\frac{7}{12}$

Q75 Part B

$\cos\theta$

A. $\frac{3}{5}$

B. $\frac{4}{5}$ ✓

C. $\frac{5}{4}$

D. $\frac{3}{4}$

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Part B — 75 Questions • Answer Key

Q1 Part B

A device operates at 240 V and consumes 480 W of power. What is the current flowing through the device?

- **A.** 2 A ✓
- **B.** 1 A
- **C.** 1.5 A
- **D.** 2.5 A

Q2 Part B

If a continuous time analog signal is sampled using a pulse train, then the spectrum of the PAM signal is a/an _____.

- **A.** triangular function
- **B.** sinc function ✓
- **C.** impulse function
- **D.** step function

Q3 Part B

What is an advantage of using RTDs (Resistance Temperature Detectors)?

- **A.** High sensitivity
- **B.** RTDs are linear over wide operating range ✓
- **C.** Not affected by shock and vibrations
- **D.** Lower cost than other temperature transducers

Q4 Part B

Which type of semiconductor material(s) is/are NOT doped with any impurities?

- **A.** Only intrinsic semiconductor ✓
- **B.** Doped semiconductor
- **C.** Both intrinsic and extrinsic semiconductors
- **D.** Only extrinsic semiconductor

Q5 Part B

Why does the pointer of a dynamo meter type power factor meter denote some reading even when load is not connected to the meter?

- **A.** Because there is no eddy current
- **B.** Due to the residual magnetism in the current coil
- **C.** Because there is no control mechanism ✓
- **D.** Due to the residual magnetism in the pressure coil

Q6 Part B

In a four band colour coded resistor, yellow colour in fourth band represents ____ tolerance.

- **A.** ±10%
- **B.** ±4% ✓
- **C.** ±3%
- **D.** ±5%

Q7 Part B

What is the maximum range of current to be measured by a multimeter for the red probe to be connected to the mA terminal of the multimeter?

- **A.** 1000 mA
- **B.** 200 mA ✓
- **C.** 100 mA
- **D.** 500 mA

Q8 Part B

Which of the following statements is true for the loading effect of a voltmeter?

- **A.** It is related to the sensitivity of the voltmeter and thus the voltmeter gives correct reading.
- **B.** It is related to the permittivity of the voltmeter and thus the voltmeter gives correct reading.
- **C.** It is related to the permittivity of the voltmeter and thus the voltmeter gives incorrect reading.
- **D.** It is related to the sensitivity of the voltmeter and thus the voltmeter gives incorrect reading. ✓

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Q9 Part B

What is the effect of doping on the Fermi level of a semiconductor for n-type doping?

A. Fermi level moves below the valence band.

B. Fermi level remains unchanged.

C. Fermi level moves closer to the valence band.

D. Fermi level moves closer to the conduction band. ✓

Q10 Part B

Which of the following statements is/are correct?
Statement I - The annealing process uses heat to reduce the hardness and increase the ductility and toughness of various steels, cast iron, and alloys.
Statement II - Quenching is a rapid cooling process that alters specific properties of materials by manipulating the cooling rate.

A. Statement (I) is correct but Statement (II) is incorrect.

B. Statement (I) and (II) both are correct. ✓

C. Statement (I) is incorrect but Statement (II) is correct.

D. Statement (I) and (II) both are incorrect.

Q11 Part B

In a 1 : 4 demux with active high outputs and an enable input, which condition will result in an output logic high at Output 3?

A. Enable = 1, Select = 10

B. Enable = 0, Select = 00

C. Enable = 1, Select = 11 ✓

D. Enable = 0, Select = 11

Q12 Part B

What is waste?

A. Natural resources for living organisms

B. Valuable substances for agriculture

C. Useful materials for industries

D. Unwanted or unusable materials ✓

Q13 Part B

What is the main function of a 1-to-4 demultiplexer?

A. To transmit a single input signal to one of the four outputs ✓

B. To combine multiple input signals into one output

C. To generate a new input signal for each output

D. To duplicate the input signal to all outputs

Q14 Part B

The amplitude and frequency of calibration signals of the oscilloscope are indicated on the _____ side of the panel.

A. back

B. right

C. front ✓

D. left

Q15 Part B

Which of the following parts of a hammer-head is used for shaping and forming work like riveting and bending?

A. Face

B. Eyehole

C. Pein ✓

D. Cheek

Q16 Part B

In an inverting amplifier circuit, if the input resistor (Rin) is increased while keeping the feedback resistor (Rf) constant, what happens to the voltage gain?

A. The gain decreases. ✓

B. The gain remains unchanged.

C. The gain saturates to +VSAT.

D. The gain increases.

Q17 Part B

Which of the following options represents the inputs of an RS Flip-Flop?

A. Data and Control

B. Reset and Set ✓

C. Input and Output

D. Clock and Enable

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Q18 Part B

Match the correct length and breadth of the Trimmed sizes of sheets.

Designation	Trimmed size
A. A0	P. 297 × 420
B. A1	Q. 420× 594
C. A2	R. 594 × 841
D. A3	S. 841 × 1189

A. A - R, B - S, C - Q, D - P

B. A - P, B - R, C - Q, D - S

C. A - S, B - R, C - P, D - Q

D. A - S, B - R, C - Q, D - P ✓

Q19 Part B

When drawing a curved line of a specific length in an engineering drawing, which tool is most appropriate for ensuring accuracy?

A. Protractor

B. Straightedge

C. French Curve ✓

D. Compass

Q20 Part B

What is the chemical effect that occurs in a battery during the charging process of a Lead Acid battery?

A. Lead reacts with sulphur to form lead sulphate

B. Water dissociation into hydrogen and oxygen

C. Lead sulphate decomposes into lead and sulphuric acid ✓

D. Sulphuric acid dissociates into hydrogen and sulphate ions

Q21 Part B

How do flip-flops play a role in the implementation of a finite state machine (FSM)?

A. Flip-flops generate the input signals required for state transitions.

B. Flip-flops are used for timing control in FSM-based circuits.

C. Flip-flops are used to store the state of the FSM and transition between states based on input conditions. ✓

D. Flip-flops provide the logic gates necessary for FSM output generation.

Q22 Part B

Which of the following is NOT a type of error in measurement?

A. Absolute error ✓

B. Systematic error

C. Gross error

D. Random error

Q23 Part B

When did India implement the Hazardous Wastes (Management and Handling) Rules to regulate the disposal and handling of hazardous waste?

A. 1987

B. 2000

C. 1989 ✓

D. 1982

Q24 Part B

Which of the following types of wooden mallets are used for general purpose work such as flattening and bending?

A. Bossing mallets

B. Side-faked mallets

C. Standard wooden mallets ✓

D. End-faked mallets

Q25 Part B

To make a carbon film resistor on a _____ tube, a thin layer of carbon is deposited.

A. ceramic ✓

B. glass

C. manganese

D. silicon carbide

Q26 Part B

In engineering drawing, what is defined as the path of a moving point with no thickness?

A. Angle

B. Curve

C. Point

D. Line ✓

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Q27 Part B

What does an optical pyrometer measure?

- A. The relative density of liquids
- B. The temperature of the surface ✓
- C. The volume of liquids
- D. The pressure of gases

Q28 Part B

What is the term used to describe the region in a P-N junction where electrons and holes recombine?

- A. Transition region
- B. Drift region
- C. P region
- D. Depletion region ✓

Q29 Part B

In a transistor, what happens to the current flowing through the Emitter and Collector regions when the Base-Emitter voltage is increased?

- A. The current through both the Emitter and Collector increases. ✓
- B. The current through both the Emitter and Collector decreases.
- C. The current through the Emitter decreases, while the current through the Collector increases.
- D. The current through the Emitter increases, while the current through the Collector decreases.

Q30 Part B

What happens when a voltmeter with low input resistance is used in a circuit?

- A. It eliminates the need for calibration.
- B. It blocks the current flow completely.
- C. It draws more current, affecting the circuit voltage. ✓
- D. It provides more accurate readings.

Q31 Part B

Which of the following is the key difference between a fuse and a circuit breaker?

- A. A fuse can be reset after tripping, while a circuit breaker must be replaced.
- B. A fuse is used for high-voltage circuits, while a circuit breaker is used for low-voltage circuits.
- C. A fuse is a mechanical device, while a circuit breaker is an electronic device.
- D. A fuse is a one-time-use device, while a circuit breaker can be reset and reused. ✓

Q32 Part B

If a machine has an efficiency of 80%, it means:

- A. the machine produces more output than input
- B. the machine has a velocity ratio and mechanical advantage both equal to 80
- C. the machine does not have any loss in input energy
- D. the machine loses 20% of the input ✓

Q33 Part B

What is the purpose of a shunt capacitor connected at the output of a full wave rectifier circuit?

- A. To control power dissipation
- B. To smooth out the output waveform ✓
- C. To regulate the output voltage
- D. To increase the output AC voltage

Q34 Part B

What is the primary principle behind the generation of electrical energy in a piezoelectric device?

- A. Conversion of thermal energy into electrical energy
- B. Conversion of chemical energy into electrical energy
- C. Conversion of light energy into electrical energy
- D. Conversion of mechanical stress into electrical energy ✓

Q35 Part B

Which of the following types of wooden mallets are used for hollowing panel beatings?

- A. Standard wooden mallets
- B. End-faked mallets
- C. Side-faked mallets
- D. Bossing mallets ✓

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Q36 Part B

What is the primary condition for oscillation in an electronic circuit?

- A. The loop gain must be greater than 1.
- B. The loop gain must be less than 1.
- C. The loop gain must be equal to 1. ✓
- D. The loop gain must be negative.

Q37 Part B

What is the primary function of the 8051 address bus?

- A. To provide power to the memory
- B. To select a specific memory location or I/O port ✓
- C. To control the flow of data
- D. To carry data between the CPU and memory

Q38 Part B

What is the blade length of the T1 'T' square, as per IS:1360-1989?

- A. 500 mm
- B. 1500 mm
- C. 700 mm
- D. 1000 mm ✓

Q39 Part B

In engineering drawing (lettering and numbering), a single stroke means that the _____.

- A. thickness of the line of the letter or number is obtained in one stroke of the pencil ✓
- B. thickness of the line of the letter or number is obtained in three strokes of the pencil
- C. thickness of the line of the letter or number is obtained in no strokes of the pencil
- D. thickness of the line of the letter or number is obtained in two strokes of the pencil

Q40 Part B

Which of the following logic gates are used to implement the Sum and Carry outputs in a half adder?

- A. NOR gate and OR gate
- B. OR gate and AND gate
- C. NAND gate and XOR gate
- D. XOR gate and AND gate ✓

Q41 Part B

Which of the following logic gates can be directly implemented using a single NOR gate?

- A. OR
- B. AND
- C. NOT ✓
- D. EXOR

Q42 Part B

What does a power factor of 0.8 lagging indicate in an AC circuit?

- A. The load is purely resistive.
- B. The load has inductive components. ✓
- C. The circuit has only capacitive elements.
- D. The load is resistive and capacitive.

Q43 Part B

What is the working principle of an inductive transducer?

- A. Converts physical motion into change in resistance
- B. Converts physical motion into change in capacitance
- C. Converts physical motion into change in impedance
- D. Converts physical motion into change in inductance ✓

Q44 Part B

Which of the following statements about a NOT gate is FALSE?

- A. A NOT gate has only one input and one output.
- B. A NOT gate can be used to invert the output of another logic gate.
- C. A NOT gate can be implemented using a NAND gate by connecting both inputs together.
- D. A NOT gate can be used to implement the AND operation directly. ✓

Q45 Part B

Which of the following is a common application of flip-flops in digital electronics?

- A. Signal amplification
- B. Data storage ✓
- C. Signal modulation
- D. Analog-to-digital conversion

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Q46 Part B

Why is it important to follow proper disposal procedures for industrial waste?

- A. To allow waste to decompose anywhere
- B. To reduce the number of trash bins needed
- C. To save time and effort in sorting waste
- D. To comply with environmental regulations and reduce pollution ✓

Q47 Part B

Which of the following is a better option to implement a NOT gate using NOR gate?

- A. Use one NOR gate and one NOT gate.
- B. Use one NOR gate with both inputs tied together. ✓
- C. Use two NOR gates in parallel.
- D. Use two NOR gates in series.

Q48 Part B

How is creeping in an energy meter prevented?

- A. By adding more turns in the current coil
- B. By using a braking magnet
- C. By increasing the supply voltage
- D. By providing a small hole in the rotating disk ✓

Q49 Part B

A transducer that does NOT require any power source for its operation is called:

- A. passive transducer
- B. digital transducer
- C. active transducer ✓
- D. smart transducer

Q50 Part B

Why is a level shifter used in the internal block diagram of an op-amp?

- A. To amplify high-frequency signals
- B. To shift the DC voltage level to match the output stage requirements ✓
- C. To reduce the gain
- D. To reduce power consumption

Q51 Part B

Which of the following statements correctly describes the placement and purpose of orientation marks on a drawing sheet?

1. Orientation marks are placed at two opposite corners of the drawing sheet to indicate the correct orientation on the drawing board.
2. Orientation marks consist of arrow heads placed across the frame, with one at the shorter side and one at the longer side, coinciding with the centering marks.
3. One of the orientation marks always points towards the draughtsman, indicating the direction in which the drawing sheet should be placed.
4. Orientation marks are used to mark the midpoint of each side of the drawing sheet for accurate centering.

- A. 1, 2, and 3 only
- B. 1 and 4 only
- C. 2 and 3 only ✓
- D. 1, 2, and 4 only

Q52 Part B

Which of the following is a key advantage of using Thyristors in power control applications?

- A. High frequency switching ✓
- B. High efficiency and low power loss
- C. Small size and low cost
- D. Low voltage handling capabilities

Q53 Part B

Which of the following is an example of a p-type semiconductor?

- A. Silicon doped with phosphorus
- B. Silicon doped with arsenic
- C. Silicon doped with boron ✓
- D. Germanium doped with phosphorus

Q54 Part B

Which of the following uses of wire gauge is INCORRECT?

- A. It measures the diameter of a wire.
- B. It does not help determine how much current a wire can carry. ✓
- C. Using the wrong wire gauge can damage appliances and electronic devices.
- D. It is used in electrical installations, welding and other applications.

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Q55 Part B

What is the primary function of the 8051's pins 29 (PSEN)?

- A. To provide an external clock signal
- B. To enable external programme memory access ✓
- C. To enable external data memory access
- D. To reset the microcontroller

Q56 Part B

Select the most suitable electronic circuit used to obtain sampled signal as an output if the input is a continuous time sinusoidal analog signal.

- A. Electronic switch ✓
- B. Amplifier
- C. Low pass filter
- D. Oscillator

Q57 Part B

What force (effort) will be required to push a load, initially at rest, of mass 500 g, so that at a distance of 20 m, its final velocity is 20 m/sec [Assume that there is no friction and 'g' = 10 m/s^2].

- A. 5 J
- B. 10 N
- C. 5 N ✓
- D. 10 J

Q58 Part B

Which of the following punches is used to make deeper witness marks on scribed lines and make it easier for the drill to start correctly?

- A. Solid punch
- B. Centre punch ✓
- C. Pin punch
- D. Prick punch

Q59 Part B

What is the typical input impedance of a BJT CE voltage amplifier?

- A. Low impedance (less than 10 Ω)
- B. Very high impedance (greater than 1000 kΩ)
- C. Medium impedance (1 kΩ to 10 kΩ) ✓
- D. High impedance (greater than 100 kΩ)

Q60 Part B

Which of the following statements is correct about a protractor?

Statements:
1. A protractor can be used to measure angles from both sides.
2. A protractor is typically made of a rigid metal material.

- A. Neither statement is true
- B. Only statement 2 is true
- C. Only statement 1 is true ✓
- D. Both statements are true

Q61 Part B

What is the ideal input impedance of an operational amplifier?

- A. Infinite ✓
- B. Zero
- C. 10 kΩ
- D. 1 MΩ

Q62 Part B

What type of oscillator uses an inductive voltage divider as the feedback network?

- A. Crystal oscillator
- B. RC oscillator
- C. Hartley oscillator ✓
- D. Colpitts oscillator

Q63 Part B

In frequency modulation, what is the modulation index defined as?

- A. Ratio of maximum frequency deviation to modulating frequency ✓
- B. Ratio of modulating frequency to maximum frequency deviation
- C. Ratio of carrier frequency to maximum frequency deviation
- D. Ratio of maximum frequency deviation to carrier frequency

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Q64 Part B

What is the significance of alpha (α) in a transistor?

- A. Current gain in common base configuration ✓
- B. Power gain in common emitter configuration
- C. Current gain in common emitter configuration
- D. Power gain in common base configuration

Q65 Part B

The discharge transistor in an IC 555 timer operates in which mode?

- A. High-impedance mode
- B. Linear mode
- C. Active mode
- D. Saturation and cutoff mode ✓

Q66 Part B

What is the purpose of the tank circuit in a Colpitts oscillator?

- A. To provide earthing stability to oscillation
- B. To provide a stable supply voltage
- C. To provide a resonant circuit that determines the frequency of oscillation ✓
- D. To make heat loss zero for the oscillator

Q67 Part B

How does the 8051 microcontroller use its address bus in a typical memory-mapped I/O system?

- A. It acts as a buffer between the microcontroller and external devices.
- B. It determines the direction of data transfer.
- C. It stores configuration data for peripheral devices.
- D. It carries memory addresses for accessing external I/O devices and memory. ✓

Q68 Part B

What does 'Dark On' operation mean in a photoelectric switch?

- A. The photoelectric switch remains off regardless of light interruption.
- B. The photoelectric switch is energised when the beam of light reaches the receiver.
- C. The photoelectric switch is energised when the beam of light is interrupted. ✓
- D. The photoelectric switch is always on when no object is present.

Q69 Part B

Minimum number of NOR gate required to implement AND gate using only NOR gate are:

- A. 2
- B. 5
- C. 3 ✓
- D. 4

Q70 Part B

If the coefficient of linear expansion of a material is 2×10^{-5} $°C^{-1}$, what does it mean?

- A. The material expands by 2×10^{-5} times its original area per degree Celsius
- B. The material expands by 2×10^{-5} times its original volume per degree Celsius
- C. The material expands by 2×10^{-5} times its original length per degree Celsius ✓
- D. The material always increases by 2×10^{-5} kg when temperature is increased by 1°C

Q71 Part B

Pencils are rated in engineering drawings based on the _____.

- A. hardness or softness of the lead ✓
- B. colour of the lead
- C. durability of the lead
- D. shape of the lead

Q72 Part B

In an 8051-based system, which bus is used to distinguish between memory access and I/O port access?

- A. Address bus
- B. Interrupt bus
- C. Control bus ✓
- D. Data bus

Q73 Part B

Which of the following is a fundamental unit?

- A. newton
- B. metre ✓
- C. pascal
- D. watt

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Q74 Part B

Which of the following punch marks is used for the correct location and seating of the divider point?

A. Centre punch marks of 30°

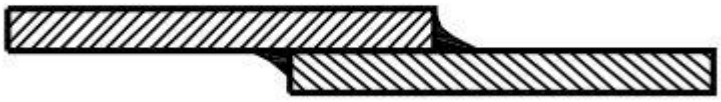
B. Centre punch marks of 60°

C. Prick punch marks of 120°

D. Prick punch marks of 30° ✓

Q75 Part B

Identify the type of brazed joint shown below.



A. Joggle Lap

B. Simple Lap ✓

C. Strapped Lap

D. Butted Flange

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Part B — 75 Questions • Answer Key

Q1 Part B

The SI unit of 'ultimate stress' is _____.

- A. pascal (Pa) ✓
- B. newton (N)
- C. newton per meter (N/m)
- D. joule per square meter (J/m^2)

Q2 Part B

Why do cars have treaded tyres?

- A. To increase friction and grip on the road ✓
- B. To reduce weight
- C. To decrease friction
- D. To increase speed

Q3 Part B

A rectangular floor measuring 10 m × 8 m is to be tiled. If each tile covers 0.25 m^2, how many tiles are needed?

- A. 200
- B. 300
- C. 320 ✓
- D. 250

Q4 Part B

Which of the following statements is/are true about Non-Functional Dimensions (NF) in engineering drawing?

Statement 1: Non-functional Dimensions are shown without limits, as they do not affect the functionality of the component or space.
Statement 2: Non-Functional Dimensions are typically used for reference purposes only, and do not impact the assembly or performance of the component or space.

- A. Only statement 2 is true ✓
- B. Only statement 1 is true
- C. Both statements are true
- D. Neither statement is true

Q5 Part B

Why is a braking system used in an energy meter?

- A. To maintain a uniform rotation proportional to power consumption ✓
- B. To decrease the friction in the moving parts
- C. To reduce the power consumption of the meter itself
- D. To increase the speed of the rotating disk

Q6 Part B

An LVDT has a secondary voltage of 5 V for a displacement of ±10 mm. Determine the output voltage for a core displacement of 6 mm.

- A. 1.5 V
- B. 0.5 V
- C. 3 V ✓
- D. 4.5 V

Q7 Part B

What will happen if resistance is measured in a powered circuit?

- A. The multimeter may get damaged. ✓
- B. The resistance value will be higher than expected.
- C. The test leads will heat up.
- D. The reading will be accurate.

Q8 Part B

What is the purpose of the two voltage coils in a power factor meter?

- A. To measure power factor at two different frequencies
- B. To create a rotating field for phase angle measurement ✓
- C. To improve measurement accuracy in DC circuits
- D. To measure active and reactive power

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Q9 Part B

In a logic circuit, three SPST (Single Pole Single Throw) switches are used to implement a logic gate. The switches are connected in series. What is the output of the circuit if all switches are closed?

A. Undefined

B. 1 ✓

C. The output will depend on the type of gate used

D. 0

Q10 Part B

What will be the output of a Zero Crossing Detector if the input signal is a triangular wave instead of a sine wave?

A. The output will be a triangular waveform.

B. The output will still be a square wave but maybe with unequal high and low periods. ✓

C. The output will have multiple transitions at each crossing.

D. The output will remain at zero.

Q11 Part B

What is the working principle of an analogue vibrating reed frequency meter?

A. Electromagnetic resonance ✓

B. Electrostatic attraction

C. Piezoelectric effect

D. Thermal expansion

Q12 Part B

An angle greater than 180 degrees is referred to as _____.

A. a right angle

B. an acute angle

C. an obtuse angle

D. a reflex angle ✓

Q13 Part B

For which of the following calipers, a screw and nut are provided for opening and closing the caliper legs?

A. Spring joint calipers ✓

B. Firm joint calipers

C. Simple calipers

D. Leg and point calipers

Q14 Part B

Which of the following actions is a part of the emergency response team's responsibilities during an active emergency?

A. Preparing reports on emergency incidents

B. Rescuing persons in immediate danger ✓

C. Conducting routine safety checks

D. Scheduling regular evacuation drills

Q15 Part B

What is the primary reason for the heating effect in a conductor when an electric current passes through it?

A. The electric field in the conductor causes heat generation.

B. The movement of electrons causes heat generation. ✓

C. The conductor absorbs heat from the surrounding environment.

D. The movement of protons causes heat generation.

Q16 Part B

The colour code of a resistor to be measured is yellow, violet, red and silver for the first, second, third and fourth bands, respectively. What is the maximum value of the resistor?

A. 6,130 ohms

B. 7,210 ohms

C. 4,230 ohms

D. 5,170 ohms ✓

Q17 Part B

What is the function of the resistor connected between Pin 7 (discharge) and Vcc in a monostable multivibrator?

A. It provides a feedback path.

B. It limits the current through the IC.

C. It sets the output frequency.

D. It controls the charging time of the capacitor. ✓

Q18 Part B

What is the primary reason for conducting a vehicle road test?

A. To test how fast the vehicle can go

B. To avoid the need for inspections

C. To increase fuel efficiency

D. To ensure the vehicle is functioning safely and correctly ✓

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Q19 Part B

What is the primary goal of the 5S concept?

A. To replace traditional safety measures

B. To increase the number of safety regulations

C. To improve workplace organisation and efficiency ✓

D. To eliminate the need for maintenance

Q20 Part B

What is the impact of using a buffered parallel I/O port compared to a non-buffered one in terms of data transfer speed and reliability?

A. Buffered I/O ports only work in unidirectional data transfer applications.

B. Non-buffered I/O ports are faster but less reliable.

C. Buffered I/O ports provide faster data transfer with a lower risk of data loss or corruption. ✓

D. Buffered I/O ports are slower but more reliable.

Q21 Part B

A 100-mm centre-punch could have a 10-mm diameter body and a 6-mm diameter point ground to an angle of _____.

A. 120°

B. 90° ✓

C. 60°

D. 30°

Q22 Part B

What is the function of a 4-to-1 multiplexer?

A. It multiplies four data inputs to one output.

B. It routes four data inputs to one output without selection.

C. It selects one of four select lines based on two data inputs.

D. It selects one of four data inputs based on two select lines. ✓

Q23 Part B

What is the Boolean expression for the sum output of a full adder with inputs A, B and Carry-in (Cin)?

A. A*B*Cin

B. A·B+A'.B

C. A⊕B⊕Cin ✓

D. A+B+Cin

Q24 Part B

In a monostable multivibrator using IC 555, what triggers the output pulse?

A. Connecting a capacitor to ground

B. Resetting the flip-flop manually

C. Applying a pulse with voltage going below 1/3 Vcc ✓

D. Applying a high voltage of value equal to Vcc at pin 5

Q25 Part B

Which option shows the correct answer when 27°C is converted to the kelvin scale?

A. – 300 K

B. 246 K

C. 300 K ✓

D. – 246 K

Q26 Part B

What is the term used to describe programs that distinguish between uppercase and lowercase letters, treating "yes" and "YES" as different inputs?

A. Case-insensitive

B. Numerical

C. Case-sensitive ✓

D. Alphabetical

Q27 Part B

What is the primary function of a 1:4 demux?

A. To combine multiple signals into one output

B. To direct one input signal to four output lines ✓

C. To store input signals for later use

D. To amplify an input signal

Q28 Part B

What is the output of an RS flip-flop when Set = 0 and Reset = 0?

A. Q = 1, Q' = 0

B. Q = 0, Q' = 1

C. No change in output ✓

D. Invalid state

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Q29 Part B

Which of the following conversions are correct?

A. 1 L = 1000 dm^3 and 1 mL = 1000 cm^3

B. 1000 L = 1 dm^3 and 1000 mL = 1 cm^3

C. 1 L = 1 dm^3 and 1 mL = 1 cm^3 ✓

D. 1000 L = 1 dm^3 and 1 mL = 1000 cm^3

Q30 Part B

In a positive feedback oscillator, what is the effect of increasing the gain of the amplifier (A) on the frequency of oscillation?

A. The frequency of oscillation becomes unstable.

B. The frequency of oscillation remains unchanged. ✓

C. The frequency of oscillation increases.

D. The frequency of oscillation decreases.

Q31 Part B

What is the primary purpose of preventive maintenance?

A. To increase the workload of employees

B. To reduce unexpected equipment failures ✓

C. To delay repairs until breakdowns occur

D. To eliminate the need for regular inspections

Q32 Part B

Which of the following screwdrivers has cross-shaped tips that are unlikely to slip from the cruciform slots in Philips recessed head screws?

A. Stumpy screwdriver

B. Offset screwdriver

C. Cross-recess screwdriver ✓

D. Ratchet screwdriver

Q33 Part B

Match the following designations of sheets with their respective trimmed sizes in length and breadth.

Designation Trimmed Size
A) A0 P) 297 × 420
B) A1 Q) 420 × 594
C) A2 R) 594 × 841
D) A3 S) 841 × 1189

A. A-S ; B-R ; C-Q ; D-P ✓

B. A-Q ; B-R ; C-S ; D-P

C. A-S ; B-P ; C-Q ; D-R

D. A-P ; B-R ; C-Q ; D-S

Q34 Part B

What is the purpose of the feedback network in an oscillator circuit?

A. To filter out unwanted frequencies

B. To provide positive feedback to sustain oscillations ✓

C. To provide impedance matching

D. To provide a stable output voltage

Q35 Part B

How can you extend a half adder to handle multi-bit binary addition?

A. By using multiple half adders in series

B. By combining half adders and full adders ✓

C. By adding more XOR gates

D. By cascading half adders with carry propagation

Q36 Part B

What is the effect of temperature changes on the frequency stability of a crystal oscillator?

A. The frequency stability remains constant with changing temperature.

B. The frequency stability increases with increasing temperature.

C. The frequency stability decreases with increasing temperature. ✓

D. The frequency stability is affected by temperature changes, but the effect is negligible.

Q37 Part B

_____ recommend(s) 20 mm wide margins for sheet sizes AO and A1 in engineering drawings.

A. Borders and frames: SP: 46 (2003) ✓

B. Geographic coordinate systems

C. Custom grids

D. Grid reference system

Q38 Part B

Which of the following is the primary advantage of using parallel I/O ports over serial I/O ports?

A. They are faster due to simultaneous transmission of data bits. ✓

B. They require fewer wires for data transmission.

C. They consume less power.

D. They are more commonly used in modern systems than serial I/O ports.

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Q39 Part B

A 200 V voltmeter has an internal resistance of 20 kΩ. To extend its range to 1,000 V, what should be the value of the series multiplier resistance?

- A. 120 kΩ
- B. 100 kΩ
- C. 200 kΩ
- D. 80 kΩ ✓

Q40 Part B

The accuracy of measurement by a try square is about:

- A. 0.02 mm per 10 mm length
- B. 0.001 mm per 10 mm length
- C. 0.004 mm per 10 mm length
- D. 0.002 mm per 10 mm length ✓

Q41 Part B

What is the main advantage of using a Colpitts oscillator over a Hartley oscillator in terms of frequency stability?

- A. The frequency stability of both oscillators is dependent on the values of the components used.
- B. The Hartley oscillator has a more stable frequency than the Colpitts oscillator due to its inductive voltage divider.
- C. The Colpitts oscillator has a more stable frequency than the Hartley oscillator due to its capacitive voltage divider. ✓
- D. The frequency stability of both oscillators is the same.

Q42 Part B

Electrical energy is measured in which unit?

- A. Joule
- B. Ampere-hour (Ah)
- C. Watt
- D. Kilowatt-hour (kWh) ✓

Q43 Part B

How much is the energy gap between the valence band and conduction band of silicon (Si)?

- A. 3.5 eV
- B. 1.1 eV ✓
- C. 2.5 eV
- D. 0.5 eV

Q44 Part B

What does 'OL' or '1' indicate when measuring voltage with a digital multimeter?

- A. The test leads are shorted.
- B. The voltage exceeds the selected range. ✓
- C. The battery is low.
- D. The voltage is too low.

Q45 Part B

What is the purpose of the resistor 'R' in an RC oscillator?

- A. To provide a means of stabilising the supply votlage
- B. To provide a path for the output signal
- C. To provide a means of adjusting the frequency of oscillation ✓
- D. To provide a means of filtering out all frequencies

Q46 Part B

What is the gain of a voltage amplifier if the input voltage is 2 V and the output voltage is 10 V?

- A. 10
- B. 20
- C. 2
- D. 5 ✓

Q47 Part B

What is the typical output of a Zero Crossing Detector using an op-amp if the input applied is a sinusoidal ac signal?

- A. A sinusoidal wave
- B. A triangular wave
- C. A trapezoidal wave
- D. A square wave ✓

Q48 Part B

Which of the following points is NOT relevant to a LVDT?

- A. Prone to more friction ✓
- B. Less rugged
- C. Low power consumption
- D. Low sensitivity

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Q49 Part B

Sine bars are used when a high degree of accuracy less than _____ is needed for measuring angles.

A. 1 degree
B. 30 degrees
C. 1 minute ✓
D. 30 minutes

Q50 Part B

If the multimeter reading shows '0.00' when measuring current, what could be the possible reason?

A. The fuse in the multimeter is blown.
B. The battery of the multimeter is low.
C. The circuit has no current flow. ✓
D. The probes are reversed.

Q51 Part B

Which of the following care and maintenance of a marking table is INCORRECT?

A. The marking table should be protected from damage.
B. The marking table should be protected from rust.
C. After use, the marking table should be cleaned with a soft cloth.
D. The surface of the marking table should not be given a thin layer of oil. ✓

Q52 Part B

A multimeter's internal fuse is rated at 250 mA. If a circuit draws 1 A, what will happen when measuring current?

A. The multimeter will automatically adjust to the correct range.
B. The fuse will blow, and no current will be measured. ✓
C. The reading will be lower than expected.
D. The multimeter will read 1A accurately.

Q53 Part B

Which of the following is a primary difference between a primary and a secondary electrochemical cell?

A. A secondary cell produces more energy than a primary cell.
B. A primary cell can be recharged, while a secondary cell cannot be recharged.
C. A primary cell cannot be recharged, while a secondary cell can be recharged. ✓
D. There is no difference between primary and secondary cells.

Q54 Part B

In a JK flip-flop, if J = 0, K = 1 and the current state is Q = 1, what will be the next output after one clock pulse?

A. The output will be undefined.
B. Q will toggle to 0; Q' will toggle to 1
C. Q will remain 1; Q' will remain 0
D. Q will be reset to 0; Q' will be set to 1 ✓

Q55 Part B

What is the function of a half-wave rectifier in a power supply?

A. To convert AC voltage to DC voltage ✓
B. To amplify the output voltage
C. To filter the output voltage
D. To regulate the output voltage

Q56 Part B

How can an AND gate be implemented using only NAND gates?

A. By connecting two NAND gates in Parallel
B. By connecting OR gate to NAND gate
C. By inverting the output of a NAND gate ✓
D. By connecting the inputs of a NAND gate to logic 1

Q57 Part B

Which type of circuit is used to convert both the half-cycles of an AC waveform into a pulsating DC waveform?

A. Clamper circuit
B. Clippers circuit
C. Half-wave rectifier
D. Full-wave rectifier ✓

Q58 Part B

What is the primary function of the Program Status Word (PSW) SFR in the 8051?

A. To store the address of the next instruction
B. To store arithmetic flags and register bank select bits ✓
C. To enable external interrupts
D. To control the timer modes

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Q59 Part B

For a JK flip-flop, if the J input is held at 1 and the K input is held at 0, what will happen?

- **A.** The output will be set to 1. ✓
- **B.** The output will always be 1.
- **C.** The output will always be 0.
- **D.** The output will toggle on each clock pulse.

Q60 Part B

What is the main advantage of using a crystal oscillator over an RC oscillator?

- **A.** Lower output amplitude
- **B.** Higher output amplitude
- **C.** Higher frequency stability ✓
- **D.** Lower frequency stability

Q61 Part B

Which of the following is INCORRECT about line standard?

- **A.** More accurate due to line thickness ✓
- **B.** Subject to parallax error
- **C.** Quick measurements over a wide range
- **D.** Used to measure the distance between two engraved lines

Q62 Part B

Natural rubber is soft at high temperatures and brittle at low temperatures; hence raw rubber is heated with sulphur and other additives at a temperature range between 373 – 415 K to make it strong. This process is called _____ of rubber.

- **A.** vulcanisation ✓
- **B.** molding
- **C.** latex
- **D.** extrusion

Q63 Part B

Identify the circuit most suitable for demodulating or processing the PAM signal at the receiver end.

- **A.** Oscillator
- **B.** Low pass filter ✓
- **C.** Attenuator
- **D.** Mixer

Q64 Part B

What is the output state of a JK flip-flop when J = 0 and K = 0?

- **A.** Output Q = 1, Q' = 0
- **B.** No change in output ✓
- **C.** Output Q = 1, Q' = 1
- **D.** Output Q = 0, Q' = 1

Q65 Part B

Match the following sensor selection criteria with their correct definitions.

Criteria	Definition
I. Operating range	A. Chosen to allow sufficient outpu
II. Sensitivity	B. Chosen to maintain range requi
III. Frequency response	C. Flat over entire desired range

- **A.** I-B, II- A, III-C ✓
- **B.** I-A, II- C, III-B
- **C.** I-A, II- B, III-C
- **D.** I-B, II- C, III-A

Q66 Part B

In a circuit with a NTC type thermistor and a fixed resistor connected in series connected to a DC power supply, what will happen to the output voltage if there is a rise in temperature?

- **A.** The output voltage will increase. ✓
- **B.** The output voltage will remain constant.
- **C.** The output voltage will fluctuate depending on the resistor value.
- **D.** The output voltage will decrease.

Q67 Part B

Which of the following is a key electrical safety tip in a workshop?

- **A.** Operate machines with wet hands
- **B.** Ignore frayed wires if the device is still working
- **C.** Use water to clean electrical panels
- **D.** Ensure electrical equipment is properly grounded ✓

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Q68 Part B

Which of the following is a major risk associated with fuel spillage?

- A. Fire hazards and environmental contamination ✓
- B. Better lubrication for workshop floors
- C. Increased productivity
- D. Reduced need for ventilation

Q69 Part B

A statement and conclusion for pictorial drawing are given below. Determine the logical relationship between them.

Statement: Pictorial drawings are three-dimensional and provide a visual representation of an object.

Conclusion: Therefore, pictorial drawings are useful for describing the shape of a piece part or component.

- A. The conclusion does not logically follow from the statement.
- B. The conclusion is partially supported by the statement.
- C. The conclusion is unrelated to the statement.
- D. The conclusion logically follows from the statement. ✓

Q70 Part B

What is the primary purpose of shielding in electrical cables?

- A. To increase the voltage capacity of the cable
- B. To increase the current-carrying capacity of the cable
- C. To protect the cable from external electromagnetic interference ✓
- D. To prevent heat loss from the cable

Q71 Part B

Which parameter of the carrier pulse is impacted during pulse width modulation of pulse train due to continuous time varying analog signal?

- A. Both amplitude and frequency
- B. Duty cycle ✓
- C. Only amplitude
- D. Only frequency

Q72 Part B

How can an OR gate be implemented using only NAND gates?

- A. Use three NAND gates - 2 as NOT gates and 1 for the NAND operation. ✓
- B. Use one NAND gate - 1 for the OR operation directly.
- C. Use two NAND gates - 1 as NOT gates and 1 for the OR operation.
- D. Use four NAND gates - 2 as NOT gates and 2 for the NAND operation.

Q73 Part B

The use of the modulation process helps in shifting the given message signal frequencies to a _____ range where it can occupy only _____ percentage of the spectrum.

- A. very low frequency; high
- B. very high frequency; high
- C. very high frequency; very small ✓
- D. very low frequency; very small

Q74 Part B

Which of the following is the size of the internal RAM in the 'Standard 8051' microcontroller?

- A. 1 kilo bytes
- B. 256 bytes
- C. 512 bytes
- D. 128 bytes ✓

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Q75 Part B

The given equation represents the relationship between temperature and resistance of an RTD.

$$R_t = R_{ref}(1 + \alpha \Delta t)$$

What does Δt represent?

A. Difference between operating and environmental temperature

B. Operating temperature

C. Reference temperature

D. Difference between operating and reference temperature ✓

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Part B — 75 Questions • Answer Key

Q1 Part B

Which of the following statements about title block is/are true?

Statement 1: The title block is situated in the bottom right-hand corner of the drawing sheet.
Statement 2: The contents of the title block are standardised and cannot be modified to suit individual company needs.

A. Both statements are false
B. Statement 1 is false, but statement 2 is true
C. Statement 1 is true, but statement 2 is false ✓
D. Both statements are true

Q2 Part B

Where should the probes be connected when measuring voltage in a circuit?

A. In series with the circuit
B. Across the circuit breaker only
C. In parallel with the circuit ✓
D. Across the fuse only

Q3 Part B

Which of the following materials can be detected by an inductive proximity switch?

A. Glass
B. Paper
C. Stainless steel ✓
D. Wood

Q4 Part B

Which of the following metals has the lowest melting point?

A. Mercury ✓
B. Iron
C. Lead
D. Gold

Q5 Part B

In a series circuit, three resistors of 10 ohms, 20 ohms, and R ohms are connected in series with a 12 V battery. What is the value of resistance R if current flowing in the circuit is 0.2 A?

A. 10 ohms
B. 20 ohms
C. 30 ohms ✓
D. 40 ohms

Q6 Part B

Which of the following types of chisels is used for separating metals after chain drilling?

A. Cross-cut chisel
B. Flat chisel
C. Web chisel ✓
D. Diamond point chisel

Q7 Part B

What is the primary disadvantage of using a digital frequency counter in high-frequency measurements?

A. Increased power consumption
B. Inability to measure AC voltages
C. Limited resolution at very high frequencies due to counting limitations ✓
D. High sensitivity to temperature variations

Q8 Part B

Which of the following is the main property of the OR gate?

A. It produces a high output only when all inputs are low.
B. It produces a low output only when all inputs are high.
C. It produces a high output when at least one input is high. ✓
D. It produces a low output when at least one input is low.

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Q9 Part B

What happens to the conductivity of a semiconductor when it is heated?

- A. Conductivity decreases
- B. Conductivity becomes zero
- C. Conductivity remains constant
- D. Conductivity increases ✓

Q10 Part B

What is the advantage of using a differential amplifier in a voltage amplifier circuit?

- A. It decreases the power consumption of the amplifier.
- B. It increases the common-mode rejection ratio (CMRR) of the amplifier. ✓
- C. It increases the gain of the amplifier.
- D. It increases the noise sensitivity of the amplifier.

Q11 Part B

Which of the following colours is commonly used for caution signs?

- A. Blue
- B. Yellow ✓
- C. Red
- D. Green

Q12 Part B

How can a NOT gate be implemented using a 2-input NOR gate?

- A. By connecting both inputs of the NOR gate to the same input signal ✓
- B. By connecting two NOR gates in parallel
- C. It is not possible to create a NOT gate using a NOR gate.
- D. By connecting two NOR gates in series

Q13 Part B

How can stability be improved in a practical differentiator circuit using an op-amp?

- A. By increasing the gain of the op-amp
- B. By adding a resistor in series with the capacitor of the input path ✓
- C. By decreasing the input voltage
- D. By removing the capacitor

Q14 Part B

Which SFR in the 8051 is used to control the serial communication mode and baud rate?

- A. SMOD
- B. TCON
- C. SCON ✓
- D. TMOD

Q15 Part B

What is the effect of increasing the base current on the collector current in a transistor amplifier?

- A. The collector current increases. ✓
- B. The collector current becomes zero.
- C. The collector current decreases.
- D. The collector current remains constant.

Q16 Part B

The wave set of hacksaw teeth set has a pitch of _____.

- A. 2.0 mm
- B. 0.5 mm
- C. 0.8 mm ✓
- D. 1.0 mm

Q17 Part B

What is the correct way to connect a multimeter when measuring current in a circuit?

- A. In series with the circuit ✓
- B. Across the power supply terminals
- C. Across a resistor
- D. In parallel with the circuit

Q18 Part B

Which of the following information is necessary to construct a rectangle?

- A. Length of two adjacent sides ✓
- B. Length of one side and the area of the rectangle
- C. Only the length of one side
- D. Only the length of the diagonal

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Q19 Part B

Why should the highest voltage range be selected first when measuring an unknown voltage?

- A. To save the battery power
- B. To increase the measurement accuracy
- C. To improve the response time of the display
- D. To protect the multimeter from damage ✓

Q20 Part B

Which type of semiconductor has an excess of holes?

- A. p-type semiconductor ✓
- B. n-type semiconductor
- C. Intrinsic semiconductor
- D. Pure conductor

Q21 Part B

Which of the following configurations is commonly used in Darlington amplifier circuits due to its high current gain and low input impedance?

- A. Common Emitter with a Common Base stage (CE-CB) ✓
- B. Common Base (CB)
- C. Common Collector (CC)
- D. Common Emitter (CE)

Q22 Part B

Who is authorised to conduct road tests on workshop vehicles?

- A. Only trained and certified personnel ✓
- B. Visitors to the workshop
- C. Any employee
- D. The company accountant

Q23 Part B

What is the purpose of negative feedback in a voltage amplifier?

- A. To increase the gain of the amplifier
- B. To increase the noise sensitivity of the amplifier
- C. To decrease the gain of the amplifier ✓
- D. To decrease the bandwidth of the amplifier

Q24 Part B

Select the correct statement regarding an antenna application.

- A. A biconical antenna is not used for UHF signal.
- B. It is possible to cover the VHF and UHF bands with the one antenna. ✓
- C. It is impossible to cover the VHF and UHF bands with the one antenna.
- D. A Yagi-Uda antenna does not contain a reflector and dipole as its component.

Q25 Part B

Find the lateral surface area of a cube with side length 5 cm.

- A. 125 cm^2
- B. 150 cm^2
- C. 200 cm^2
- D. 100 cm^2 ✓

Q26 Part B

How many comparators are present in the internal block diagram of IC 555?

- A. One
- B. Two ✓
- C. Four
- D. Three

Q27 Part B

Which of the following statements is NOT correct for using scribers?

- A. Scriber points are very sharp, so they are to be handled very carefully.
- B. While scribing lines, the scriber is used like a pencil.
- C. Do not put the scriber in your pocket.
- D. Place a cork on the point when in use to prevent accidents. ✓

Q28 Part B

What precaution should be taken when measuring resistance in a circuit with capacitors?

- A. Reverse the test leads multiple times.
- B. Use the highest resistance range.
- C. Measure resistance in AC mode.
- D. Discharge the capacitors before testing. ✓

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Q29 Part B

What does 'Light On' operation mean in a photoelectric switch?

A. The photoelectric switch is energised when the beam of light is interrupted.

B. The photoelectric switch is always on, even when an object is detected.

C. The photoelectric switch remains off regardless of light interruption.

D. The photoelectric switch is energised when the beam of light reaches the receiver. ✓

Q30 Part B

What is the primary function of a NOT gate in a digital circuit?

A. To combine multiple input signals

B. To amplify the input signal

C. To invert the input signal ✓

D. To delay the input signal

Q31 Part B

What happens when both the Set (S) and Reset (R) inputs of an RS Flip-Flop are 0?

A. The output remains unchanged. ✓

B. The output is reset to 0.

C. The flip-flop is in an invalid state.

D. The output is set to 1.

Q32 Part B

For your safety at work, which of the following should be ensured?
1. All the required protective clothing and equipment are used.
2. Training and instruction necessary for performing tasks safely have been received.

A. Only statement 1

B. Neither statement 1 nor 2

C. Only statement 2

D. Both statements 1 and 2 ✓

Q33 Part B

Which of the following calipers are used for marking lines, parallel to inside and outside edges and for locating the centre of round bars?

A. Spring joint calipers

B. Leg and point calipers ✓

C. Simple calipers

D. Firm joint calipers

Q34 Part B

If a potential transformer has a turns ratio of 100 : 1 and the primary voltage is 11 kV, what will be the secondary voltage?

A. 110 V ✓

B. 11 V

C. 1.1 V

D. 1,100 V

Q35 Part B

What happens when both the J and K inputs of a JK Flip-Flop are HIGH (1)?

A. The output toggles. ✓

B. The output is set to 1.

C. The output is reset to 0.

D. The output remains the same.

Q36 Part B

What is the SI unit of 'volume'?

A. Litres

B. Cubic centimetre

C. Cubic metre ✓

D. Millilitres

Q37 Part B

Which of the following 'V' blocks will have one 'V' groove and two grooves (slots) on either side for clamping in two positions?

A. Double level single groove 'V' block

B. Matched pair 'V' block

C. Single level double groove 'V' block ✓

D. Single level single groove 'V' block

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Q38 Part B

Which of the following is true about Port 0 in the 8051 microcontrollers?

- A. Port 0 pins are not programmable.
- B. Port 0 can be used for both input and output operations, but requires external pull-ups. ✓
- C. Port 0 is exclusively used for input only.
- D. Port 0 cannot be used for output operations.

Q39 Part B

When creating 10 mm single-stroke capital letters in vertical style, what does the 10 mm distance between horizontal parallel lines represent?

- A. Letter width
- B. Letter height ✓
- C. Stroke thickness
- D. Interline spacing

Q40 Part B

In the 8051 microcontroller, what is the memory address range reserved for Special Function Registers (SFRs)?

- A. 20h to 2Fh
- B. 0000h to FFFFh
- C. 80h to FFh ✓
- D. 00h to 7Fh

Q41 Part B

For an 'N' bit uniform quantizer, the number of quantization levels is given by:

- A. 2N
- B. 2^N ✓
- C. 2+N
- D. N/2

Q42 Part B

What is the typical temperature range of a mercury-based clinical thermometer?

- A. 0°C to 100°C
- B. 35°C to 42°C ✓
- C. 0°C to 50°C
- D. −10°C to 110°C

Q43 Part B

What is the advantage of using a transistor as a switch in a digital circuit?

- A. High voltage gain
- B. High current gain
- C. Low sensitivity
- D. High switching speed ✓

Q44 Part B

What are the two main outputs of a half adder?

- A. Sum and Carry ✓
- B. Carry and Borrow
- C. Sum and Difference
- D. Sum and Quotient

Q45 Part B

A voltmeter with a resistance of 10,000 ohms is connected across a circuit that has a voltage of 50 V. What is the current flowing through the voltmeter?

- A. 2 mA
- B. 1 mA
- C. 5 mA ✓
- D. 4 mA

Q46 Part B

When passing stationary vehicles, keep a watch on _____ who may come out suddenly from the front of the stationary vehicle. While overtaking, it should be done on the _____ side. Always keep a good _____ between your vehicle and others.

- A. cyclists; left; interval
- B. vehicles; right; gap
- C. drivers; left; space
- D. pedestrians; right; distance ✓

Q47 Part B

Which of the following is the primary reason why copper is widely used as a conductor in electrical wiring?

- A. Copper has low resistance and high conductivity. ✓
- B. Copper has a low melting point.
- C. Copper is abundant and inexpensive.
- D. Copper has high resistance to electricity.

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Q48 Part B

The SI unit of temperature is/are _____.

A. both kelvin and celsius

B. celsius

C. kelvin ✓

D. fahrenheit

Q49 Part B

Which of the following is a common calibration method for electrical measuring instruments?

A. Approximation method

B. Estimation method

C. Null method ✓

D. Guesswork method

Q50 Part B

A 100-mm prick punch with a 7-mm diameter body could have a 2.5-mm diameter point ground to an angle of _____.

A. 90°

B. 30° ✓

C. 120°

D. 45°

Q51 Part B

Why is an electrodynamometer-type power factor meter preferred in AC circuits?

A. It can measure both single-phase and three-phase power factors. ✓

B. It does not require voltage connections.

C. It can measure DC power factor accurately.

D. It has a faster response time.

Q52 Part B

Which of the following is the correct implementation of the Boolean equation F = (A·B) + (C·D) using only AND and OR gates?

A. One AND gate and two OR gates

B. Two OR gates followed by one AND gate

C. Two AND gates followed by one OR gate ✓

D. One AND gate followed by one OR gate

Q53 Part B

A voltage amplifier has a gain of 20 and an input resistance of 1 kΩ. If the input signal is 0.1 V, what is the output voltage and the current drawn from the input signal source?

A. Output voltage = 2 V, Input current = 3 mA

B. Output voltage = 2 V, Input current = 1 mA

C. Output voltage = 5 V, Input current = 0.1 mA

D. Output voltage = 2 V, Input current = 0.1 mA ✓

Q54 Part B

Which of the following types of errors can be minimised by proper instrument calibration?

A. Random error

B. Gross error

C. Systematic error ✓

D. Observational error

Q55 Part B

What is the purpose of using a transistor in a relay driver circuit?

A. To filter out noise

B. To amplify the input signal

C. To switch on the relay coil ✓

D. To provide high input impedance in ON state

Q56 Part B

An AND gate is used in a digital circuit to enable a certain function. Under what condition will the function be enabled?

A. When all the inputs are low

B. When any one of the inputs is high

C. When all the inputs are high ✓

D. When any one of the inputs is low

Q57 Part B

What is a DC LVDT?

A. DC LVDT does not exist.

B. It operates on AC power supply and has an AC output.

C. It operates on DC power supply and has a DC output. ✓

D. It operates on DC power supply and has an AC output.

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Q58 Part B

Match the following types of lines with their correct descriptions according to their orientation and characteristics.

Description	Type of Line
A. A line that is neither parallel to a horizontal plane nor perpendicular to it.	1. Horizontal line
B. A line that is perpendicular to horizontal lines.	2. Vertical line
C. A line that changes its direction continuously.	3. Inclined line
D. A line that is parallel to a horizontal plane.	4. Curved line

A. A - 1, B - 2, C - 3, D - 4

B. A - 2, B - 3, C - 4, D - 1

C. A - 3, B - 2, C - 4, D - 1 ✓

D. A - 2, B - 1, C - 4, D - 3

Q59 Part B

Which of the following statements is INCORRECT about end standard?

A. It measures the distance between two parallel flat surfaces.

B. Faces are subject to wear.

C. It is slower but more accurate.

D. It is used to measure the distance between two engraved lines. ✓

Q60 Part B

The generation of an electrostatic field is a characteristic of which type of sensor?

A. Ultrasonic sensor

B. Capacitive proximity sensor ✓

C. Optical sensor

D. Inductive proximity sensor

Q61 Part B

What does 'traceability' in calibration mean?

A. The calibration process is linked to an internationally recognised standard ✓

B. The ability to track past measurements

C. The instrument's accuracy depends on user experience

D. The ability to repeat measurements consistently

Q62 Part B

How does the 8051's internal RAM organisation affect the efficiency of interrupt service routines (ISRs) that require saving and restoring register values?

A. The general-purpose RAM area allows for large amounts of data to be pushed onto the stack, making ISRs more versatile.

B. The multiple register banks allow for switching to a different bank, reducing the need to push and pop registers, thus increasing efficiency. ✓

C. The lack of hardware stack pointer in the internal RAM limits the efficiency of ISRs.

D. The bit-addressable area allows for fast saving and restoring of individual flags, improving ISR efficiency.

Q63 Part B

In a logic circuit, two inputs A and B are applied to an AND gate, and the output of the AND gate is connected to the input of a NOT gate. If the inputs A and B are both at logic 0, what will be the output of the entire circuit?

A. Undefined

B. 0

C. 1 ✓

D. 2

Q64 Part B

What is the minimum age for employment in factories or mines or other hazardous employment, according to Article 24 of the Indian Constitution?

A. 14 years ✓

B. 12 years

C. 16 years

D. 18 years

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Q65 Part B

If the length of a resistor is doubled, what happens to its resistance, assuming all other factors remain constant?

- **A.** The resistance is doubled. ✓
- **B.** The resistance remains the same.
- **C.** The resistance is halved.
- **D.** The resistance quadruples.

Q66 Part B

Which type of line is used to represent hidden edges or surfaces in a technical drawing, as per BIS SP 46-2003?

- **A.** Continuous thin line
- **B.** Continuous thick line
- **C.** Dashed thin line ✓
- **D.** Chain thin line

Q67 Part B

In a PCM pulse code modulator, if the output of the encoder is 1 Byte sequence, then determine the number of bits of the encoder and number of quantization levels required by the quantizer.

- **A.** 16 and 64, respectively
- **B.** 16 and 128, respectively
- **C.** 8 and 256, respectively ✓
- **D.** 8 and 64, respectively

Q68 Part B

Convert 8.5% into a decimal.

- **A.** 0.85
- **B.** 8.5
- **C.** 0.085 ✓
- **D.** 85

Q69 Part B

Which of the following terms in the 5S concept refers to making a habit of maintaining the established procedures?

- **A.** Shine
- **B.** Set
- **C.** Sort
- **D.** Sustain ✓

Q70 Part B

The input stage of an operational amplifier is typically a/an:

- **A.** voltage regulator
- **B.** differential amplifier ✓
- **C.** oscillator
- **D.** buffer circuit

Q71 Part B

A basic inverting integrator using OP-AMP is unstable at low frequencies. What modification is commonly made to stabilise it?

- **A.** Add a resistor in parallel with the capacitor in the feedback path ✓
- **B.** Increase the op-amp gain
- **C.** Add a resistor in series with the capacitor in the feedback path
- **D.** Use a low-power op-amp

Q72 Part B

Which of the following Boolean expressions represents the behaviour of a 3-input AND gate?

- **A.** A + B + C
- **B.** A * B * C ✓
- **C.** (A * B) + C
- **D.** (A + B) * C

Q73 Part B

What is the significance of the cut-off region in the output characteristic of a transistor?

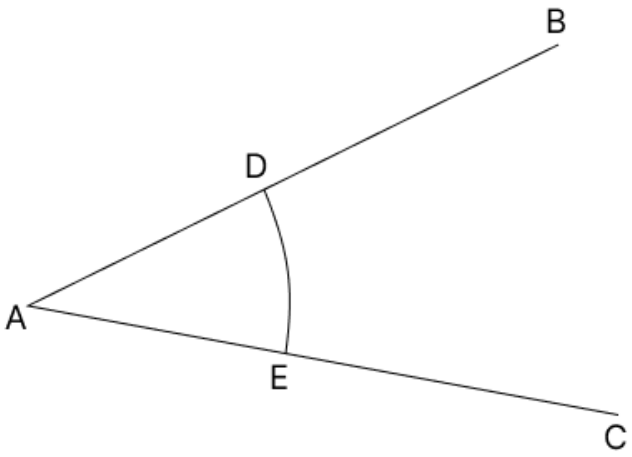
- **A.** It indicates the region where the transistor is fully turned off. ✓
- **B.** It indicates the minimum collector-emitter voltage.
- **C.** It indicates the maximum collector current.
- **D.** It indicates the region where the transistor is fully turned on.

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Q74 Part B

In the process of bisecting angle BAC in the given figure, why do we draw arcs from points D and E?



A. To find midpoint AB

B. To mark equal lengths

C. To intersect line AC

D. To intersect above A ✓

Q75 Part B

Which logic gate configuration can be used to implement the Boolean function $F = \overline{[A.(B+C)]}$?

A. NOT gate, followed by one AND gate and one OR gate

B. One AND gate, followed by a NOT gate

C. One AND gate, followed by a NOT gate and one OR gate

D. One OR gate, followed by one AND gate and one NOT gate ✓

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Part B — 75 Questions • Answer Key

Q1 Part B

What is the advantage of giving heat treatment to a material?

- A. To decrease the melting point of the material
- B. To increase the weight of the material
- C. To change it from one element to another element
- D. To make surgical knives of sharp edges ✓

Q2 Part B

For what purpose are pins and clips used in engineering drawings?

- A. To transfer dimensions and dividing lines into a number of equal parts
- B. To draw horizontal lines, parallel lines and to guide/hold the set squares
- C. To fasten the drawing sheet on to the drawing board firmly so that it does not shake ✓
- D. To support the drawing paper/tracing paper for making drawings

Q3 Part B

Which of the following files is used for filing narrow grooves and angles above 10°?

- A. Knife-edge file ✓
- B. Half round file
- C. Square file
- D. Triangular file

Q4 Part B

How are the steering arms set to achieve the Ackerman angle?

- A. At right angle to spindle body
- B. Slanted away from vehicle centre
- C. Slanted towards vehicle centre ✓
- D. Parallel to spindle body

Q5 Part B

In a lead-acid battery, what is the chemical composition of the material used for the positive plate during discharge?

- A. Sulphuric acid (H_2SO_4)
- B. Lead (Pb)
- C. Lead dioxide (PbO_2) ✓
- D. Lead sulfate ($PbSO_4$)

Q6 Part B

Rivets are typically made from what type of material?

- A. Elastic materials
- B. Brittle materials
- C. Rigid materials
- D. Ductile materials ✓

Q7 Part B

What is the use of a jack?

- A. To lift and support a vehicle during repairs ✓
- B. To provide additional braking power
- C. To increase the vehicle's speed
- D. To start the vehicle's engine

Q8 Part B

Which of the following hand-operated drilling machines is used for drilling small diameter holes up to 6 mm?

- A. Electric hand drill
- B. Ratchet drilling machine
- C. Breast drilling machine
- D. Bevel gear type drilling machine ✓

Q9 Part B

Which of the following is an important safety measure during a power failure?

- A. Using candles for lighting
- B. Continuing to use equipment without verifying power status
- C. Ensuring all machines and electrical equipment are turned off ✓
- D. Ignoring alarm systems

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Q10 Part B

If the current flowing through a conductor is 5 A and the resistance of the conductor is 10 ohms, what will be the voltage across the conductor, according to Ohm's Law?

A. 15 V

B. 50 V ✓

C. 5 V

D. 10 V

Q11 Part B

In an F-shaped combustion chamber, which of the following parts is generally NOT located on the extended side of the combustion chamber in a petrol engine?

A. Inlet valve

B. Spark plug

C. Outlet valve

D. Camshaft ✓

Q12 Part B

Which of the following materials CANNOT be welded using the CO_2 welding process?

A. Aluminium

B. Carbon steel

C. Magnesium ✓

D. Stainless steel

Q13 Part B

Which of the following is NOT the correct characteristic of an I-head combustion chamber used in a petrol engine?

A. I-head has higher surface to volume ratio and therefore there is a high amount of heat loss. ✓

B. I-head is superior to an L-head engine at high compression ratios.

C. I-head has a higher volumetric efficiency from larger valves or valve lifts.

D. I-head has less flame travel length and hence there is a greater freedom from knock.

Q14 Part B

Which type of gear applies in a car when the engine is running and the clutch is engaged, and the clutch shaft gear drives the drive gear of the lay shaft and thus lay shaft also rotates and the main shaft remains stationary as no gears in main shaft are engaged with lay shaft gears?

A. Top gear

B. First gear

C. Neutral gear ✓

D. Reverse gear

Q15 Part B

Oxidation in oxy-acetylene welding can lead to _____.

A. improved ductility

B. better weld appearance

C. porosity and oxide defects ✓

D. increased strength

Q16 Part B

The tandem master cylinder is also known as _____.

A. a dual-line brake ✓

B. an electric brake

C. a manual brake

D. a single-line brake

Q17 Part B

What is a key advantage of using MOSFETs in electronic circuits compared to other types of transistors?

A. High frequency response

B. High input impedance and low power consumption ✓

C. Ability to handle higher voltages and currents than BJTs

D. Ability to amplify both AC and DC signals

Q18 Part B

A circular hole of radius 3 cm is cut from a rectangular sheet of dimensions 12 cm × 10 cm. Find the remaining area.

(Take π = 3.14)

A. 100 cm^2

B. 91.74 cm^2 ✓

C. 95.86 cm^2

D. 75.74 cm^2

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Q19 Part B

What is the correct name of the top portion of the valve that interacts with the camshaft during operation of the engine?

- A. Tip ✓
- B. Puppet
- C. Mushroom
- D. Butterfly

Q20 Part B

What is the primary reason for electrical injuries when a person comes in contact with electrical equipment?

- A. Electrical equipment is not properly grounded.
- B. Current flows through the body causing harm. ✓
- C. Devices are used for too long.
- D. Electrical devices are too powerful.

Q21 Part B

When does a vacuum booster create a vacuum?

- A. When the engine is off, and brake is applied
- B. When the engine is running, and the brake is not applied ✓
- C. When the fuel level is low
- D. When the brake is applied

Q22 Part B

What is the main purpose of a carburetor in a gasoline engine?

- A. Storing fuel for the engine
- B. Atomising and vaporising ✓
- C. Igniting the fuel-air mixture
- D. Cooling the engine

Q23 Part B

A type of internal spring force expands a piston ring based on the design and properties of the material used. It is determined by _____.

- A. forced piston ring gap
- B. compressed spring ring gap
- C. compressed ring gap
- D. free piston ring gap ✓

Q24 Part B

What is the purpose of an emergency evacuation plan?

- A. To ensure safe and orderly evacuation during emergencies ✓
- B. To avoid safety drills
- C. To increase productivity
- D. To allow workers to leave early

Q25 Part B

In which part of the IC engine are the cylinder liners fitted?

- A. Piston
- B. Cylinder head
- C. Cylinder block ✓
- D. Crankcase

Q26 Part B

Non-functional dimensions are _____.

- A. not essential for the function of the space or component ✓
- B. essential for the function of the space or component
- C. derived from the values of the related features of a drawing
- D. directly derived from the values given on a drawing

Q27 Part B

What is the limiting value of compression ratio on which usually a petrol engine works?

- A. Compression ratio = 6
- B. Compression ratio = 8 ✓
- C. Compression ratio = 22
- D. Compression ratio = 14

Q28 Part B

Which of the following organisations is responsible for enforcing workplace safety regulations in India?

- A. World Health Organization (WHO)
- B. Food and Drug Administration (FDA)
- C. Directorate General of Factory Advice Service and Labour Institutes (DGFASLI) ✓
- D. Environmental Protection Agency (EPA)

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Q29 Part B

Why is it important for every person to follow safety procedures in the workplace?

A. To increase overall production efficiency

B. To minimise risks and avoid accidents ✓

C. To reduce operational costs significantly

D. To limit the need for frequent supervision

Q30 Part B

The unit for specific gravity is _____.

A. m/s^2

B. g/cm^3

C. kg/m^3

D. no unit (dimensionless) ✓

Q31 Part B

Arrange the following steps in the correct order to draw an equilateral triangle with each side of 35 mm.

1. Join CA and CB.
2. Draw a line and mark AB 35 mm as the side of the triangle.
3. With radius AB and center A and B, draw arcs cutting at C.
4. ABC is the required triangle.

A. 2, 3, 1, 4 ✓

B. 1, 2, 4, 3

C. 2, 1, 3, 4

D. 3, 2, 1, 4

Q32 Part B

What will happen if the new oil filter is not soaked in oil before installing it when changing the engine oil?

A. Filter clogs

B. Engine overheats

C. Engine noise increases

D. Oil level drops ✓

Q33 Part B

Which of the following instruments is used for the measurement of piston ring end gap in the cylinder?

A. Micrometer

B. Vernier caliper

C. Dial gauge

D. Feeler gauge ✓

Q34 Part B

After brazing, hammering the joint serves to _____.

A. reduce the melting point

B. increase the strength

C. check for leakages and remove flux ✓

D. improve the appearance

Q35 Part B

Which of the following vices consists of a handle and a small collet chuck at one end?

A. Hand vice

B. Pin vice ✓

C. Pipe vice

D. Toolmaker's vice

Q36 Part B

Which of the following statements is correct about engine valves?

A. The camshaft and its associated parts control the flame of sparks during ignition of the enigne.

B. The valve's head is perfectly positioned at a 30-45 degree angle that ideally fits with the valve seat, creating a firm seal. ✓

C. Valves with their conical shapes control the flow of the entry of gasses into an engine.

D. Poppet or mushroom valves are commonly found in two stroke engines for their remarkable features.

Q37 Part B

A drawing instrument box is used to carry all _____ instruments.

A. drawing ✓

B. screening

C. drilling

D. casting

Q38 Part B

What is the main difference between a double piston with step bore and a double piston with straight bore wheel cylinder?

A. The step bore has pistons with different diameters. ✓

B. The step bore operates without hydraulic pressure.

C. The step bore does not use brake shoes.

D. The step bore uses a single piston.

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Q39 Part B

Which of the following instruments works on the principle of the magnification of the small movement of the plunger or stylus that is converted into a rotary motion of the pointer on a circular scale?

A. Pressure gauge
B. Micrometer
C. Vernier caliper
D. Dial test indicator ✓

Q40 Part B

In what kind of applications are spot, seam, and projection welding frequently used?

A. Joining thick steel plates
B. Welding dissimilar metals
C. Joining thin sheets in the manufacturing of vehicles and machinery ✓
D. Creating intricate metal sculptures

Q41 Part B

A circuit consists of three resistors; 15 ohms, 10 ohms, and 20 ohms. The 15-ohm resistor is in series with the parallel combination of the 10-ohm and 20-ohm resistors. If a 24 V battery is applied across the circuit, what is the total current flowing through the circuit?

A. 3.1 A
B. 0.1 A
C. 1.1 A ✓
D. 2.1 A

Q42 Part B

A vital component of a car's clutch system positioned on the clutch housing, which slides along a hollow shaft and moves through the clutch fork aided by hydraulic or cable pressure, is known as:

A. cushion spring
B. clutch release bearing ✓
C. lever
D. fork arm

Q43 Part B

Which of the following type of lubricants are used as solid particles?

A. Solid wax
B. Grease
C. Graphite ✓
D. Silica

Q44 Part B

Which of the following steps is INCORRECT for micrometer adjustment?

A. Insert the large end of wrench in the hole on the external cylinder.
B. Use the wrench to rotate the cylinder until zero is aligned.
C. Find set screw and loosen it.
D. Open the micrometer using friction stop. ✓

Q45 Part B

In a diesel engine, heat is supplied at which of the following thermodynamic processes?

A. At constant pressure process ✓
B. At constant volume process
C. At constant temperature process
D. At adiabatic compression process

Q46 Part B

When selecting a sheet size for an original drawing, what should be the primary consideration?

A. The standard size of the drawing office.
B. The clarity and resolution required. ✓
C. The orientation of the drawing (horizontal or vertical).
D. The size of the reproduction.

Q47 Part B

Which of the following options is correct when the pressure plate position is such that the cushion spring of clutch is NOT compressed?

A. It is in the engagement phase.
B. It is in the partial engagement phase.
C. The clutch is closed.
D. The clutch is open. ✓

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Q48 Part B

Gaskets, seals and spacers are made using:

- A. centre punch
- B. hollow punch ✓
- C. pin punch
- D. prick punch

Q49 Part B

When using a multimeter to measure current, which of the following is correct?

- A. The multimeter is connected directly to the power source.
- B. The multimeter is connected in series with the load. ✓
- C. The multimeter is connected only across resistive components.
- D. The multimeter is connected in parallel with the load.

Q50 Part B

When measuring the resistance of a resistor using an ohmmeter, what does a reading of zero resistance indicate?

- A. The resistor is functioning normally.
- B. The resistor is open-circuited.
- C. The resistor is short-circuited. ✓
- D. The ohmmeter is malfunctioning.

Q51 Part B

Which of the following systems is used to transmit engine torque to the driving wheels to drive a vehicle on the road?

- A. Transmission system ✓
- B. Steering system
- C. Differential gear mechanism
- D. Four bar chain mechanism

Q52 Part B

Which of the following parts of a file is the part fitted to the tang for holding the file?

- A. Tip or Point
- B. Handle ✓
- C. Edge
- D. Tang

Q53 Part B

Which of the following types of lube oils are used in airline industries?

- A. Grease and bee wax lubricants
- B. Natural petroleum lubricants
- C. Synthetic lubricants ✓
- D. Biodiesel lubricants

Q54 Part B

Which of the following metals is NOT used for manufacturing of piston bearing?

- A. Copper
- B. Lead
- C. Cast iron ✓
- D. Silicon

Q55 Part B

What should you do to ensure your personal safety at work?

- A. Wear personal protective equipment. ✓
- B. Work in a hurry without checking equipment.
- C. Ignore warning signs and instructions.
- D. Take risks to finish tasks quickly.

Q56 Part B

In a velocity-time graph, the negative slope represents ____.

- A. retardation ✓
- B. displacement
- C. acceleration
- D. distance

Q57 Part B

What should be done if oil or grease is found on the clutch lining?

- A. Clean with petrol
- B. Tighten the pressure spring
- C. Replace new lining ✓
- D. Apply more grease

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Q58 Part B

Which of the following methods helps the easier assembly and disassembly by providing a more efficient way to fit the connecting rod around the crankshaft journal, particularly in tight engine compartment, in an internal combustion engine?

A. Small end trimming linearly on a connecting rod
B. Big end split orthogonally on a connecting rod
C. Big end split obliquely on a connecting rod ✓
D. Small end union linearly on a connecting rod

Q59 Part B

The percentage of energy loss per unit deformation from friction happening inside the rubber, which creates heat build-up in the rubber, and is measured as in terms of the temperature, is known as _____.

A. creep
B. resilience
C. stress-strain test
D. hysteresis ✓

Q60 Part B

Which of the following types of pliers is used to shape loops in wires and to form curves in light metal strips?

A. Flat nose pliers
B. Round nose pliers ✓
C. Slip-joint pliers
D. End cutting pliers

Q61 Part B

What is the result of not providing adequate ignition timing advance when using weak mixtures?

A. Better fuel vaporisation
B. Increased power output
C. Lower fuel consumption
D. Engine overheating and misfiring ✓

Q62 Part B

A tube-like structure lies between a piston and cylinder wall that regulates the flow of air and fuel inside the cylinder. This valve has a small hole in the side that promptly lines up with the hole of a cylinder. This valve is known as:

A. butterfly valve
B. sleeve valve ✓
C. valve in form of port
D. poppet valve

Q63 Part B

A mechanism that can split the power of a propeller shaft to the rear axle and produce variation in the speed of rear wheels when the vehicle takes a turn is called a/an:

A. integral unit
B. automatic clutch unit
C. torque convertor
D. differential unit ✓

Q64 Part B

Which of the following elements is used in lubrication oil as an anti-wear additive?

A. Copper (Cu) ✓
B. Barium (Ba)
C. Boron (B)
D. Calcium (Ca)

Q65 Part B

Which of the following designs have the advantage of effectively preventing contact slippage and axial misplacement of the connecting rod cover and connecting rod body?

A. Straight cut design
B. Oval cut design
C. Obliquely cut design ✓
D. Curvilinear cut design

Q66 Part B

What is the main function of a master cylinder in a braking system?

A. To build up hydraulic pressure to operate the brakes ✓
B. To measure the brake fluid level
C. To control the engine speed
D. To absorb vibrations from the road

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Q67 Part B

What is the name of the tool used for force amplification?

- A. Wheel
- B. Allen key
- C. Screw driver
- D. Lever ✓

Q68 Part B

According to BIS SP 46-2003, which of the following applications is correctly represented by a chain-thin line in engineering drawings?

- A. Center lines ✓
- B. Hidden edges
- C. Dimension lines
- D. Visible edges

Q69 Part B

The temperature of the air after compression stroke in a CI engine is:

- A. less than ambient temperature
- B. ambient temperature only
- C. high but not enough to ignite the fuel as spark plug is used to ignite the fuel
- D. high enough to auto-ignite the fuel without any external ignition source ✓

Q70 Part B

Which of the following statements is INCORRECT about the four-stroke diesel engine?

- A. Cycles in both petrol and diesel engines consist of suction, compression, ignition, expansion and exhaust.
- B. In C.I. engines, air-fuel mixture is sucked during the stroke and the fuel is injected in the cylinder near the end of the compression stroke. ✓
- C. In C.I. engines, only air is sucked during the stroke and the fuel is injected in the cylinder near the end of the compression stroke.
- D. The operation of C.I. engines (or diesel engines) is practically the same as those of S.I. engines.

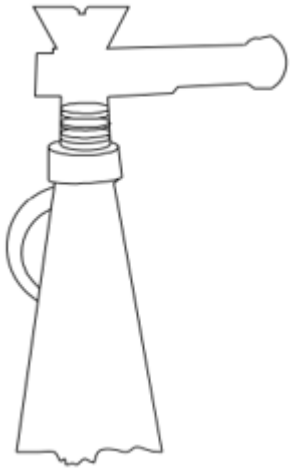
Q71 Part B

What should be done if the air filter element of the dry-type air cleaner is clogged?

- A. Clean it with compressed air
- B. Wash it with detergent
- C. Inspect it visually
- D. Replace it ✓

Q72 Part B

Based on the given diagram, identify the type of jack depicted.



- A. Heavy duty bottle type hydraulic jack
- B. Trolley type hydraulic jack
- C. Light weight screw jack (manual type lifting jack) ✓
- D. Axle stand

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Q73 Part B

$\cos\theta$

A. $\frac{3}{5}$

B. $\frac{4}{5}$ ✓

C. $\frac{5}{4}$

D. $\frac{3}{4}$

Q74 Part B

Which of the following is the correct expression for power developed at the crankshaft in terms of mechanical efficiency?

Consider BP - brake power, IP - Indicated power

A. $\text{BP} = \text{IP} \times \text{Mechanial efficiency}$ ✓

B. $\text{IP} = \text{Mechanical efficiency} \times \text{PB}$

C. $\text{BP} = \frac{(\text{Mechanical efficiency} + \text{IP})}{100}$

D. $\text{BP} = \frac{\text{Mechanical Efficiency}}{\text{IP}}$

Q75 Part B

$(\frac{3}{8}) + (\frac{5}{12})$

A. $\frac{17}{24}$

B. $\frac{19}{24}$ ✓

C. $\frac{8}{20}$

D. $\frac{7}{12}$

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Part B 75 Questions • Answer Key

Q1 Part B

A torsion bar is a steel bar operated by:

- A. both compressive stress and twisting stress
- B. both tensile and compressive stresses
- C. both shear strain and longitudinal strain
- D. both twisting and shear stresses ✓

Q2 Part B

Which of the following statements is NOT correct about the steering system in vehicles?

- A. It should multiply the turning effort applied on the steering wheel by the driver.
- B. It should minimise the turning effort applied on the steering wheel by the driver by use of overdamped damper. ✓
- C. The function of the steering system is to convert the rotary movement of the steering wheel into the angular turn of the front wheels.
- D. It should not transmit the shocks of the road surface encountered by wheels to the driver hands.

Q3 Part B

What happens when a tyre is under-inflated?

- A. The tyre grips the road better.
- B. The centre of the tyre wears out faster.
- C. The tyre remains unaffected.
- D. The tyre wears out faster at the edges. ✓

Q4 Part B

A device operates at 240 V and consumes 480 W of power. What is the current flowing through the device?

- A. 2 A ✓
- B. 1 A
- C. 1.5 A
- D. 2.5 A

Q5 Part B

Which of the following is a fundamental unit?

- A. newton
- B. metre ✓
- C. pascal
- D. watt

Q6 Part B

Which of the following types of shafts allows easy implementation of a 4 valve per cylinder configuration?

- A. Single overhead cam setup
- B. Dual overhead cam setup ✓
- C. Crankshaft of multicylinder engine setup
- D. Cam and follower rocker arm setup

Q7 Part B

Where is the secondary filter installed in the fuel system?

- A. Before the fuel tank
- B. Inside the fuel tank
- C. On the outlet side of the primary filter ✓
- D. After the feed pump

Q8 Part B

What is waste?

- A. Natural resources for living organisms
- B. Valuable substances for agriculture
- C. Useful materials for industries
- D. Unwanted or unusable materials ✓

Q9 Part B

What happens when the accelerator pedal is pressed in the main circuit of a carburetor?

- A. Vacuum decreases
- B. Throttle opens ✓
- C. Air velocity decreases
- D. Main jet closes

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Q10 Part B

Pencils are rated in engineering drawings based on the _____.

- A. hardness or softness of the lead ✓
- B. colour of the lead
- C. durability of the lead
- D. shape of the lead

Q11 Part B

Which of the following parts of a hammer-head is used for shaping and forming work like riveting and bending?

- A. Face
- B. Eyehole
- C. Pein ✓
- D. Cheek

Q12 Part B

What is the chemical effect that occurs in a battery during the charging process of a Lead Acid battery?

- A. Lead reacts with sulphur to form lead sulphate
- B. Water dissociation into hydrogen and oxygen
- C. Lead sulphate decomposes into lead and sulphuric acid ✓
- D. Sulphuric acid dissociates into hydrogen and sulphate ions

Q13 Part B

A constant mesh gearbox usually comes with how many manual transmission configurations?

- A. It comes with a 5-speed 1-reverse manual transmission configuration.
- B. It comes with a 4-speed 1-reverse manual transmission configuration. ✓
- C. It comes with a 3-speed 1-reverse manual transmission configuration.
- D. It comes with a 6-speed 1-reverse manual transmission configuration.

Q14 Part B

What happens when the brake pedal is pressed in a pedal-assisted type brake?

- A. The power cylinder is activated. ✓
- B. The engine shuts down.
- C. The clutch is released.
- D. The accelerator is engaged.

Q15 Part B

Which of the following is an example of a p-type semiconductor?

- A. Silicon doped with phosphorus
- B. Silicon doped with arsenic
- C. Silicon doped with boron ✓
- D. Germanium doped with phosphorus

Q16 Part B

The exhaust gases in a two stroke engine are driven out by:

- A. fresh charge of fuel entering the cylinder nearly at the end of the compression stroke
- B. fresh air entering the casing nearly at the end of the suction stroke
- C. fresh charge of fuel entering the cylinder nearly at the end of the working stroke ✓
- D. left out charge of fuel from exhaust entering the cylinder nearly at the end of the working stroke

Q17 Part B

As per the SAE viscosity rating, which of the following numbers reflects thicker oil that better resists viscosity breakdown in the summer season?

- A. 0W to 5W
- B. −6W to −70W
- C. 100W to 160W
- D. 40W to 50W ✓

Q18 Part B

Why is it important to follow proper disposal procedures for industrial waste?

- A. To allow waste to decompose anywhere
- B. To reduce the number of trash bins needed
- C. To save time and effort in sorting waste
- D. To comply with environmental regulations and reduce pollution ✓

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Q19 Part B

A type of chamber in which the combustion space is essentially a single cavity with little restriction on one part of the chamber to the other, and hence with no large difference in pressure between parts of the chamber during the combustion process is known as:

A. air-cell combustion chamber
B. open combustion chamber ✓
C. pre-combustion chamber
D. shallow depth combustion chamber

Q20 Part B

What does an optical pyrometer measure?

A. The relative density of liquids
B. The temperature of the surface ✓
C. The volume of liquids
D. The pressure of gases

Q21 Part B

Which of the following statements is correct about a protractor?

Statements:
1. A protractor can be used to measure angles from both sides.
2. A protractor is typically made of a rigid metal material.

A. Neither statement is true
B. Only statement 2 is true
C. Only statement 1 is true ✓
D. Both statements are true

Q22 Part B

Which of the following punches is used to make deeper witness marks on scribed lines and make it easier for the drill to start correctly?

A. Solid punch
B. Centre punch ✓
C. Pin punch
D. Prick punch

Q23 Part B

The brake pedal transfers the driver's applied force to which component that initiates hydraulic pressure?

A. Brake shoes via pressure fluid
B. Master cylinder through mechanical linkage ✓
C. Wheel cylinder through direct linkage
D. Brake drum by hydraulic compression

Q24 Part B

When did India implement the Hazardous Wastes (Management and Handling) Rules to regulate the disposal and handling of hazardous waste?

A. 1987
B. 2000
C. 1989 ✓
D. 1982

Q25 Part B

In engineering drawing, what is defined as the path of a moving point with no thickness?

A. Angle
B. Curve
C. Point
D. Line ✓

Q26 Part B

What is meant by relining of a clutch plate?

A. Cleaning the clutch plate with petrol
B. Tightening the pressure spring
C. Replacing the entire clutch assembly
D. Replacing the worn-out friction material on the clutch plate ✓

Q27 Part B

What type of bearing is fitted into the connecting rod, allowing the gudgeon pin to provide bearing for the oscillating small end of the connecting rod?

A. Needle bearing ✓
B. Tapper roller bearing
C. Journal bearing
D. Ball bearing

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Q28 Part B

The filler material used in brazing is commercially known as _____.

A. alloy

B. flux

C. spelter ✓

D. solder

Q29 Part B

Which of the following methods is implemented for locking a semi floating type piston pin?

A. Riveting

B. Gluing

C. Screw ✓

D. Welding

Q30 Part B

Which of the following parts of an engine adjusts the opening times of the valves to suit all operating conditions and ensures ideal charge cycles within a wide range of engine speeds and loads?

A. Rocker arm

B. Crankshaft

C. Camshaft ✓

D. Crank

Q31 Part B

Why are metal dispersants or detergents used as additives in lubrication oil?

A. These are used to control the formation of sedimentation of particles throughout the system

B. These are used to control bubbles formation and mist throughout the system

C. These are used to control viscosity index and wax formation throughout the system at high temperature

D. These are used to control deposit formation throughout the system ✓

Q32 Part B

What is the blade length of the T1 'T' square, as per IS:1360-1989?

A. 500 mm

B. 1500 mm

C. 700 mm

D. 1000 mm ✓

Q33 Part B

What causes impurities in diesel fuel to settle in a sedimentation-type filter?

A. Magnetic properties of impurities

B. Higher temperature of impurities

C. Higher inertia of impurities ✓

D. Lower density of impurities

Q34 Part B

In which part of the IC engine does a piston move during operation?

A. Cylinder head

B. Cylinder liner ✓

C. Sump

D. Crankcase

Q35 Part B

If the coefficient of linear expansion of a material is 2×10^{-5} $°C^{-1}$, what does it mean?

A. The material expands by 2×10^{-5} times its original area per degree Celsius

B. The material expands by 2×10^{-5} times its original volume per degree Celsius

C. The material expands by 2×10^{-5} times its original length per degree Celsius ✓

D. The material always increases by 2×10^{-5} kg when temperature is increased by 1°C

Q36 Part B

A cylinder head gasket is incorporated between which of the following two parts of the engine?

A. Puppet valve and cylinder block

B. Piston ring and cylinder head

C. Cylinder head and water jacket

D. Cylinder block and cylinder head ✓

Q37 Part B

The distance a cam lobe rises away from the base circle of the camshaft is known as:

A. mushroom valve lift

B. rocker arm lift

C. gross lift

D. lobe lift ✓

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Q38 Part B

The kingpin provides directional stability along with the _____.

- A. Castor Angle ✓
- B. Toe-out
- C. Camber Angle
- D. Toe-in

Q39 Part B

Which of the following statements correctly describes the placement and purpose of orientation marks on a drawing sheet?

1. Orientation marks are placed at two opposite corners of the drawing sheet to indicate the correct orientation on the drawing board.
2. Orientation marks consist of arrow heads placed across the frame, with one at the shorter side and one at the longer side, coinciding with the centering marks.
3. One of the orientation marks always points towards the draughtsman, indicating the direction in which the drawing sheet should be placed.
4. Orientation marks are used to mark the midpoint of each side of the drawing sheet for accurate centering.

- A. 1, 2, and 3 only
- B. 1 and 4 only
- C. 2 and 3 only ✓
- D. 1, 2, and 4 only

Q40 Part B

As the piston moves up to create a compression force, which of the following parts movements leads to inlet valve closure in engine?

- A. Connecting rod movement
- B. Helical spring movement
- C. Crankshaft movement
- D. Camshaft movement ✓

Q41 Part B

If a machine has an efficiency of 80%, it means:

- A. the machine produces more output than input
- B. the machine has a velocity ratio and mechanical advantage both equal to 80
- C. the machine does not have any loss in input energy
- D. the machine loses 20% of the input ✓

Q42 Part B

_____ is a type of spring that is often used as part of the vehicle clutch assembly, and its main function is to engage and disengage the pressure plate and the driven plate (clutch disk).

- A. Spiral spring
- B. Leaf spring
- C. Diaphragm spring ✓
- D. Laminated spring

Q43 Part B

Flash butt welding and butt welding are particularly suitable for welding of _____.

- A. Large sections with various shapes ✓
- B. Small, intricate components
- C. Thin wires
- D. Pipes requiring precise alignment

Q44 Part B

_____ brakes are a type of brake in which the fluid from the master cylinder is forced into a caliper where it presses against a piston. The piston in turn squeezes two brake pads against the disc (rotor), which is attached to wheel, forcing it to slow down or stop.

- A. Vacuum
- B. Electrical
- C. Disk ✓
- D. Drum

Q45 Part B

Which of the following is the key difference between a fuse and a circuit breaker?

- A. A fuse can be reset after tripping, while a circuit breaker must be replaced.
- B. A fuse is used for high-voltage circuits, while a circuit breaker is used for low-voltage circuits.
- C. A fuse is a mechanical device, while a circuit breaker is an electronic device.
- D. A fuse is a one-time-use device, while a circuit breaker can be reset and reused. ✓

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Q46 Part B

What is the purpose of the water cooling system in a resistance welding machine?

- A. To cool the work piece
- B. To cool the electrodes ✓
- C. To cool the transformer
- D. To cool the force mechanism

Q47 Part B

Final drive is the last stage of power transmission from the propeller shaft to rear axles and then to the wheels. To which of the following angles does it turn the propeller shaft motion?

- A. Right angle to drive the rear axle ✓
- B. 45 degree angle to drive the rear axle
- C. −45 degree to drive the front axle
- D. Equal and opposite angle to drive the rear axle

Q48 Part B

Match the correct length and breadth of the Trimmed sizes of sheets.

Designation	Trimmed size
A. A0	P. 297 × 420
B. A1	Q. 420× 594
C. A2	R. 594 × 841
D. A3	S. 841 × 1189

- A. A - R, B - S, C - Q, D - P
- B. A - P, B - R, C - Q, D - S
- C. A - S, B - R, C - P, D - Q
- D. A - S, B - R, C - Q, D - P ✓

Q49 Part B

Which of the following is a key advantage of using Thyristors in power control applications?

- A. High frequency switching ✓
- B. High efficiency and low power loss
- C. Small size and low cost
- D. Low voltage handling capabilities

Q50 Part B

What is the main function of wheel bearing seals?

- A. To make the bearing spin faster
- B. To increase tire pressure
- C. To stop the wheel from rotating
- D. To prevent lubricant leakage and block dirt/moisture ✓

Q51 Part B

Which of the following is true for a given fixed compression ratio?

- A. Both Otto and Diesel cycles are equally efficient.
- B. Otto cycle is the most efficient. ✓
- C. Dual cycle is the most efficient.
- D. Diesel cycle is the most efficient.

Q52 Part B

In engineering drawing (lettering and numbering), a single stroke means that the _____.

- A. thickness of the line of the letter or number is obtained in one stroke of the pencil ✓
- B. thickness of the line of the letter or number is obtained in three strokes of the pencil
- C. thickness of the line of the letter or number is obtained in no strokes of the pencil
- D. thickness of the line of the letter or number is obtained in two strokes of the pencil

Q53 Part B

Which of the following punch marks is used for the correct location and seating of the divider point?

- A. Centre punch marks of 30°
- B. Centre punch marks of 60°
- C. Prick punch marks of 120°
- D. Prick punch marks of 30° ✓

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Q54 Part B

Which of the following statements is correct about a diesel cycle and its air standard efficiency with respect to the compression ratio?

- **A.** The air standard efficiency of a diesel cycle increases with the increase in the compression ratio. ✓
- **B.** The maximum compression ratio for the diesel engine is limited by detonation.
- **C.** The air standard efficiency decreases with the increase in the compression ratio.
- **D.** For a given compression ratio, Otto cycle is the least efficient while the diesel cycle is the most efficient.

Q55 Part B

Which of the following types of valves is NOT used in the four stroke engine?

- **A.** Butterfly valves ✓
- **B.** Rotary valves
- **C.** Reed valves
- **D.** Poppet valves

Q56 Part B

Which of the following best describes the role of the inert gas in TIG welding?

- **A.** To act as a filler metal
- **B.** To shield the weld zone from atmospheric contamination ✓
- **C.** To cool the weld pool
- **D.** To increase the welding speed

Q57 Part B

Which of the following statements is/are correct?
Statement I - The annealing process uses heat to reduce the hardness and increase the ductility and toughness of various steels, cast iron, and alloys.
Statement II - Quenching is a rapid cooling process that alters specific properties of materials by manipulating the cooling rate.

- **A.** Statement (I) is correct but Statement (II) is incorrect.
- **B.** Statement (I) and (II) both are correct. ✓
- **C.** Statement (I) is incorrect but Statement (II) is correct.
- **D.** Statement (I) and (II) both are incorrect.

Q58 Part B

Which of the following uses of wire gauge is INCORRECT?

- **A.** It measures the diameter of a wire.
- **B.** It does not help determine how much current a wire can carry. ✓
- **C.** Using the wrong wire gauge can damage appliances and electronic devices.
- **D.** It is used in electrical installations, welding and other applications.

Q59 Part B

When drawing a curved line of a specific length in an engineering drawing, which tool is most appropriate for ensuring accuracy?

- **A.** Protractor
- **B.** Straightedge
- **C.** French Curve ✓
- **D.** Compass

Q60 Part B

What do the SAE viscosity rating numbers denote, such as 0W or 5W?

- **A.** Denotes thicker oil that better resists viscosity breakdown when hot
- **B.** High viscosity oil and difficult flow for cold starting
- **C.** Easier oil flow for cold starting ✓
- **D.** Denotes thicker oil that better resists viscosity breakdown when cold

Q61 Part B

Which of the following types of wooden mallets are used for hollowing panel beatings?

- **A.** Standard wooden mallets
- **B.** End-faked mallets
- **C.** Side-faked mallets
- **D.** Bossing mallets ✓

Q62 Part B

Which of the following parts of a dial bore gauge is used to hold all the components together and contains a mechanism for transmitting the plunger motion to the dial?

- **A.** Sliding plunger
- **B.** Anvil
- **C.** Stem ✓
- **D.** Extension rings

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Q63 Part B

In the carburetor the fuel is broken up and mixed with air, what is this process called?

- A. Ignition
- B. Emulsification
- C. Carburation ✓
- D. Combustion

Q64 Part B

Fusion welding is characterised by _____.

- A. joining metals only under high pressure
- B. melting and fusing joining edges, with or without filler metal, without pressure ✓
- C. requiring specialised equipment for pressure application
- D. using only similar metals

Q65 Part B

Which of the following types of engines has irregular operation that occurs because the amount of fresh mixture entering the cylinder is not enough to clear all the exhaust gases and a part of it remains in the cylinder to contaminate the charge?

- A. Four-stroke petrol engine
- B. Two-stroke diesel engine
- C. Four-stroke diesel cycle
- D. Two-stroke petrol engine ✓

Q66 Part B

What is the primary purpose of applying brakes in a vehicle?

- A. To increase the speed of the vehicle
- B. To improve fuel efficiency
- C. To stop or slow down the vehicle ✓
- D. To open the fuel tank

Q67 Part B

What is the primary principle behind the generation of electrical energy in a piezoelectric device?

- A. Conversion of thermal energy into electrical energy
- B. Conversion of chemical energy into electrical energy
- C. Conversion of light energy into electrical energy
- D. Conversion of mechanical stress into electrical energy ✓

Q68 Part B

Which of the following types of wooden mallets are used for general purpose work such as flattening and bending?

- A. Bossing mallets
- B. Side-faked mallets
- C. Standard wooden mallets ✓
- D. End-faked mallets

Q69 Part B

The basic function of the connecting rod is to convert:

- A. the reciprocating motion of piston to the rotary motion of the crankshaft ✓
- B. the curvilinear motion of piston to the linear motion of the camshaft
- C. the reciprocating motion of piston head to the rotary motion of the camshaft
- D. the linear motion of the crankshaft into rotary motion of piston

Q70 Part B

Which of the following is NOT a correct statement about the torsion spring?

- A. This spring needs less space.
- B. It is lighter than leaf spring system.
- C. It takes the driving or braking torque, and additional link mechanisms are not required for this purpose. ✓
- D. This spring provides very neat and compact design.

Q71 Part B

Which of the following is a correct function of the indirect injection combustion chamber?

- A. It accommodates the port (Inlet and Outlet) for In & Out of air.
- B. There is a confined space in it, in which the air and fuel mixtures are burned. ✓
- C. It does not have properties to withstand temperature variations.
- D. It houses and guides the crankshaft.

Q72 Part B

What is the accuracy level of a vernier caliper that can be read?

- A. 0.02 mm ✓
- B. 0.01 mm
- C. 0.2 mm
- D. 0.1 mm

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Q73 Part B

The hydraulic brake system works on the principle of:

A. Boyle's Law

B. Ohm's Law

C. Pascal's Law ✓

D. Newton's Law

Q74 Part B

What force (effort) will be required to push a load, initially at rest, of mass 500 g, so that at a distance of 20 m, its final velocity is 20 m/sec [Assume that there is no friction and 'g' = 10 m/s^2].

A. 5 J

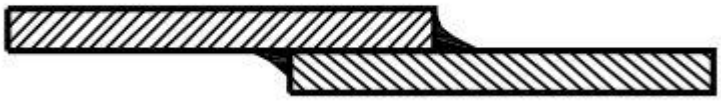
B. 10 N

C. 5 N ✓

D. 10 J

Q75 Part B

Identify the type of brazed joint shown below.



A. Joggle Lap

B. Simple Lap ✓

C. Strapped Lap

D. Butted Flange

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Part B

75 Questions • Answer Key

Q1 Part B

Which of the following materials is used as a binding agent in organic brake linings?

- A. Metal powder
- B. Rubber
- C. Cotton
- D. Resin ✓

Q2 Part B

Which option shows the correct answer when 27°C is converted to the kelvin scale?

- A. – 300 K
- B. 246 K
- C. 300 K ✓
- D. – 246 K

Q3 Part B

The primary function of the flux during brazing is to _____.

- A. make the joint more aesthetically pleasing
- B. remove rust and prevent atmospheric effects ✓
- C. increase the melting point of the spelter
- D. strengthen the joint

Q4 Part B

Natural rubber is soft at high temperatures and brittle at low temperatures; hence raw rubber is heated with sulphur and other additives at a temperature range between 373 – 415 K to make it strong. This process is called _____ of rubber.

- A. vulcanisation ✓
- B. molding
- C. latex
- D. extrusion

Q5 Part B

Which of the following conversions are correct?

- A. 1 L = 1000 dm^3 and 1 mL = 1000 cm^3
- B. 1000 L = 1 dm^3 and 1000 mL = 1 cm^3
- C. 1 L = 1 dm^3 and 1 mL = 1 cm^3 ✓
- D. 1000 L = 1 dm^3 and 1 mL = 1000 cm^3

Q6 Part B

Which of the following care and maintenance of a marking table is INCORRECT?

- A. The marking table should be protected from damage.
- B. The marking table should be protected from rust.
- C. After use, the marking table should be cleaned with a soft cloth.
- D. The surface of the marking table should not be given a thin layer of oil. ✓

Q7 Part B

The accuracy of measurement by a try square is about:

- A. 0.02 mm per 10 mm length
- B. 0.001 mm per 10 mm length
- C. 0.004 mm per 10 mm length
- D. 0.002 mm per 10 mm length ✓

Q8 Part B

What is the primary reason for conducting a vehicle road test?

- A. To test how fast the vehicle can go
- B. To avoid the need for inspections
- C. To increase fuel efficiency
- D. To ensure the vehicle is functioning safely and correctly ✓

Q9 Part B

How many check-valves are in a tandem master cylinder?

- A. None; it uses a pump only.
- B. Three for each wheel
- C. One for all brakes
- D. Two, one for front and one for rear brakes ✓

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Q10 Part B

In a two stroke petrol engine, during the upward stroke of the piston, the gases are compressed in the piston, and at the same time, which of the following is also performed during the operation?

A. Fresh fuel enters in the cylinder from the crank chamber through the valve.

B. Fresh air for petrol engine enters the cylinder from the chamber through the valve exhaust port.

C. Fresh air and fuel (petrol) mixture enters the crank chamber through the valve. ✓

D. Exhaust gases enter the crank chamber through the valve.

Q11 Part B

Which of the statements is correct about a compression ignition engine?

A. Diesel engine produces less noise compared to petrol engine.

B. Operating speed range is less compared to petrol engine. ✓

C. Starting is easy for diesel engine since less cranking effort is required compared to petrol engine.

D. Initial and maintenance costs of diesel engine is less compared to petrol engine.

Q12 Part B

The process of aligning a principal inertia axis with the geometric axis of rotation of the shaft through the addition or removal of material in a shaft is known as:

A. balancing ✓

B. parallel alignment

C. equilibrium

D. angular alignment

Q13 Part B

The clutch slave cylinder disengages the clutch from the engine by moving the:

A. spline shaft

B. pressure plate ✓

C. cushion spring

D. leaf spring

Q14 Part B

The SI unit of 'ultimate stress' is _____.

A. pascal (Pa) ✓

B. newton (N)

C. newton per meter (N/m)

D. joule per square meter (J/m^2)

Q15 Part B

Which of the following screwdrivers has cross-shaped tips that are unlikely to slip from the cruciform slots in Philips recessed head screws?

A. Stumpy screwdriver

B. Offset screwdriver

C. Cross-recess screwdriver ✓

D. Ratchet screwdriver

Q16 Part B

The accuracy of the dial bore gauge instrument depends on which of the following parts?

A. A dot indicator on a linear scale

B. An arrow on a semi-circular scale

C. A pointer on a graduated dial ✓

D. A marking on a logarithmic dial

Q17 Part B

Compared to the metals being joined, the melting point of solder is _____.

A. equal (the same)

B. unpredictable

C. higher

D. lower ✓

Q18 Part B

A rectangular floor measuring 10 m × 8 m is to be tiled. If each tile covers 0.25 m^2, how many tiles are needed?

A. 200

B. 300

C. 320 ✓

D. 250

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Q19 Part B

Which of the following is INCORRECT about line standard?

- A. More accurate due to line thickness ✓
- B. Subject to parallax error
- C. Quick measurements over a wide range
- D. Used to measure the distance between two engraved lines

Q20 Part B

_____ is a type of single thin sheet of metal that yields when pressure is applied and is widely used in most modern cars. When pressure is removed, the metal springs back to its original shape.

- A. Spiral spring
- B. Diaphragm spring ✓
- C. Leaf spring
- D. Cushion spring

Q21 Part B

Which of the following statements is NOT correct about the procedure of calculating balancing of crankshaft of an engine?

- A. To balance a crankshaft, metal can be added by welding material deposition on the 'heavy' side until balance is achieved. ✓
- B. To balance a crankshaft, metal can be removed by drilling holes on the 'heavy' side until balance is achieved.
- C. Crankshaft balancing involves calculating the rotating and reciprocating masses of a crankshaft.
- D. It involves determining the balancing couple and counterweight mass required to balance the crankshaft.

Q22 Part B

A 100-mm centre-punch could have a 10-mm diameter body and a 6-mm diameter point ground to an angle of _____.

- A. 120°
- B. 90° ✓
- C. 60°
- D. 30°

Q23 Part B

What can happen if air gets locked in the fuel system?

- A. Reduced exhaust emissions
- B. Increased fuel efficiency
- C. Erratic running of the engine ✓
- D. Improved engine performance

Q24 Part B

What is the primary purpose of shielding in electrical cables?

- A. To increase the voltage capacity of the cable
- B. To increase the current-carrying capacity of the cable
- C. To protect the cable from external electromagnetic interference ✓
- D. To prevent heat loss from the cable

Q25 Part B

In a logic circuit, three SPST (Single Pole Single Throw) switches are used to implement a logic gate. The switches are connected in series. What is the output of the circuit if all switches are closed?

- A. Undefined
- B. 1 ✓
- C. The output will depend on the type of gate used
- D. 0

Q26 Part B

Diesel fuel is generally used in which of the following types of vehicles?

- A. Aerospace vehicles
- B. Scooters
- C. Cars
- D. Heavy trucks and buses ✓

Q27 Part B

Which of the following types of materials is NOT used in an oil filter as a strainer?

- A. Thin aluminum foil ✓
- B. Felt
- C. Cloth
- D. Wire screen

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Q28 Part B

Which of the following is a key electrical safety tip in a workshop?

A. Operate machines with wet hands

B. Ignore frayed wires if the device is still working

C. Use water to clean electrical panels

D. Ensure electrical equipment is properly grounded ✓

Q29 Part B

Which of the following statements is NOT correct about the functions of a lube oil pump?

A. Maintains consistent oil circulation throughout the engine.

B. Provides direction for the oil's passage through the galleries and to various areas.

C. The movement of engine lubricant around the engine is made difficult ✓

D. Oil is transferred to the engine's key components under high pressure,.

Q30 Part B

For which of the following calipers, a screw and nut are provided for opening and closing the caliper legs?

A. Spring joint calipers ✓

B. Firm joint calipers

C. Simple calipers

D. Leg and point calipers

Q31 Part B

What is a major disadvantage of an over-inflated tyre?

A. Increases road grip

B. Reduces rolling resistance

C. Improves shock absorption

D. Wears out faster at the centre ✓

Q32 Part B

Which of the following stages of an automatic transmission system locks the transmission, restricting a vehicle from moving?

A. Park (P) stage ✓

B. Drive (D) stage

C. Low (L) stage

D. Neutral (N) stage

Q33 Part B

What is the role of the rubber seal in the wheel cylinder?

A. To increase hydraulic pressure

B. To prevent brake fluid leakage ✓

C. To retract the brake shoes

D. To connect the piston to the brake shoe

Q34 Part B

What is the main purpose of an ignition coil in a gasoline engine?

A. To step up low voltage to high voltage ✓

B. To regulate engine temperature

C. To control the engine's timing

D. To supply fuel to the engine

Q35 Part B

Which of the following statements is/are true about Non-Functional Dimensions (NF) in engineering drawing?

Statement 1: Non-functional Dimensions are shown without limits, as they do not affect the functionality of the component or space.
Statement 2: Non-Functional Dimensions are typically used for reference purposes only, and do not impact the assembly or performance of the component or space.

A. Only statement 2 is true ✓

B. Only statement 1 is true

C. Both statements are true

D. Neither statement is true

Q36 Part B

Which of the following gases is primarily liberated during oxidation of the weld pool in oxy-acetylene welding?

A. Carbon dioxide ✓

B. Hydrogen

C. Carbon monoxide

D. Nitrogen

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Q37 Part B

What is the primary reason for the heating effect in a conductor when an electric current passes through it?

A. The electric field in the conductor causes heat generation.

B. The movement of electrons causes heat generation. ✓

C. The conductor absorbs heat from the surrounding environment.

D. The movement of protons causes heat generation.

Q38 Part B

The piston rings are placed in the ring groove and provide sealing between which of the following two parts to prevents leakage of high-pressure gases?

A. Piston and the cylinder liner ✓

B. Piston and the cylinder block

C. Piston and the cylinder head

D. Piston and the cylinder fins

Q39 Part B

An angle greater than 180 degrees is referred to as _____.

A. a right angle

B. an acute angle

C. an obtuse angle

D. a reflex angle ✓

Q40 Part B

A statement and conclusion for pictorial drawing are given below. Determine the logical relationship between them.

Statement: Pictorial drawings are three-dimensional and provide a visual representation of an object.

Conclusion: Therefore, pictorial drawings are useful for describing the shape of a piece part or component.

A. The conclusion does not logically follow from the statement.

B. The conclusion is partially supported by the statement.

C. The conclusion is unrelated to the statement.

D. The conclusion logically follows from the statement. ✓

Q41 Part B

What is the primary purpose of preventive maintenance?

A. To increase the workload of employees

B. To reduce unexpected equipment failures ✓

C. To delay repairs until breakdowns occur

D. To eliminate the need for regular inspections

Q42 Part B

_____ recommend(s) 20 mm wide margins for sheet sizes A0 and A1 in engineering drawings.

A. Borders and frames: SP: 46 (2003) ✓

B. Geographic coordinate systems

C. Custom grids

D. Grid reference system

Q43 Part B

Which of the following statements is NOT correct about the parts associated with the cylinder head?

A. Space enclosed between the cylinder head and piston top during combustion is the combustion chamber.

B. Through the metal screw the spark plug is fitted in the cylinder head plug.

C. The fuel injector is used to spray fuel into the engine cylinder. It is fixed to the cylinder head.

D. The combustion of fuel and the consequent release of thermal energy results in the building up of pressure in the casing. ✓

Q44 Part B

A type of brake has a diaphragm operating in a cylinder. For application of brakes on one side, a diaphragm is subjected to atmospheric pressure while the other is applied negative pressure by exhausting air known as ____ brake.

A. air

B. electric

C. vacuum ✓

D. hydraulic

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Q45 Part B

What is the term used to describe programs that distinguish between uppercase and lowercase letters, treating "yes" and "YES" as different inputs?

- A. Case-insensitive
- B. Numerical
- C. Case-sensitive ✓
- D. Alphabetical

Q46 Part B

Which of the following actions is a part of the emergency response team's responsibilities during an active emergency?

- A. Preparing reports on emergency incidents
- B. Rescuing persons in immediate danger ✓
- C. Conducting routine safety checks
- D. Scheduling regular evacuation drills

Q47 Part B

Which of the following is a primary difference between a primary and a secondary electrochemical cell?

- A. A secondary cell produces more energy than a primary cell.
- B. A primary cell can be recharged, while a secondary cell cannot be recharged.
- C. A primary cell cannot be recharged, while a secondary cell can be recharged. ✓
- D. There is no difference between primary and secondary cells.

Q48 Part B

Sine bars are used when a high degree of accuracy less than _____ is needed for measuring angles.

- A. 1 degree
- B. 30 degrees
- C. 1 minute ✓
- D. 30 minutes

Q49 Part B

Which of the following types of piston ring is placed at the top of the piston in an IC engine?

- A. Oil ring
- B. Compression ring ✓
- C. Wiper ring
- D. Pressure ring

Q50 Part B

Which of the following components in the axle is the most likely to fail if there is an unusual loud clanking or clunking as you put your vehicle into gear, or if a vehicle seems to struggle to get power as it starts to move?

- A. Bearing at the wheel is damaged
- B. Bending in the shaft induced
- C. There is a crack initiated in the axle at cross sectional area perpendicular to axis
- D. Axle-joint damage ✓

Q51 Part B

The primary function of a blowpipe in Oxy acetylene welding is to:

- A. protect against flashback
- B. carry gas from the regulator
- C. control and mix oxygen and acetylene gases ✓
- D. regulate gas pressure

Q52 Part B

Which of the following is NOT the correct statement when fitting rings in an internal combustion (IC) engine?

- A. Cleaning the piston head sealing surface area thoroughly is required. ✓
- B. This is vital for maintaining proper combustion pressure and preventing oil consumption issues.
- C. Use of specialised tools to install the rings without twisting or damaging them is essential.
- D. The most crucial precaution is to ensure proper ring gap and alignment by carefully checking the end gap of each ring.

Q53 Part B

Which of the following is a major risk associated with fuel spillage?

- A. Fire hazards and environmental contamination ✓
- B. Better lubrication for workshop floors
- C. Increased productivity
- D. Reduced need for ventilation

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Q54 Part B

Which of the following processes is carried out on connecting rods to locate the two halves relative to one another?

- A. Dimples are created on the surface
- B. Tapper threads are used
- C. Mirror finishing is done by diamond turning machine
- D. Serrations are used ✓

Q55 Part B

When the crank is at the dead centre, what will be the magnitude of bending moment and twisting moment at the crankshaft?

- A. Bending moment on the shaft is maximum and the twisting moment is zero. ✓
- B. Both bending moment and the twisting moment are zero in the shaft
- C. Bending moment on the shaft is minimum and the twisting moment is maximum.
- D. Both bending moment and twisting moment on the shaft are maximum

Q56 Part B

Which of the following terms is associated with the cams that control the valves and directly influence the breathing process of the engine?

- A. Shape and timing of the cams ✓
- B. Speed of the cams
- C. Material of construction of the cams
- D. Location and length of the cams

Q57 Part B

Which of the following locations is correct for installing the oil filter in the engine?

- A. After lines going to supply the oil to the bearing after coolers
- B. In between coolers and the oil lines coming from sump
- C. Downstream of coolers in order to filter if any solid part from coolers enters the oil lines ✓
- D. Up stream of coolers in order to filter if any solid part from coolers lives the oil lines

Q58 Part B

What is the primary goal of the 5S concept?

- A. To replace traditional safety measures
- B. To increase the number of safety regulations
- C. To improve workplace organisation and efficiency ✓
- D. To eliminate the need for maintenance

Q59 Part B

Match the following designations of sheets with their respective trimmed sizes in length and breadth.

Designation Trimmed Size
A) A0 P) 297 × 420
B) A1 Q) 420 × 594
C) A2 R) 594 × 841
D) A3 S) 841 × 1189

- A. A-S ; B-R ; C-Q ; D-P ✓
- B. A-Q ; B-R ; C-S ; D-P
- C. A-S ; B-P ; C-Q ; D-R
- D. A-P ; B-R ; C-Q ; D-S

Q60 Part B

What happens if the O-ring seal is damaged?

- A. The wheel bearings may stop rotating.
- B. The vehicle's suspension may fail.
- C. The brake pedal may become harder to press.
- D. Oil may seep into the brake drum, reducing braking efficiency. ✓

Q61 Part B

The space enclosed in the upper part of a cylinder, by the cylinder head and the piston top, during the combustion process is called:

- A. combustion chamber ✓
- B. fuel digestion chamber
- C. air suction zone
- D. compression ratio

Q62 Part B

Why do cars have treaded tyres?

- A. To increase friction and grip on the road ✓
- B. To reduce weight
- C. To decrease friction
- D. To increase speed

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Q63 Part B

Which of the following components is a part of a diesel engine only?

- A. Spray nozzle ✓
- B. Fuel tank
- C. Carburetor
- D. Spark plug

Q64 Part B

Which of the following types of brakes can be used with drum, disc or a combination, with air pressure providing the power instead of hydraulic fluid?

- A. Air brakes ✓
- B. Electric brakes
- C. Pneumatic brakes
- D. Magnetic brakes

Q65 Part B

Which of the following indicates that the fuel system is free of air during bleeding?

- A. Air bubbles stop escaping with fuel ✓
- B. Fuel stops flowing
- C. Bleeding screw tightens automatically
- D. Engine runs smoothly

Q66 Part B

Which of the following types of seats is made of hardened alloys and pressed or shrunk into the cylinder head, often used in aluminium engines for better durability?

- A. Integral valve seats
- B. Ring valve seats
- C. Butterfly valve seats
- D. Insert valve seats ✓

Q67 Part B

The core of the ignition coil of a spark ignition engine is made from which material?

- A. Aluminium
- B. Copper
- C. Steel
- D. Soft iron ✓

Q68 Part B

Which of the following processes is used to fit a bearing into the connecting rod, allowing the gudgeon pin to provide the oscillating movement at the small end of the connecting rod?

- A. Interference fit
- B. Press fit ✓
- C. Autofrettage fit
- D. Loose fit

Q69 Part B

In contexts such as automotive clutches, the spring is used to absorb shock during engagement. It is often referred to as a:

- A. leaf spring of circular shape
- B. tensile spring in helical shape
- C. cushion spring in flat shape ✓
- D. spiral spring of rectangular shape

Q70 Part B

The distance between the parts to be joined in a weld is known as _____.

- A. reinforcement
- B. root gap ✓
- C. leg length
- D. fusion penetration

Q71 Part B

The angle formed by the backward tilt of the steering axis from vertical, when viewed from the side of the wheel is known as _____.

- A. positive castor ✓
- B. zero castor
- C. positive camber
- D. negative castor

Q72 Part B

The function of a steering system is to convert the rotary movement of the steering wheel into:

- A. angular velocity of the front wheels
- B. angular turn of the front wheels ✓
- C. linear motion of the front wheels
- D. angular turns of the rear wheels

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Q73 Part B

How many divisions are there on a vernier scale as used in a modern vernier caliper for metric measurement?

- **A.** 50 ✓
- **B.** 25
- **C.** 75
- **D.** 100

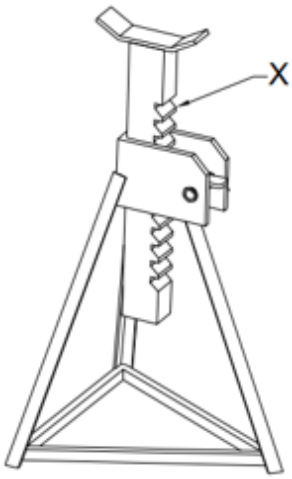
Q74 Part B

In a circuit with a NTC type thermistor and a fixed resistor connected in series connected to a DC power supply, what will happen to the output voltage if there is a rise in temperature?

- **A.** The output voltage will increase. ✓
- **B.** The output voltage will remain constant.
- **C.** The output voltage will fluctuate depending on the resistor value.
- **D.** The output voltage will decrease.

Q75 Part B

In the given diagram of an adjustable jack stand, what is the name of the part marked as 'X'?



- **A.** Ratchet teeth ✓
- **B.** Ratchet handle
- **C.** Outlet valve
- **D.** Saddle

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Part B — 75 Questions • Answer Key

Q1 Part B

The SI unit of temperature is/are _____.

A. both kelvin and celsius
B. celsius
C. kelvin ✓
D. fahrenheit

Q2 Part B

When flushing a radiator, what is the purpose of submerging the radiator in a water tank after flushing?

A. To cool the radiator
B. To clean the exterior of the radiator
C. To refill the radiator with coolant
D. To check for leaks using air pressure ✓

Q3 Part B

Convert 8.5% into a decimal.

A. 0.85
B. 8.5
C. 0.085 ✓
D. 85

Q4 Part B

The emergency brake locks the wheels by bypassing which system?

A. Electric brake system
B. Air pressure system
C. Hydraulic brake system ✓
D. Fuel injection system

Q5 Part B

Which of the following calipers are used for marking lines, parallel to inside and outside edges and for locating the centre of round bars?

A. Spring joint calipers
B. Leg and point calipers ✓
C. Simple calipers
D. Firm joint calipers

Q6 Part B

Which of the following types of engine classifications is based on the thermodynamic cycle?

A. In-line cylinder engine
B. V-engine
C. Radial engine
D. Otto cycle engine ✓

Q7 Part B

Which of the following types of chisels is used for separating metals after chain drilling?

A. Cross-cut chisel
B. Flat chisel
C. Web chisel ✓
D. Diamond point chisel

Q8 Part B

A voltmeter with a resistance of 10,000 ohms is connected across a circuit that has a voltage of 50 V. What is the current flowing through the voltmeter?

A. 2 mA
B. 1 mA
C. 5 mA ✓
D. 4 mA

Q9 Part B

Which type of line is used to represent hidden edges or surfaces in a technical drawing, as per BIS SP 46-2003?

A. Continuous thin line
B. Continuous thick line
C. Dashed thin line ✓
D. Chain thin line

Q10 Part B

Which of the following is NOT a part of the gear changing mechanism in an automatic transmission system?

A. Universal coupling ✓
B. Epicyclic gear arrangement
C. Fluid coupling
D. Torque converter

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Q11 Part B

In two-stroke engines, one power cycle is completed in how many revolutions of the crankshaft?

- A. Two revolutions
- B. Four revolutions
- C. Three revolutions
- D. One revolution ✓

Q12 Part B

Which of the following colours is commonly used for caution signs?

- A. Blue
- B. Yellow ✓
- C. Red
- D. Green

Q13 Part B

What is the minimum age for employment in factories or mines or other hazardous employment, according to Article 24 of the Indian Constitution?

- A. 14 years ✓
- B. 12 years
- C. 16 years
- D. 18 years

Q14 Part B

A crucial engine component that ensures proper sealing of the intake and exhaust valves is known as:

- A. valve barrier
- B. valve gasket
- C. valve seat ✓
- D. valve ring

Q15 Part B

Where is a typical clutch actuated by a number of coil springs?

- A. On a pitch circle near the central axis of the shaft
- B. On a base circle near the centre of the circle
- C. On an addendum circle near the centre of the radius
- D. On a pitch circle near the periphery ✓

Q16 Part B

What is an effective way to reduce backlash in a gear system?

- A. Use worn-out gears for better engagement
- B. Use proper lubrication and regular maintenance ✓
- C. Increase the clearance between gears
- D. Ignore minor misalignments in gear setup

Q17 Part B

Acetylene hose-pipes are typically identified by their ____ colour.

- A. black
- B. green
- C. maroon ✓
- D. blue

Q18 Part B

What is the primary function of a spark plug in an spark ignition engine?

- A. To provide lubrication to engine parts
- B. To regulate engine timing
- C. To ignite the compressed air-fuel mixture ✓
- D. To cool the engine

Q19 Part B

Which of the following statements is correct about the clutch used in vehicles?

- A. It allows the driver to couple or decouple the power transmission at will without stopping the engine. ✓
- B. It allows the driver to lift and unload the bulk material from engine and transmission.
- C. It allows the driver to change the drive of engine in any direction.
- D. It allows the driver to change the speed of engine.

Q20 Part B

A carburetor used in a petrol engine is designed so as to fit in which of the following parts of the engine?

- A. Piston
- B. Casing
- C. Cylinder head ✓
- D. Connecting rod

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Q21 Part B

For your safety at work, which of the following should be ensured?
1. All the required protective clothing and equipment are used.
2. Training and instruction necessary for performing tasks safely have been received.

A. Only statement 1
B. Neither statement 1 nor 2
C. Only statement 2
D. Both statements 1 and 2 ✓

Q22 Part B

Which of the following statements about title block is/are true?

Statement 1: The title block is situated in the bottom right-hand corner of the drawing sheet.
Statement 2: The contents of the title block are standardised and cannot be modified to suit individual company needs.

A. Both statements are false
B. Statement 1 is false, but statement 2 is true
C. Statement 1 is true, but statement 2 is false ✓
D. Both statements are true

Q23 Part B

What is the state of the metal at the junction when heat is applied during resistance welding?

A. Plastic ✓
B. Solid
C. Liquid
D. Gaseous

Q24 Part B

Which of the following changes is/are observed in the engine when the idle adjustment screw in the carburetor is adjusted?

A. Decreases idle port area, reduce engine speed ✓
B. Regulate air intake
C. Control fuel mixture at high speeds
D. Increase idle port area, increase engine speed

Q25 Part B

Which of the following is NOT a typical component of a welding cable's construction?

A. Fine copper wires
B. Rubber insulation
C. Woven fabric reinforcing layers
D. Steel core ✓

Q26 Part B

What is the accuracy level of metric micrometer reading?

A. 0.5 mm
B. 1.0 mm
C. 0.1 mm
D. 0.01 mm ✓

Q27 Part B

Which of the following information is necessary to construct a rectangle?

A. Length of two adjacent sides ✓
B. Length of one side and the area of the rectangle
C. Only the length of one side
D. Only the length of the diagonal

Q28 Part B

What is a consequence of using a lower heat input in oxy-acetylene welding?

A. Reduced filler metal requirement
B. Increased welding speed
C. Increased weld penetration
D. Slower welding speed ✓

Q29 Part B

Which of the following is NOT the purpose of lubrication oil in an engine?

A. Separation of lighter boiling materials such as gasoline, jet fuel, diesel, etc.
B. Finishing to improve oxidation and heat stability
C. Mixing of impurities uniformly that include aromatics and polar compounds ✓
D. Dewaxing to improve low-temperature fluidity

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Q30 Part B

When passing stationary vehicles, keep a watch on _____ who may come out suddenly from the front of the stationary vehicle. While overtaking, it should be done on the _____ side. Always keep a good _____ between your vehicle and others.

- A. cyclists; left; interval
- B. vehicles; right; gap
- C. drivers; left; space
- D. pedestrians; right; distance ✓

Q31 Part B

Which of the following metals has the lowest melting point?

- A. Mercury ✓
- B. Iron
- C. Lead
- D. Gold

Q32 Part B

The camshaft is driven by the crankshaft through which of the following types of power transmission techniques?

- A. Flat belt transmission drive
- B. Timing gears drive ✓
- C. Chain drive
- D. Epicyclic gear train drive

Q33 Part B

In a logic circuit, two inputs A and B are applied to an AND gate, and the output of the AND gate is connected to the input of a NOT gate. If the inputs A and B are both at logic 0, what will be the output of the entire circuit?

- A. Undefined
- B. 0
- C. 1 ✓
- D. 2

Q34 Part B

Which of the following types of engine classifications is based on cylinder arrangement?

- A. Diesel cycle enigne
- B. Dual cycle engine
- C. V-engine ✓
- D. Otto cycle engine

Q35 Part B

What is the approximate temperature range of a neutral oxy-acetylene flame?

- A. 3000°C-3500°C ✓
- B. 2500°C-2750°C
- C. 1500°C-2000°C
- D. 2000°C-2500°C

Q36 Part B

Which of the following devices is used to insert a micrometer in the hole of an external cylinder for zero aligning?

- A. Spanner
- B. Allen key
- C. Screw driver
- D. Wrench ✓

Q37 Part B

What is the typical temperature range of a mercury-based clinical thermometer?

- A. 0°C to 100°C
- B. 35°C to 42°C ✓
- C. 0°C to 50°C
- D. −10°C to 110°C

Q38 Part B

If the vehicle does NOT move due to the brake system, what should be checked first?

- A. Parking brake applied ✓
- B. Piston diameter
- C. Brake adjuster
- D. Loose inlet fitting

Q39 Part B

What is the reason that cam lobe causes the engine to make a ticking or tapping noise, especially when idling, and is often rhythmic and varies in loudness?

- A. When the cam lobe is subjected to higher load.
- B. When the cam lobe wears out. ✓
- C. When the cam lobe is hot.
- D. When cam lobe is has insufficient lubrication.

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Q40 Part B

After removing the carbon deposit on the cylinder head, which of the following is used to clean the cylinder head?

- A. Diesel
- B. Kerosene
- C. Lub oil
- D. Cleaning solvent ✓

Q41 Part B

Which property is NOT essential for a friction material?

- A. Low thermal conductivity
- B. High noise generation ✓
- C. Durability
- D. Resistance to wear

Q42 Part B

What is the best method of manufacturing of connecting rod used in an engine?

- A. Drop forging ✓
- B. Investment casting
- C. Sand casting
- D. Machining operation

Q43 Part B

The process in which an oil pump housing is first filled with oil, especially for oil pumps that are driven by the crankshaft, is known as:

- A. alignment of a pump
- B. ferrography of a pump
- C. priming of a new oil pump ✓
- D. cavitation of a pump

Q44 Part B

Which of the following is the primary reason why copper is widely used as a conductor in electrical wiring?

- A. Copper has low resistance and high conductivity. ✓
- B. Copper has a low melting point.
- C. Copper is abundant and inexpensive.
- D. Copper has high resistance to electricity.

Q45 Part B

Which of the following types of additives are blended with the lubricant to reduce the surface tension of the oil?

- A. Tackiness agents
- B. Demulsifiers
- C. Mist suppressors
- D. Emulsifiers ✓

Q46 Part B

A single plate friction clutch consists of a clutch disk between the:

- A. differential gear and transmission gear box
- B. pressure plate and driving shaft
- C. driving shaft and differential gear
- D. flywheel and a pressure plate ✓

Q47 Part B

In a hydraulic brake booster system, where is the hydraulic pressure stored before it is used to assist braking?

- A. Power steering pump
- B. Master cylinder
- C. Accumulator ✓
- D. Brake caliper

Q48 Part B

Which of the following parts is NOT associated with camshaft responsible for the opening and closing of engine valves?

- A. Tappets
- B. Connecting rod ✓
- C. Rocker arms
- D. Push rods

Q49 Part B

A 100-mm prick punch with a 7-mm diameter body could have a 2.5-mm diameter point ground to an angle of _____.

- A. 90°
- B. 30° ✓
- C. 120°
- D. 45°

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Q50 Part B

If the length of a resistor is doubled, what happens to its resistance, assuming all other factors remain constant?

- **A.** The resistance is doubled. ✓
- **B.** The resistance remains the same.
- **C.** The resistance is halved.
- **D.** The resistance quadruples.

Q51 Part B

What does toe-in mean in the wheel alignment of a vehicle?

- **A.** Wheels parallel
- **B.** Wheels rotated 90 degrees
- **C.** Wheels inclined inward at front ✓
- **D.** Wheels inclined outward at front

Q52 Part B

In a series circuit, three resistors of 10 ohms, 20 ohms, and R ohms are connected in series with a 12 V battery. What is the value of resistance R if current flowing in the circuit is 0.2 A?

- **A.** 10 ohms
- **B.** 20 ohms
- **C.** 30 ohms ✓
- **D.** 40 ohms

Q53 Part B

Who is authorised to conduct road tests on workshop vehicles?

- **A.** Only trained and certified personnel ✓
- **B.** Visitors to the workshop
- **C.** Any employee
- **D.** The company accountant

Q54 Part B

Which of the following 'V' blocks will have one 'V' groove and two grooves (slots) on either side for clamping in two positions?

- **A.** Double level single groove 'V' block
- **B.** Matched pair 'V' block
- **C.** Single level double groove 'V' block ✓
- **D.** Single level single groove 'V' block

Q55 Part B

If the calliper bore diameter worn is greater than 2.630 inches (66.80 mm), what corrective action is recommended?

- **A.** Tightening the inlet fitting
- **B.** Replacing the calliper housing ✓
- **C.** Adjusting the brake pads
- **D.** Replacing the piston

Q56 Part B

What type of rays are a significant hazard during arc welding?

- **A.** Sound waves and visible light
- **B.** X-rays and gamma rays
- **C.** Ultraviolet and infrared rays ✓
- **D.** Microwaves and radio waves

Q57 Part B

How much clearance is to be provided for compression ring fitted into the piston of an IC engine?

- **A.** Approximately 0.035 – 0.080 mm for compression rings
- **B.** Approximately 0.095 – 1.80 mm for compression rings
- **C.** 0.002 D to 0.004 D where D is the cylinder bore ✓
- **D.** Approximately 0.9 – 1.80 mm for compression rings

Q58 Part B

The wave set of hacksaw teeth set has a pitch of _____.

- **A.** 2.0 mm
- **B.** 0.5 mm
- **C.** 0.8 mm ✓
- **D.** 1.0 mm

Q59 Part B

Which of the following provisions is provided in the cylinder head during design for increasing the air cooling effect?

- **A.** Fins or extended surfaces are provided on the cylinder walls and cylinder blocks. ✓
- **B.** Cylinder head is provided with water jackets.
- **C.** Cylinder block is provided with high speed cooling air flow.
- **D.** Dimple like shapes on surfaces are provided on the cylinder walls.

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Q60 Part B

For the given tire size, as per specification as 205/55R16, what is the width of the tire?

A. 205/55 mm

B. 550 mm

C. 205 mm ✓

D. 880 mm

Q61 Part B

Which of the following is NOT the correct function of the front axle?

A. It transmits the torque of a vehicle through springs to the front wheels. ✓

B. It absorbs torque applied on it due to braking of vehicle.

C. An axle is a central shaft for a rotating wheel or gear.

D. It supports the weight of the front part of the vehicle.

Q62 Part B

What happens if air is NOT removed from a hydraulic brake system?

A. The fuel efficiency improves.

B. The engine runs smoother.

C. The tires wear out faster.

D. The brakes feel spongy and less effective. ✓

Q63 Part B

Which of the following symptom or indicator does NOT show the failure of an oil pump?

A. When the engine oil flow slows or stops, the components continue to be lubricated by hot oil that is not permitted to flow

B. When the engine runs at a normal temperature and oil flow is steady. ✓

C. If a hydraulic lifter in a vehicle creates noise

D. Able to push oil through the system adequately and with low pressure in oil lines

Q64 Part B

When creating 10 mm single-stroke capital letters in vertical style, what does the 10 mm distance between horizontal parallel lines represent?

A. Letter width

B. Letter height ✓

C. Stroke thickness

D. Interline spacing

Q65 Part B

What is the SI unit of 'volume'?

A. Litres

B. Cubic centimetre

C. Cubic metre ✓

D. Millilitres

Q66 Part B

Which of the following statements is INCORRECT about end standard?

A. It measures the distance between two parallel flat surfaces.

B. Faces are subject to wear.

C. It is slower but more accurate.

D. It is used to measure the distance between two engraved lines. ✓

Q67 Part B

Match the following types of lines with their correct descriptions according to their orientation and characteristics.

Description	Type of Line
A. A line that is neither parallel to a horizontal plane nor perpendicular to it.	1. Horizontal line
B. A line that is perpendicular to horizontal lines.	2. Vertical line
C. A line that changes its direction continuously.	3. Inclined line
D. A line that is parallel to a horizontal plane.	4. Curved line

A. A - 1, B - 2, C - 3, D - 4

B. A - 2, B - 3, C - 4, D - 1

C. A - 3, B - 2, C - 4, D - 1 ✓

D. A - 2, B - 1, C - 4, D - 3

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Q68 Part B

Find the lateral surface area of a cube with side length 5 cm.

A. 125 cm^2

B. 150 cm^2

C. 200 cm^2

D. 100 cm^2 ✓

Q69 Part B

Which of the following parts of the engine is used to compress the charge during compression stroke and to transmit the gas force to the connecting rod and then to the crankshaft during power stroke?

A. Crankcase

B. Cylinder head

C. Cylinder block

D. Piston ✓

Q70 Part B

Which of the following terms in the 5S concept refers to making a habit of maintaining the established procedures?

A. Shine

B. Set

C. Sort

D. Sustain ✓

Q71 Part B

Which of the following types of valve seats are commonly used in cast iron head of the engine?

A. Integral valve seats ✓

B. Insert valve seats

C. Elliptical valve seats

D. Two piece valve seats

Q72 Part B

Which of the following statements is NOT correct for using scribers?

A. Scriber points are very sharp, so they are to be handled very carefully.

B. While scribing lines, the scriber is used like a pencil.

C. Do not put the scriber in your pocket.

D. Place a cork on the point when in use to prevent accidents. ✓

Q73 Part B

A type of piston which provides an even distribution of the air-fuel mixture, consistent flame front during combustion and it has the smallest surface area on top is known as:

A. semi-spherical piston

B. dish piston

C. flat piston ✓

D. dome piston

Q74 Part B

For the given tire size, as per specification as 205/55R16, what is the width of the tire?

A. $880\ mm$

B. $550\ mm$

C. $\frac{205}{55}\ mm$

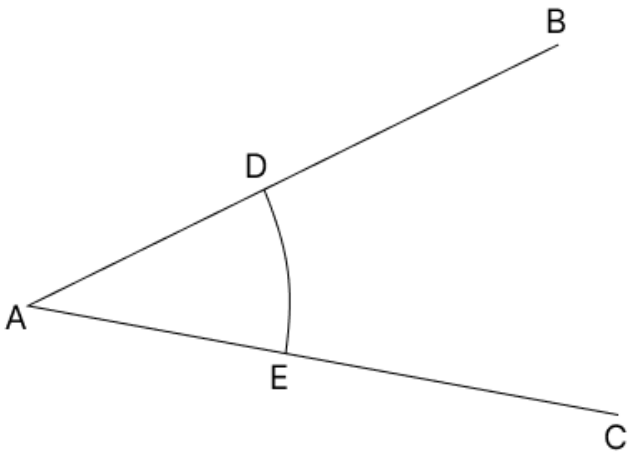
D. $205\ mm$ ✓

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Q75 Part B

In the process of bisecting angle BAC in the given figure, why do we draw arcs from points D and E?



A. To find midpoint AB

B. To mark equal lengths

C. To intersect line AC

D. To intersect above A ✓

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Part B — 75 Questions • Answer Key

Q1 Part B

Which of the following parts of a thermostatic expansion valve transmits the diaphragm force to spring to control the flow?

- A. Push rod and ball valve ✓
- B. Spring retainer
- C. Body sealing gasket
- D. Superheat spring

Q2 Part B

What is the primary reason for electrical injuries when a person comes in contact with electrical equipment?

- A. Electrical equipment is not properly grounded.
- B. Current flows through the body causing harm. ✓
- C. Devices are used for too long.
- D. Electrical devices are too powerful.

Q3 Part B

In which of the following types of cooling towers are the eliminators fitted just below the fan and spray nozzles fitted just below the eliminator?

- A. Natural draft cooling tower
- B. Hyperbolic draft cooling tower
- C. Induced draft cooling tower ✓
- D. Forced draft cooling tower

Q4 Part B

Which of the following components of a storage-type water cooler gives initial power for starting winding at the compressor needed and cuts off power supply at running?

- A. Fan motor
- B. Relay ✓
- C. Thermostat
- D. Overload protector

Q5 Part B

Which of the following components of the flake ice machine is a vertically placed drum-shaped stainless-steel container, equipped with the rotating blade?

- A. Condenser
- B. Evaporator ✓
- C. Compressor
- D. Tube ice generator

Q6 Part B

When measuring the resistance of a resistor using an ohmmeter, what does a reading of zero resistance indicate?

- A. The resistor is functioning normally.
- B. The resistor is open-circuited.
- C. The resistor is short-circuited. ✓
- D. The ohmmeter is malfunctioning.

Q7 Part B

Which of the following is INCORRECT regarding the cleaning and care of split AC systems?

- A. When removing and replacing the air filters, be sure to touch the heat exchanger ✓
- B. Before cleaning the AC, be sure to turn it off and disconnect the power supply cord
- C. After washing, allow it to dry thoroughly in a shaded place
- D. Be sure the intake grille is installed securely

Q8 Part B

In a refrigeration system, an electronic expansion valve is a ____.

- A. device that meters or regulates the flow of liquid refrigerant to the evaporator ✓
- B. device used to measure the moisture content of the air
- C. device used to store heat during normal operation of the cycle
- D. device used to remove the frost by melting

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Q9 Part B

In refrigeration and air conditioning systems, balance valves are also called the _____.

- **A.** circuit setter ✓
- **B.** circuit breaker
- **C.** coil setter
- **D.** fan coil setter

Q10 Part B

What is the purpose of an emergency evacuation plan?

- **A.** To ensure safe and orderly evacuation during emergencies ✓
- **B.** To avoid safety drills
- **C.** To increase productivity
- **D.** To allow workers to leave early

Q11 Part B

Which of the following electrical components is used in the refrigeration system to protect the compressor from abnormal operating condition?

- **A.** Overload protector ✓
- **B.** Defrost heater
- **C.** Fan motor
- **D.** PTC relay

Q12 Part B

Which of the following vices consists of a handle and a small collet chuck at one end?

- **A.** Hand vice
- **B.** Pin vice ✓
- **C.** Pipe vice
- **D.** Toolmaker's vice

Q13 Part B

Read the given statements carefully and select the correct option.

Statement 1: In frost-free refrigerator, evaporator fan and condenser fan produces uniform cooling.
Statement 2: In conventional type refrigerator, no fan is provided hence the cooling is not uniform cooling/freezing.

- **A.** Statement 2 is correct and Statement 1 is incorrect.
- **B.** Statement 1 is correct and Statement 2 is incorrect.
- **C.** Both Statement 1 and Statement 2 are incorrect.
- **D.** Both Statement 1 and Statement 2 are correct. ✓

Q14 Part B

In an air-conditioning system, butterfly dampers and multiple vane dampers are _____.

- **A.** evaporators
- **B.** duct water-flow controls
- **C.** duct air-flow controls ✓
- **D.** condensers

Q15 Part B

What is a key advantage of using MOSFETs in electronic circuits compared to other types of transistors?

- **A.** High frequency response
- **B.** High input impedance and low power consumption ✓
- **C.** Ability to handle higher voltages and currents than BJTs
- **D.** Ability to amplify both AC and DC signals

Q16 Part B

Arrange the following steps in the correct order to draw an equilateral triangle with each side of 35 mm.

1. Join CA and CB.
2. Draw a line and mark AB 35 mm as the side of the triangle.
3. With radius AB and center A and B, draw arcs cutting at C.
4. ABC is the required triangle.

- **A.** 2, 3, 1, 4 ✓
- **B.** 1, 2, 4, 3
- **C.** 2, 1, 3, 4
- **D.** 3, 2, 1, 4

Q17 Part B

Match the components in Column A with those in Column B.

Column A Column B
Thermometer (A) Measuring solar intensity (P)
Pyrometer (B) Measuring pressure (Q)
Barometer (C) Measuring high temperatures (R)
Pyrometer (D) Measuring ordinary temperatures (S)

- **A.** A-S, B-R, C-Q, D-P ✓
- **B.** A-Q, B-R, C-S, D-P
- **C.** A-P, B-R, C-Q, D-S
- **D.** A-S, B-Q, C-R, D-P

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Q18 Part B

Which of the following components of a walk-in cooler is required on freezers to prevent drain line freeze up?

- A. Drain line heater ✓
- B. Condensate water evaporator
- C. Condenser unit rack
- D. Heat exchanger

Q19 Part B

Which of the following types of compressors has up to 10 cylinders and is most frequently used in car air-conditioning systems?

- A. Swash plate compressor ✓
- B. Scroll type compressor
- C. Hermetic compressor
- D. Wobble plate compressor

Q20 Part B

In a velocity-time graph, the negative slope represents ____.

- A. retardation ✓
- B. displacement
- C. acceleration
- D. distance

Q21 Part B

Which of the following statements is/are correct about a commercial refrigeration system?

Statement 1: Condenser water inlet picks up heat from the gas so that it condenses.
Statement 2: Condenser water outlet connects hot water to the cooling tower.

- A. Only statement 1 is correct.
- B. Neither statement 1 nor statement 2 is correct.
- C. Only statement 2 is correct.
- D. Both statement 1 and statement 2 are correct. ✓

Q22 Part B

The liquid can get sub-cooled below the saturation temperature in the:

- A. evaporator
- B. compressor
- C. expander
- D. condenser ✓

Q23 Part B

In Duct Insulation of Refrigeration and Air-Conditioning, EPDM stands for _____.

- A. Ethyl Propylene Dual Monomer
- B. Ethylene Propylene Diene Material
- C. Ethylene Propylene Diene Monomer ✓
- D. Ethylene Polymer Diene Monomer

Q24 Part B

Which of the following hand-operated drilling machines is used for drilling small diameter holes up to 6 mm?

- A. Electric hand drill
- B. Ratchet drilling machine
- C. Breast drilling machine
- D. Bevel gear type drilling machine ✓

Q25 Part B

If the current flowing through a conductor is 5 A and the resistance of the conductor is 10 ohms, what will be the voltage across the conductor, according to Ohm's Law?

- A. 15 V
- B. 50 V ✓
- C. 5 V
- D. 10 V

Q26 Part B

_____ is the process of adding moisture to the air without affecting its dry bulb temperature.

- A. Isothermal process
- B. Humidification ✓
- C. De-humidification
- D. Adiabatic process

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Q27 Part B

Which of the following processes of maintaining central AC always follows the detailed instructions provided by equipment manufactures or system designers?

A. Log sheets
B. Starting procedure ✓
C. Post start-up checks
D. Pre-start-up checks

Q28 Part B

The low side component of the vapour compression refrigeration system, where the refrigerant absorbs heat by evaporating, is _____.

A. compressor
B. suction line ✓
C. discharge line
D. condenser

Q29 Part B

Which of the following factors is responsible for the maintenance of any desired temperature within an enclosed space even though the temperature of the outside air is above or below the desired room temperature?

A. Temperature of air ✓
B. Motion of air
C. Humidity of air
D. Purity of air

Q30 Part B

_____ is the space where heat exchange takes place in direct expansion plants of Central Industrial Air Conditioning systems.

A. Aerosol Handling Unit
B. Air Handling Unit ✓
C. Automotive Handling Unit
D. Automobile Handling Unit

Q31 Part B

In industrial air conditioning systems, a pipe line is provided from the condenser to the cooling tower to circulate _____.

A. gas
B. chlorine
C. water ✓
D. air

Q32 Part B

The unit for specific gravity is _____.

A. m/s^2
B. g/cm^3
C. kg/m^3
D. no unit (dimensionless) ✓

Q33 Part B

_____ exists when a system changes its state due to temperature difference between the system and its surroundings.

A. Diffusion
B. Work
C. Mass flow
D. Heat ✓

Q34 Part B

What are 'Thermal insulators' in Refrigeration and Air Conditioning systems?

A. Materials that retard or offer resistance to the flow of air through it
B. Materials that retard or offer resistance to the flow of water through it
C. Materials that retard or offer resistance to the flow of heat through it ✓
D. Materials that retard or offer resistance to the friction

Q35 Part B

In which of the following types of refrigeration system, a lighter gas compared to the refrigerant vapour is introduced into the system?

A. Three fluid absorption system ✓
B. Ice refrigeration system
C. Liquid gas refrigeration system
D. Dry ice refrigeration system

Q36 Part B

When using a multimeter to measure current, which of the following is correct?

A. The multimeter is connected directly to the power source.
B. The multimeter is connected in series with the load. ✓
C. The multimeter is connected only across resistive components.
D. The multimeter is connected in parallel with the load.

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Q37 Part B

In horizontal type bottle coolers, _____ air convection is present inside the storage cooling compartment.

- A. neutral
- B. natural ✓
- C. forced
- D. obligatory

Q38 Part B

The ____ in an air-conditioning system allows heat to flow from the hot refrigerant to the cooler outside air.

- A. condenser ✓
- B. evaporator
- C. turbine
- D. compressor

Q39 Part B

What is the advantage of giving heat treatment to a material?

- A. To decrease the melting point of the material
- B. To increase the weight of the material
- C. To change it from one element to another element
- D. To make surgical knives of sharp edges ✓

Q40 Part B

Which of the following files is used for filing narrow grooves and angles above 10°?

- A. Knife-edge file ✓
- B. Half round file
- C. Square file
- D. Triangular file

Q41 Part B

In the refrigeration system, ____ refrigerants are the heat carriers that directly cool the material by absorbing latent heat.

- A. highly flammable
- B. secondary
- C. primary ✓
- D. nitrogen

Q42 Part B

Which of the following organisations is responsible for enforcing workplace safety regulations in India?

- A. World Health Organization (WHO)
- B. Food and Drug Administration (FDA)
- C. Directorate General of Factory Advice Service and Labour Institutes (DGFASLI) ✓
- D. Environmental Protection Agency (EPA)

Q43 Part B

A circuit consists of three resistors; 15 ohms, 10 ohms, and 20 ohms. The 15-ohm resistor is in series with the parallel combination of the 10-ohm and 20-ohm resistors. If a 24 V battery is applied across the circuit, what is the total current flowing through the circuit?

- A. 3.1 A
- B. 0.1 A
- C. 1.1 A ✓
- D. 2.1 A

Q44 Part B

According to BIS SP 46-2003, which of the following applications is correctly represented by a chain-thin line in engineering drawings?

- A. Center lines ✓
- B. Hidden edges
- C. Dimension lines
- D. Visible edges

Q45 Part B

In the operations of a cold storage plant, _____ is used to protect the plant components against unusual working conditions.

- A. Temperature control
- B. Safety control ✓
- C. Moisture control
- D. Fluid control

Q46 Part B

_____ moves from one point to another through air in air conditioning systems.

- A. Air borne sound ✓
- B. Structure borne sound
- C. Water borne sound
- D. Refrigerent borne sound

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Q47 Part B

The _____ device is used for producing cold in a refrigeration system.

A. manifold gauge tool
B. condenser
C. economiser
D. vortex tube ✓

Q48 Part B

Why is it important for every person to follow safety procedures in the workplace?

A. To increase overall production efficiency
B. To minimise risks and avoid accidents ✓
C. To reduce operational costs significantly
D. To limit the need for frequent supervision

Q49 Part B

In a vapor compression system, the condensed liquid refrigerant from the condenser is stored in a vessel known as _____.

A. receiver ✓
B. evaporator
C. condenser
D. expansion valve

Q50 Part B

Which of the following motors is used for condensing units and cooling coils of bottle coolers?

A. Slip ring induction motor
B. Capacitor-start capacitor-run induction motor
C. Squirrel cage induction motor
D. Shaded pole induction motor ✓

Q51 Part B

For what purpose are pins and clips used in engineering drawings?

A. To transfer dimensions and dividing lines into a number of equal parts
B. To draw horizontal lines, parallel lines and to guide/hold the set squares
C. To fasten the drawing sheet on to the drawing board firmly so that it does not shake ✓
D. To support the drawing paper/tracing paper for making drawings

Q52 Part B

In a lead-acid battery, what is the chemical composition of the material used for the positive plate during discharge?

A. Sulphuric acid (H_2SO_4)
B. Lead (Pb)
C. Lead dioxide (PbO_2) ✓
D. Lead sulfate ($PbSO_4$)

Q53 Part B

When selecting a sheet size for an original drawing, what should be the primary consideration?

A. The standard size of the drawing office.
B. The clarity and resolution required. ✓
C. The orientation of the drawing (horizontal or vertical).
D. The size of the reproduction.

Q54 Part B

If the diameter of the bare tube coil evaporators is too small, then:

A. the system efficiency increases
B. the system efficiency reduces ✓
C. the pressure drop due to friction becomes too low
D. the pressure drop due to friction becomes zero

Q55 Part B

Which of the following advantages of AC motor over DC motor is INCORRECT?

A. AC motors have higher startup power demands. ✓
B. AC motors are more durable and have a longer life expectancy than DC motors.
C. AC motors are more efficient than DC motors.
D. AC motors have fewer moving parts than DC motors.

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Q56 Part B

Match the refrigerant control expansion valves with their correct functions.

Refrigerant controls	Functions
A. Suction-line regulators	P. Limit the flow of gas to the compressor to prevent surge or excessive loads
B. Check valves	Q. Interrupt the flow on demand from any one of several types of temperature or pressure-sensing devices
C. Solenoid valves	R. Prevent the flow of gas from the condenser
D. Hold back valves	S. Control the flow of refrigerant gas from the evaporator coil

- **A.** A-P, B-R, C-Q, D-S ✓
- **B.** A-S, B-P, C-Q, D-R
- **C.** A-S, B-R, C-Q, D-P
- **D.** A-S, B-R, C-P, D-Q

Q57 Part B

Which of the following are the two methods of charging refrigerants into systems?

- **A.** Charging by specific volume and Charging by diffusivity
- **B.** Charging by viscosity and Charging by volume
- **C.** Charging by density and Charging by colour
- **D.** Charging by weight and Charging by volume ✓

Q58 Part B

In refrigeration systems, 'FCU' stands for _____.

- **A.** Fan Coil Unit ✓
- **B.** Fan Control Unit
- **C.** Freezer Coil Unit
- **D.** Freezer Control Unit

Q59 Part B

Non-functional dimensions are _____.

- **A.** not essential for the function of the space or component ✓
- **B.** essential for the function of the space or component
- **C.** derived from the values of the related features of a drawing
- **D.** directly derived from the values given on a drawing

Q60 Part B

What is a refrigeration system?

- **A.** The equipment employed to maintain a system at a high temperature.
- **B.** The equipment employed to maintain a system at a low pressure.
- **C.** The equipment employed to maintain a system at a high pressure.
- **D.** The equipment employed to maintain a system at a low temperature. ✓

Q61 Part B

Which of the following parts of a file is the part fitted to the tang for holding the file?

- **A.** Tip or Point
- **B.** Handle ✓
- **C.** Edge
- **D.** Tang

Q62 Part B

Which of the following factors should be controlled in order to keep constant temperature throughout the conditioned space?

- **A.** Motion of air ✓
- **B.** Humidity of air
- **C.** Temperature of air
- **D.** Purity of air

Q63 Part B

Which of the following types of pliers is used to shape loops in wires and to form curves in light metal strips?

- **A.** Flat nose pliers
- **B.** Round nose pliers ✓
- **C.** Slip-joint pliers
- **D.** End cutting pliers

Q64 Part B

Gaskets, seals and spacers are made using:

- **A.** centre punch
- **B.** hollow punch ✓
- **C.** pin punch
- **D.** prick punch

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Q65 Part B

Which of the following components of an automotive AC system store refrigerant, filter particles, absorb moisture and separate vaporous R134a from liquid R134a?

- A. Compressor
- B. Condenser
- C. Accumulator ✓
- D. Evaporator

Q66 Part B

_____ is a type of refrigerated cabinet that displays merchandise as well as cools it.

- A. Visible heater
- B. Undercounter cooler
- C. Visible cooler ✓
- D. Hidden cooler

Q67 Part B

In an automotive air conditioning system compressor, the pistons are operated by a _____, which moves them backwards and forwards in the cylinders.

- A. crank shaft
- B. gear plate
- C. connecting rod
- D. wobble plate ✓

Q68 Part B

What is the function of a condenser in air-conditioning systems?

- A. Prevents chocking of cooling air
- B. Blows the cool air to the duct
- C. Rejects heat from refrigerant vapour and turns it to liquid ✓
- D. Picks up heat from return air

Q69 Part B

Which of the following parts of the softy machine admits and shuts the flow of an ice cream?

- A. Shaft bearing
- B. Churner shaft with conveyor
- C. Sight glass
- D. Ice cream outlet valve ✓

Q70 Part B

A drawing instrument box is used to carry all _____ instruments.

- A. drawing ✓
- B. screening
- C. drilling
- D. casting

Q71 Part B

A circular hole of radius 3 cm is cut from a rectangular sheet of dimensions 12 cm × 10 cm. Find the remaining area.

(Take π = 3.14)

- A. 100 cm^2
- B. 91.74 cm^2 ✓
- C. 95.86 cm^2
- D. 75.74 cm^2

Q72 Part B

What should you do to ensure your personal safety at work?

- A. Wear personal protective equipment. ✓
- B. Work in a hurry without checking equipment.
- C. Ignore warning signs and instructions.
- D. Take risks to finish tasks quickly.

Q73 Part B

Which of the following is an important safety measure during a power failure?

- A. Using candles for lighting
- B. Continuing to use equipment without verifying power status
- C. Ensuring all machines and electrical equipment are turned off ✓
- D. Ignoring alarm systems

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Q74 Part B

$(\frac{3}{8}) + (\frac{5}{12})$

A. $\frac{17}{24}$

B. $\frac{19}{24}$ ✓

C. $\frac{8}{20}$

D. $\frac{7}{12}$

Q75 Part B

$\cos\theta$

A. $\frac{3}{5}$

B. $\frac{4}{5}$ ✓

C. $\frac{5}{4}$

D. $\frac{3}{4}$

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Q1 Part B

Which of the following statements is correct about a protractor?

Statements:
1. A protractor can be used to measure angles from both sides.
2. A protractor is typically made of a rigid metal material.

A. Neither statement is true
B. Only statement 2 is true
C. Only statement 1 is true ✓
D. Both statements are true

Q2 Part B

In a car air-conditioning system, the ____ separates the liquid and gas refrigerant and removes moisture.

A. condenser
B. receiver-drier ✓
C. compressor
D. blower

Q3 Part B

The capacity of a cooling tower can be expressed as:

A. flow rate * specific heat * temperature difference ✓
B. specific heat * temperature difference
C. flow rate * temperature difference
D. flow rate * temperature

Q4 Part B

Which of the following types of AC motors is a three-phase induction motor?

A. Split phase induction motor
B. Shaded pole induction motor
C. Capacitor start induction motor
D. Slip ring induction motor ✓

Q5 Part B

What is waste?

A. Natural resources for living organisms
B. Valuable substances for agriculture
C. Useful materials for industries
D. Unwanted or unusable materials ✓

Q6 Part B

Which of the following punch marks is used for the correct location and seating of the divider point?

A. Centre punch marks of 30°
B. Centre punch marks of 60°
C. Prick punch marks of 120°
D. Prick punch marks of 30° ✓

Q7 Part B

If a machine has an efficiency of 80%, it means:

A. the machine produces more output than input
B. the machine has a velocity ratio and mechanical advantage both equal to 80
C. the machine does not have any loss in input energy
D. the machine loses 20% of the input ✓

Q8 Part B

Which of the following benefits of forced draft cooling in frost-free refrigerators is INCORRECT?

A. Even cooling
B. No frost buildup
C. Slower cooling ✓
D. Faster cooling

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Q9 Part B

Which of the following features of automatic control in air conditioning is INCORRECT?

A. It can be integrated with security access control systems, fire alarm systems and more.

B. It cannot adjust pressures to reduce demand when spaces are unoccupied. ✓

C. It maintains a comfortable temperature.

D. It can regulate heating and cooling to provide comfort conditions while limiting energy usage.

Q10 Part B

When did India implement the Hazardous Wastes (Management and Handling) Rules to regulate the disposal and handling of hazardous waste?

A. 1987

B. 2000

C. 1989 ✓

D. 1982

Q11 Part B

Match the columns and select the correct option from the following.

Thermodynamic Law/Concept	Brief Description
(A) First law of Thermodynamics	(P) Hypothetical envelope enclosing the system
(B) Second law of Thermodynamics	(Q) Deals with thermal equilibrium
(C) Zeroth law of Thermodynamics	(R) Principle of increase of entropy
(D) Boundary	(S) Deals with concept of internal energy

A. A-P, B-R, C-Q, D-S

B. A-S, B-R, C-Q, D-P ✓

C. A-S, B-R, C-P, D-Q

D. A-R, B-S, C-Q, D-P

Q12 Part B

Which of the following types of wooden mallets are used for general purpose work such as flattening and bending?

A. Bossing mallets

B. Side-faked mallets

C. Standard wooden mallets ✓

D. End-faked mallets

Q13 Part B

Which of the following is NOT classified as a type of cold storage system of refrigerator?

A. Frozen storage

B. De-frozen storage

C. Long-term cold storage ✓

D. Temporary storage

Q14 Part B

In direct expansion type bottle coolers, ____ is the cooling coil around the storage tank.

A. copper tube ✓

B. ice cube

C. wind

D. water

Q15 Part B

Identify the type that is NOT classified under deep freezers in the refrigerator system.

A. Chest type deep freezers

B. Upright freezers

C. High temperature deep freezers ✓

D. Display deep freezers

Q16 Part B

Which of the following parts of the softy machine holds the churner in position and dries the refrigerant?

A. Master tank

B. Sight glass

C. Filter dryer

D. Shaft bearing ✓

Q17 Part B

Which of the following punches is used to make deeper witness marks on scribed lines and make it easier for the drill to start correctly?

A. Solid punch

B. Centre punch ✓

C. Pin punch

D. Prick punch

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Q18 Part B

What is the chemical effect that occurs in a battery during the charging process of a Lead Acid battery?

- A. Lead reacts with sulphur to form lead sulphate
- B. Water dissociation into hydrogen and oxygen
- C. Lead sulphate decomposes into lead and sulphuric acid ✓
- D. Sulphuric acid dissociates into hydrogen and sulphate ions

Q19 Part B

The drying material used in refrigerators is called _____.

- A. condenser
- B. humidifier
- C. desiccant ✓
- D. stabiliser

Q20 Part B

What is the function of air washers in an air conditioning system?

- A. Cleans and humidifies the refrigerant
- B. Cleans and humidifies the condensers
- C. Cleans and humidifies the evaporators
- D. Cleans and humidifies the air ✓

Q21 Part B

In a Heating, Ventilation, and Air Conditioning (HVAC) control system, AHUs stands for _____.

- A. American Handling Units
- B. Atom Handling Units
- C. Automobile Handling Units
- D. Air Handling Units ✓

Q22 Part B

If the coefficient of linear expansion of a material is 2×10^{-5} °C^{-1}, what does it mean?

- A. The material expands by 2×10^{-5} times its original area per degree Celsius
- B. The material expands by 2×10^{-5} times its original volume per degree Celsius
- C. The material expands by 2×10^{-5} times its original length per degree Celsius ✓
- D. The material always increases by 2×10^{-5} kg when temperature is increased by 1°C

Q23 Part B

Which of the following expansion valves is a modified thermostatic expansion valve with an electrical heater incorporated in its feeler bulb?

- A. High-side float valve
- B. Level master control ✓
- C. Electronic expansion valve
- D. Low side float valve

Q24 Part B

In a refrigeration system, the defrost cycle will not start until the _____ switch turns the compressor on and off.

- A. velocity control
- B. pressure control
- C. temperature control ✓
- D. volume control

Q25 Part B

In the cycles of a car air-conditioning system, the _____ component cools the refrigerant gas.

- A. expansion valve
- B. condenser ✓
- C. compressor
- D. receiver-drier

Q26 Part B

The overall heat of steam is the sum of ____ + internal latent heat + external work of evaporation.

- A. dryness fraction
- B. hidden heat
- C. sensible heat ✓
- D. latent heat

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Q27 Part B

Which of the following statements is/are correct?
Statement I - The annealing process uses heat to reduce the hardness and increase the ductility and toughness of various steels, cast iron, and alloys.
Statement II - Quenching is a rapid cooling process that alters specific properties of materials by manipulating the cooling rate.

A. Statement (I) is correct but Statement (II) is incorrect.
B. Statement (I) and (II) both are correct. ✓
C. Statement (I) is incorrect but Statement (II) is correct.
D. Statement (I) and (II) both are incorrect.

Q28 Part B

Which of the following statements correctly describes the placement and purpose of orientation marks on a drawing sheet?

1. Orientation marks are placed at two opposite corners of the drawing sheet to indicate the correct orientation on the drawing board.
2. Orientation marks consist of arrow heads placed across the frame, with one at the shorter side and one at the longer side, coinciding with the centering marks.
3. One of the orientation marks always points towards the draughtsman, indicating the direction in which the drawing sheet should be placed.
4. Orientation marks are used to mark the midpoint of each side of the drawing sheet for accurate centering.

A. 1, 2, and 3 only
B. 1 and 4 only
C. 2 and 3 only ✓
D. 1, 2, and 4 only

Q29 Part B

Ton of refrigeration can be expressed as:

A. BTU per hour heat gain/6000
B. BTU per hour heat gain/10000
C. BTU per hour heat gain/12000 ✓
D. BTU per hour heat gain/1000

Q30 Part B

Which of the following is a component of the high side of a vapour compression cycle?

A. Accumulator
B. Compressor ✓
C. Suction line
D. Evaporator

Q31 Part B

In engineering drawing, what is defined as the path of a moving point with no thickness?

A. Angle
B. Curve
C. Point
D. Line ✓

Q32 Part B

Which of the following is an example of a p-type semiconductor?

A. Silicon doped with phosphorus
B. Silicon doped with arsenic
C. Silicon doped with boron ✓
D. Germanium doped with phosphorus

Q33 Part B

The instrument used to measure high temperature is a _____.

A. manometer
B. barometer
C. pyrometer ✓
D. vacuum pressure gauge

Q34 Part B

Electromagnetic clutches in car air conditioning systems operates electrically but transmits _____ type of torque.

A. potential
B. chemical
C. mechanical ✓
D. kinetic

Q35 Part B

Identify the two main types of thermistors used in an air-conditioning system.

A. Positive thermal coefficient (PTC) and negative time coefficient (NTC)
B. Programmable temperature coefficient (PTC) and negligible temperature coefficient (NTC)
C. Positive temperature coefficient (PTC) and negative temperature coefficient (NTC) ✓
D. Positive temperature calibration (PTC) and negative temperature calibration (NTC)

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Q36 Part B

Pencils are rated in engineering drawings based on the _____.

- A. hardness or softness of the lead ✓
- B. colour of the lead
- C. durability of the lead
- D. shape of the lead

Q37 Part B

Why is it important to follow proper disposal procedures for industrial waste?

- A. To allow waste to decompose anywhere
- B. To reduce the number of trash bins needed
- C. To save time and effort in sorting waste
- D. To comply with environmental regulations and reduce pollution ✓

Q38 Part B

Which of the followings effects of suction pressure in V.C system is INCORRECT?

- A. Evaporator pressure drops due to frictional resistance
- B. Increases the refrigerating effect ✓
- C. Decreases the refrigerating effect
- D. Increases the compressor work

Q39 Part B

What does an optical pyrometer measure?

- A. The relative density of liquids
- B. The temperature of the surface ✓
- C. The volume of liquids
- D. The pressure of gases

Q40 Part B

Match the electrical equipment of central Air Conditioning plant system with their correct functioning.

Equipment Name	Functioning
Electronic expansion valve (A)	(P) Fan is operated at step rotation speed by using the inverter
Solenoid valve (B)	(Q) Used to switch outdoor heat exchanger to evaporator
Four-way valve (C)	(R) Used to return oil from the oil separator to the compressor
Inverter fan (D)	(S) Control the refrigerant amount to cool the diode bridge

- A. A-S, B-R, C-P, D-Q
- B. A-S, B-P, C-Q, D-R
- C. A-P, B-R, C-Q, D-S
- D. A-S, B-R, C-Q, D-P ✓

Q41 Part B

Match the correct length and breadth of the Trimmed sizes of sheets.

Designation	Trimmed size
A. A0	P. 297 × 420
B. A1	Q. 420× 594
C. A2	R. 594 × 841
D. A3	S. 841 × 1189

- A. A - R, B - S, C - Q, D - P
- B. A - P, B - R, C - Q, D - S
- C. A - S, B - R, C - P, D - Q
- D. A - S, B - R, C - Q, D - P ✓

Q42 Part B

Which of the following is a key advantage of using Thyristors in power control applications?

- A. High frequency switching ✓
- B. High efficiency and low power loss
- C. Small size and low cost
- D. Low voltage handling capabilities

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Q43 Part B

Which of the following uses of wire gauge is INCORRECT?

A. It measures the diameter of a wire.

B. It does not help determine how much current a wire can carry. ✓

C. Using the wrong wire gauge can damage appliances and electronic devices.

D. It is used in electrical installations, welding and other applications.

Q44 Part B

Which of the following parts of a hammer-head is used for shaping and forming work like riveting and bending?

A. Face

B. Eyehole

C. Pein ✓

D. Cheek

Q45 Part B

In a refrigeration system, _____ are shut-off valves used to control the flow of the refrigerant.

A. thermistors

B. cocks

C. ducts

D. strainers ✓

Q46 Part B

What is the blade length of the T1 'T' square, as per IS:1360-1989?

A. 500 mm

B. 1500 mm

C. 700 mm

D. 1000 mm ✓

Q47 Part B

Which of the following components of a reciprocating compressor is welded at the top of the bottom dome or at the top dome of the compressor?

A. Piston pin

B. Process tube ✓

C. Discharge tube

D. Suction tube

Q48 Part B

A device operates at 240 V and consumes 480 W of power. What is the current flowing through the device?

A. 2 A ✓

B. 1 A

C. 1.5 A

D. 2.5 A

Q49 Part B

Which of the following is INCORRECT about the compartment maintenance of walk-in coolers?

A. Use a soft cleaning cloth with a mild detergent to wipe away dirt and stains.

B. Use a soft dry cloth to dry up finishes.

C. Use abrasive and corrosive type of cleaners. ✓

D. Use a clean damp cloth to remove any chemical residue.

Q50 Part B

Which of the following components of thermostatic expansion valve covers all external parts and prevents refrigerant leakage to atmosphere?

A. Diaphragm

B. Sensing bulb

C. Equalizer tube connection

D. Valve body ✓

Q51 Part B

What force (effort) will be required to push a load, initially at rest, of mass 500 g, so that at a distance of 20 m, its final velocity is 20 m/sec [Assume that there is no friction and 'g' = 10 m/s^2].

A. 5 J

B. 10 N

C. 5 N ✓

D. 10 J

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Q52 Part B

When drawing a curved line of a specific length in an engineering drawing, which tool is most appropriate for ensuring accuracy?

A. Protractor

B. Straightedge

C. French Curve ✓

D. Compass

Q53 Part B

A refrigeration is obtained when one ton of ice at 32°F is melted into water at 32° F in _____.

A. 6 hours

B. 1 hour

C. 24 hours ✓

D. 12 hours

Q54 Part B

Which of the following types of wooden mallets are used for hollowing panel beatings?

A. Standard wooden mallets

B. End-faked mallets

C. Side-faked mallets

D. Bossing mallets ✓

Q55 Part B

Match the Parts Identified with their Functions in cold storage systems in refrigerator systems.

Parts Identified	Functions
A. Cold room	P. Indicates the room temperature (cold room)
B. Main cold room door	Q. Controls the flow of liquid refrigerant
C. Expansion valve	R. Keeps the room air tight
D. Dial thermometer	S. Product storing area

A. A-S, B-R, C-P, D-Q

B. A-R, B-S, C-Q, D-P

C. A-S, B-R, C-Q, D-P ✓

D. A-P, B-R, C-Q, D-S

Q56 Part B

What is the primary principle behind the generation of electrical energy in a piezoelectric device?

A. Conversion of thermal energy into electrical energy

B. Conversion of chemical energy into electrical energy

C. Conversion of light energy into electrical energy

D. Conversion of mechanical stress into electrical energy ✓

Q57 Part B

A thermostat is a _____ standard control serving as an 'ON' and 'OFF' switch for the compressor in a refrigeration system.

A. humidity

B. density

C. pressure

D. temperature ✓

Q58 Part B

Which of the following parts of a chilling tank contains direct expansion coils, equally distributed throughout the tank?

A. Insulation of ice tank

B. Ice tank ✓

C. Ice block

D. Cooling coil

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Q59 Part B

Match the columns and select the correct option from the following.

Types of System	Characteristics of System
(A) Open system	(P) A system which consists of a single phase
(B) Isolated system	(Q) System is one which is thermally insulated from its surroundings
(C) Adiabatic system	(R) System which exchanges neither energy nor matter with environment
(D) Homogeneous system	(S) System is one in which matter flows into or out of the system

- **A.** A-S, B-R, C-Q, D-P ✓
- **B.** A-S, B-R, C-P, D-Q
- **C.** A-P, B-R, C-Q, D-S
- **D.** A-Q, B-R, C-S, D-P

Q60 Part B

The element of the humidity control changes as the humidity changes in an air conditioning system. This element is called _____.

- **A.** hydroscopic element
- **B.** freezing element
- **C.** hygroscopic element ✓
- **D.** sonic element

Q61 Part B

In engineering drawing (lettering and numbering), a single stroke means that the _____.

- **A.** thickness of the line of the letter or number is obtained in one stroke of the pencil ✓
- **B.** thickness of the line of the letter or number is obtained in three strokes of the pencil
- **C.** thickness of the line of the letter or number is obtained in no strokes of the pencil
- **D.** thickness of the line of the letter or number is obtained in two strokes of the pencil

Q62 Part B

Match the correct function of parts of a refrigerator.

Refrigerator Part	Function
(A) Deep freezer	(P) meters out the required amount of refrigerant
(B) Compressor	(Q) reservoir for excess liquid refrigeration
(C) Receiver	(R) provides the pumping action to the refrigerant
(D) Capillary tube	(S) keeps food frozen for extended periods of time

- **A.** A-P, B-R, C-Q, D-S
- **B.** A-S, B-R, C-P, D-Q
- **C.** A-Q, B-R, C-S, D-P
- **D.** A-S, B-R, C-Q, D-P ✓

Q63 Part B

In the condenser, the vapour refrigerant at high pressure and at high temperature is condensed to the liquid refrigerant at _____ and _____.

- **A.** high pressure; low temperature ✓
- **B.** high temperature; low pressure
- **C.** low pressure; low volume
- **D.** high temperature; high volume

Q64 Part B

A compressor is controlled by a _____ control switch during refrigeration cycle and defrost.

- **A.** temperature ✓
- **B.** pressure
- **C.** density
- **D.** volume

Q65 Part B

Which of the following is a fundamental unit?

- **A.** newton
- **B.** metre ✓
- **C.** pascal
- **D.** watt

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Q66 Part B

Which of the following care and maintenance methods of air compressor in refrigeration system is INCORRECT?

- A. Ensure that the belt guards are not fitted properly. ✓
- B. Ensure that the drive belts are in good condition.
- C. The recommended grade of oil should be used.
- D. The level of the oil should be maintained at specified marks shown on the dip stick.

Q67 Part B

The process where moisture is removed from the air, keeping its dry bulb temperature constant, is called the _____.

- A. radiation process
- B. sensible heating process
- C. humidification process
- D. dehumidification process ✓

Q68 Part B

In a refrigeration system, cocks refer to ____.

- A. devices that separate the liquid and gas refrigerant, and remove moisture
- B. devices installed in the piping to filter out solid particles
- C. manual shut-off valves used to control the flow of the refrigerant ✓
- D. devices that increase the pressure and temperature of the refrigerant gas

Q69 Part B

In _____ type of drier, the shell charged with moisture absorbing chemical is permanently sealed.

- A. Reusable
- B. Sealed ✓
- C. Unsealed
- D. Refillable

Q70 Part B

_____ of air conditioning are the diagrams for HVAC components and control systems.

- A. Blueprints
- B. HVAC drawings
- C. Schematics drawings ✓
- D. Orthogonal drawings

Q71 Part B

_____ is the process of preserving food stuffs on a large scale by refrigeration.

- A. Godown storage
- B. Hot storage
- C. Cold storage ✓
- D. Clinical storage

Q72 Part B

In Refrigeration and Air-Conditioning systems, a shell and tube type evaporator is also known as _____.

- A. fouling factor
- B. sensible heat
- C. chiller ✓
- D. latent heat

Q73 Part B

Which of the following components is provided in the freezer to control the temperature of the unit?

- A. Compressor
- B. Thermostat ✓
- C. Capillary tube
- D. Condenser fan motor

Q74 Part B

Which of the following is the key difference between a fuse and a circuit breaker?

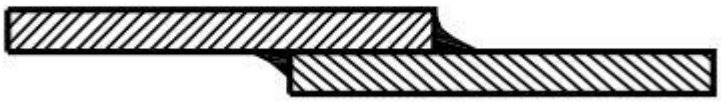
- A. A fuse can be reset after tripping, while a circuit breaker must be replaced.
- B. A fuse is used for high-voltage circuits, while a circuit breaker is used for low-voltage circuits.
- C. A fuse is a mechanical device, while a circuit breaker is an electronic device.
- D. A fuse is a one-time-use device, while a circuit breaker can be reset and reused. ✓

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Q75 Part B

Identify the type of brazed joint shown below.



A. Joggle Lap

B. Simple Lap ✓

C. Strapped Lap

D. Butted Flange

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Q1 Part B

Which of the following screwdrivers has cross-shaped tips that are unlikely to slip from the cruciform slots in Philips recessed head screws?

A. Stumpy screwdriver

B. Offset screwdriver

C. Cross-recess screwdriver ✓

D. Ratchet screwdriver

Q2 Part B

What is the primary reason for conducting a vehicle road test?

A. To test how fast the vehicle can go

B. To avoid the need for inspections

C. To increase fuel efficiency

D. To ensure the vehicle is functioning safely and correctly ✓

Q3 Part B

Which of the following statements is/are true about Non-Functional Dimensions (NF) in engineering drawing?

Statement 1: Non-functional Dimensions are shown without limits, as they do not affect the functionality of the component or space.
Statement 2: Non-Functional Dimensions are typically used for reference purposes only, and do not impact the assembly or performance of the component or space.

A. Only statement 2 is true ✓

B. Only statement 1 is true

C. Both statements are true

D. Neither statement is true

Q4 Part B

Identify the correct throttling device used in the operation of cold storage plant of refrigerator.

A. Orifice meter

B. Manometer

C. Pressure gauge

D. Expansion valve ✓

Q5 Part B

Which of the following condensers of an ice cube machine cools the refrigerant vapour by using heat exchanger between the condenser pipes and the evaporated water?

A. Air cooling condenser

B. Water cooling condenser

C. Surface condenser

D. Evaporative condenser ✓

Q6 Part B

In the Automotive Air conditioning system, a/an _____ is used to transmit the power from the engine crankshaft to the compressor by means of a drive belt.

A. clutch ✓

B. bearing

C. air filter

D. evaporator

Q7 Part B

A 100-mm centre-punch could have a 10-mm diameter body and a 6-mm diameter point ground to an angle of _____.

A. 120°

B. 90° ✓

C. 60°

D. 30°

Q8 Part B

What is the primary reason for the heating effect in a conductor when an electric current passes through it?

A. The electric field in the conductor causes heat generation.

B. The movement of electrons causes heat generation. ✓

C. The conductor absorbs heat from the surrounding environment.

D. The movement of protons causes heat generation.

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Q9 Part B

Which of the following compressors is mainly used in large industrial systems running at high speeds through the use of step-up gears?

- A. Centrifugal compressor
- B. Screw compressor ✓
- C. Scroll compressor
- D. Reciprocating compressor

Q10 Part B

In a refrigerator, the cold vapour continues to absorb heat and gets superheated in the last portion of the _____.

- A. expansion valve
- B. condenser
- C. evaporator ✓
- D. compressor

Q11 Part B

_____ recommend(s) 20 mm wide margins for sheet sizes AO and A1 in engineering drawings.

- A. Borders and frames: SP: 46 (2003) ✓
- B. Geographic coordinate systems
- C. Custom grids
- D. Grid reference system

Q12 Part B

Match the components in Column A with those in Column B.

Column A Column B
Thermometer pyrometer (A) Thermometric property resistance (P)
Mercury-in-glass (B) Electromotive force (Q)
Thermocouple (C) Length (R)
Electric resistance (D) Intensity of radiation (S)

- A. A-S, B-R, C-Q, D-P ✓
- B. A-P, B-R, C-Q, D-S
- C. A-S, B-R, C-P, D-Q
- D. A-R, B-S, C-Q, D-P

Q13 Part B

A Carnot refrigeration cycle absorbs heat at 270 K and rejects it at 300 K. What will be the coefficient of performance of this refrigeration cycle?

- A. 2
- B. 4
- C. 9 ✓
- D. 6

Q14 Part B

Which of the following is a key electrical safety tip in a workshop?

- A. Operate machines with wet hands
- B. Ignore frayed wires if the device is still working
- C. Use water to clean electrical panels
- D. Ensure electrical equipment is properly grounded ✓

Q15 Part B

Cold storages are provided with _____ to preserve the food beverages.

- A. air-tight insulated rooms ✓
- B. water sealed insulated rooms
- C. rock wool made insulated rooms
- D. fire bricks insulated rooms

Q16 Part B

Refrigeration means the removal of _____ from a system.

- A. liquid
- B. pressure
- C. volume
- D. heat ✓

Q17 Part B

In a refrigeration system, a 'cold storage' is a _____ refrigeration application.

- A. high temperature
- B. low temperature ✓
- C. high melting temperature
- D. high boiling temperature

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Q18 Part B

In a commercial refrigeration system, relative humidity (R.H.) is defined as the _____.

A. ratio of the actual amount of water present in one cubic foot to the amount of moisture needed to saturate the water at that same temperature

B. ratio of the actual amount of oxygen present in one cubic foot to the amount of moisture needed to saturate the air at that same temperature

C. ratio of the actual amount of moisture present in one cubic foot to the amount of moisture needed to saturate the air at that same temperature ✓

D. ratio of the actual amount of refrigerant present in one cubic foot to the amount of moisture needed to saturate the refrigerant at that same temperature

Q19 Part B

Humidification process is represented by a/an _____ line on the psychrometric chart.

A. intersecting

B. vertical ✓

C. diagonal

D. curved

Q20 Part B

In a refrigeration system, which of the following functions is NOT performed by valves?

A. Regulating pressure

B. Regulating temperature ✓

C. Throttling flow

D. Preventing backflow

Q21 Part B

The accuracy of measurement by a try square is about:

A. 0.02 mm per 10 mm length

B. 0.001 mm per 10 mm length

C. 0.004 mm per 10 mm length

D. 0.002 mm per 10 mm length ✓

Q22 Part B

Which of the following is a major risk associated with fuel spillage?

A. Fire hazards and environmental contamination ✓

B. Better lubrication for workshop floors

C. Increased productivity

D. Reduced need for ventilation

Q23 Part B

Which option shows the correct answer when 27°C is converted to the kelvin scale?

A. – 300 K

B. 246 K

C. 300 K ✓

D. – 246 K

Q24 Part B

Match the List-I (Chillers) to the List-II (Compression processes) in Air conditioning.

Chiller	Compression Process
(A) Reciprocating	(P) Spiral Rotors
(B) Centrifugal	(Q) Helical Rotors
(C) Screw	(R) Rotating Impeller
(D) Scroll	(S) Uses Piston

A. A-S, B-R, C-Q, D-P ✓

B. A-S, B-R, C-P, D-Q

C. A-R, B-S, C-Q, D-P

D. A-S, B-Q, C-R, D-P

Q25 Part B

What is the primary purpose of shielding in electrical cables?

A. To increase the voltage capacity of the cable

B. To increase the current-carrying capacity of the cable

C. To protect the cable from external electromagnetic interference ✓

D. To prevent heat loss from the cable

Q26 Part B

In which of the following parts of the vapour compression system does the liquid vapour refrigerant absorb its latent heat of vaporisation from the medium that is to be cooled?

A. Compressor

B. Condenser

C. Expansion valve

D. Evaporator ✓

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Q27 Part B

Which of the following actions is a part of the emergency response team's responsibilities during an active emergency?

A. Preparing reports on emergency incidents

B. Rescuing persons in immediate danger ✓

C. Conducting routine safety checks

D. Scheduling regular evacuation drills

Q28 Part B

A 'halide torch' is used to detect the leak of _____ vapour.

A. water

B. acrolein

C. freon ✓

D. formaldehyde

Q29 Part B

Which of the following parts is NOT seen in cold storage plants of a refrigeration system?

A. Condenser

B. Evaporator

C. Boiler ✓

D. Compressor

Q30 Part B

In which of the following valves is the inlet located at the outlet of the condenser coil and outlet is located to the inlet of the evaporator coil?

A. Low side float valve

B. High side float valve ✓

C. Electronic expansion valve

D. Level master control

Q31 Part B

In a circuit with a NTC type thermistor and a fixed resistor connected in series connected to a DC power supply, what will happen to the output voltage if there is a rise in temperature?

A. The output voltage will increase. ✓

B. The output voltage will remain constant.

C. The output voltage will fluctuate depending on the resistor value.

D. The output voltage will decrease.

Q32 Part B

In which of the following types of bottle coolers is pre cool storage space created and circulation of cooling of bottles even?

A. Vertical type bottle coolers ✓

B. Visible coolers

C. Commercial type bottle coolers

D. Horizontal type bottle coolers

Q33 Part B

When a cold store is used to store different types of foods, then that cold storage is called _____.

A. frozen storage

B. mixed storage ✓

C. uniform storage

D. common storage

Q34 Part B

What is the solution of the causes of valves being bent in train ACs?

A. Install a new condenser.

B. Replace the compressor from the AC system.

C. Evacuate the incondensable gases and moisture from the AC system. ✓

D. Recover the refrigerant from the AC system.

Q35 Part B

In a refrigeration system, the heat rejection factor for a condenser is defined as the ratio of _____.

A. heat rejected at the condenser to the refrigerating effect ✓

B. increase in load on the condenser to the increase in compression ratio

C. increase in work done by the condense to the refrigerating effect

D. refrigerating effect to the heat rejected at the condenser

Q36 Part B

Which of the followings refrigeration systems use non-poisonous liquid (Nitrogen) to cool the space?

A. Liquid gas refrigeration system ✓

B. Ice refrigeration system

C. Dry ice refrigeration system

D. Water vapour system

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Q37 Part B

Which of the following electrical components of refrigerator is used to activate the defrost heater periodically?

A. Overload protector

B. Fan motor

C. PTC relay

D. Defrost timer ✓

Q38 Part B

Which of the following is INCORRECT about the refrigeration unit maintenance of walk-in coolers?

A. Need not check that the voltage is within system design limits or not ✓

B. Check to see whether wire mounting nuts are secure

C. Heat exchanger inspection and maintenance

D. Check the contactor for proper operation and for worn contact points

Q39 Part B

The _____ in a car AC cools the cabin by absorbing heat from the car's interior.

A. accumulator

B. compressor

C. evaporator ✓

D. condenser

Q40 Part B

In the electrical equipment of refrigeration and air conditioning systems, 'PWM' stands for _____.

A. Pulse Wide Modelling

B. Program Width Modulation

C. Pulse Width Modulation ✓

D. Pulse Wide Monitoring

Q41 Part B

Match the Mechanical Components (List-I) of central Air-Conditioning system to its Functions (List-II).

Mechanical Components (List-I)	Functions (List-II)
(A) Ducts	(P) Cool the condensing water
(B) Drier strainer	(Q) Collect liquid refrigerant coming from the condenser
(C) Liquid receiver	(R) Prevent moisture and dust particles
(D) Cooling tower	(S) Carry air from one place to another place

A. A-S, B-P, C-Q, D-R

B. A-P, B-R, C-Q, D-S

C. A-S, B-Q, C-R, D-P

D. A-S, B-R, C-Q, D-P ✓

Q42 Part B

Match the columns and select the correct option from the following.

Term	Brief Description
(A) Refrigeration	(P) (Actual C.O. P / theoretical C.O. P)
(B) Refrigerated system	(Q) Equipment employed to maintain the system at a low temperature
(C) Refrigerating system	(R) System which is kept at lower temperature
(D) Relative C.O.P	(S) Cooling or removal of heat from a system

A. A-S, B-R, C-P, D-Q

B. A-R, B-S, C-Q, D-P

C. A-P, B-R, C-Q, D-S

D. A-S, B-R, C-Q, D-P ✓

Q43 Part B

High side float valve is a refrigeration control device whose inlet is located at the:

A. outlet of the condenser coil and outlet is located at the inlet of the evaporator coil ✓

B. outlet of the receiver coil and outlet is located at the inlet of the economiser coil

C. inlet of the condenser coil and outlet is located at the outlet of the evaporator coil

D. outlet of the compressor coil and outlet is located at the inlet of the condenser coil

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Q44 Part B

Which of the following compressors is a positive displacement machine that compress with two inter fitting, spiral shaped scroll members?

- **A.** Scroll type compressor ✓
- **B.** Screw compressor
- **C.** Centrifugal compressor
- **D.** Axial compressor

Q45 Part B

In Industrial Air Conditioning, the control is defined as:

- **A.** a device used in commercial HVAC machineries to cool secondary refrigerants
- **B.** starting, stopping or regulation of heating, ventilating, and air conditioning system ✓
- **C.** a microprocessor that continuously monitors data from a network of sensors
- **D.** a device used to generate steam and supply to Air Conditioning system

Q46 Part B

What is the function of a drier/strainer in a refrigerator?

- **A.** Removes the heat carried by the refrigerant
- **B.** Provides the necessary pumping action to the refrigerant
- **C.** Purifies the refrigerant and eliminates moisture ✓
- **D.** Metres out the required amount of refrigerant to pick the heat from the evaporator

Q47 Part B

In a logic circuit, three SPST (Single Pole Single Throw) switches are used to implement a logic gate. The switches are connected in series. What is the output of the circuit if all switches are closed?

- **A.** Undefined
- **B.** 1 ✓
- **C.** The output will depend on the type of gate used
- **D.** 0

Q48 Part B

A fire damper in an air-conditioning system is a _____.

- **A.** safety device installed within the ductwork that automatically closes valves when detecting high pressure water flow
- **B.** safety device installed within the ductwork that automatically closes when detecting high heat or smoke from a fire ✓
- **C.** safety device installed within the ductwork that automatically opens when detecting high heat or smoke from a fire
- **D.** safety device installed within the ductwork that automatically opens when detecting high air flow

Q49 Part B

For which of the following calipers, a screw and nut are provided for opening and closing the caliper legs?

- **A.** Spring joint calipers ✓
- **B.** Firm joint calipers
- **C.** Simple calipers
- **D.** Leg and point calipers

Q50 Part B

An angle greater than 180 degrees is referred to as _____.

- **A.** a right angle
- **B.** an acute angle
- **C.** an obtuse angle
- **D.** a reflex angle ✓

Q51 Part B

Which of the following design section is used in inverters to give a steady output voltage of 230 or 110 V AC, irrespective of the load?

- **A.** Pulse width modulation ✓
- **B.** DC converter
- **C.** Power factor correction
- **D.** IGBT transistors

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Q52 Part B

Which of the following equipment of an air conditioning system directs the conditioned air from the circulating fan to the space to be air conditioned at proper point?

A. Return outlets
B. Supply outlets
C. Supply duct ✓
D. Circulation fan

Q53 Part B

What is the primary goal of the 5S concept?

A. To replace traditional safety measures
B. To increase the number of safety regulations
C. To improve workplace organisation and efficiency ✓
D. To eliminate the need for maintenance

Q54 Part B

Which of the following care and maintenance of a marking table is INCORRECT?

A. The marking table should be protected from damage.
B. The marking table should be protected from rust.
C. After use, the marking table should be cleaned with a soft cloth.
D. The surface of the marking table should not be given a thin layer of oil. ✓

Q55 Part B

A rectangular floor measuring 10 m × 8 m is to be tiled. If each tile covers 0.25 m^2, how many tiles are needed?

A. 200
B. 300
C. 320 ✓
D. 250

Q56 Part B

Which of the following is INCORRECT about line standard?

A. More accurate due to line thickness ✓
B. Subject to parallax error
C. Quick measurements over a wide range
D. Used to measure the distance between two engraved lines

Q57 Part B

Match the correct meanings/definitions with the respective thermal properties of insulating materials in refrigeration and air conditioning systems.

Thermal properties	Definition
(A) Thermal conductivity	(P) Characterised by flash point, smoke index, fire point
(B) Heat capacity	(Q) Measure of the rate of progression of temperature rise in an insulating material
(C) Thermal diffusivity	(R) Measure of the heat absorbed for a certain temperature rise
(D) Combustibility	(S) Ability of a material to retard the flow of heat

A. A-P, B-R, C-Q, D-S
B. A-S, B-Q, C-R, D-P
C. A-S, B-R, C-P, D-Q
D. A-S, B-R, C-Q, D-P ✓

Q58 Part B

Which of the following is a primary difference between a primary and a secondary electrochemical cell?

A. A secondary cell produces more energy than a primary cell.
B. A primary cell can be recharged, while a secondary cell cannot be recharged.
C. A primary cell cannot be recharged, while a secondary cell can be recharged. ✓
D. There is no difference between primary and secondary cells.

Q59 Part B

Why do cars have treaded tyres?

A. To increase friction and grip on the road ✓
B. To reduce weight
C. To decrease friction
D. To increase speed

Q60 Part B

Which of the following applications of a vapour compression system use the refrigerated cabinets to store the perishable food products at the required temperature levels between −10°C to 30°C?

A. Visible cooler
B. Deep freezer ✓
C. Water cooler
D. Bottle cooler

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Q61 Part B

Which of the following ducts carries the used air from the air-conditioned room and supplies it to the AHU?

- A. Fresh air duct
- B. Extended plenum duct
- C. Supply duct
- D. Return duct ✓

Q62 Part B

The automatic device that controls the temperature of the refrigeration unit is _____.

- A. barometer
- B. thermostat ✓
- C. regulator
- D. manometer

Q63 Part B

What is the primary purpose of preventive maintenance?

- A. To increase the workload of employees
- B. To reduce unexpected equipment failures ✓
- C. To delay repairs until breakdowns occur
- D. To eliminate the need for regular inspections

Q64 Part B

Which of the following commercial compressors consists of two meshing helically grooved rotors with very close tolerance within a housing?

- A. Twin screw compressor ✓
- B. Scroll compressor
- C. Reciprocating compressor
- D. Centrifugal compressor

Q65 Part B

In Refrigeration and Air Conditioning systems, the 'refrigeration process' refers to _____ cycle.

- A. closed ✓
- B. cooling
- C. heating
- D. open

Q66 Part B

A statement and conclusion for pictorial drawing are given below. Determine the logical relationship between them.

Statement: Pictorial drawings are three-dimensional and provide a visual representation of an object.

Conclusion: Therefore, pictorial drawings are useful for describing the shape of a piece part or component.

- A. The conclusion does not logically follow from the statement.
- B. The conclusion is partially supported by the statement.
- C. The conclusion is unrelated to the statement.
- D. The conclusion logically follows from the statement. ✓

Q67 Part B

Match the following designations of sheets with their respective trimmed sizes in length and breadth.

Designation Trimmed Size
A) A0 P) 297 × 420
B) A1 Q) 420 × 594
C) A2 R) 594 × 841
D) A3 S) 841 × 1189

- A. A-S ; B-R ; C-Q ; D-P ✓
- B. A-Q ; B-R ; C-S ; D-P
- C. A-S ; B-P ; C-Q ; D-R
- D. A-P ; B-R ; C-Q ; D-S

Q68 Part B

Sine bars are used when a high degree of accuracy less than _____ is needed for measuring angles.

- A. 1 degree
- B. 30 degrees
- C. 1 minute ✓
- D. 30 minutes

Q69 Part B

The compressor is controlled by a _____ switch during both the defrost and refrigeration cycle.

- A. velocity control
- B. volume control
- C. pressure control
- D. temperature control ✓

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Q70 Part B

What is the term used to describe programs that distinguish between uppercase and lowercase letters, treating "yes" and "YES" as different inputs?

- A. Case-insensitive
- B. Numerical
- C. Case-sensitive ✓
- D. Alphabetical

Q71 Part B

In HVAC systems, a _____ is a self-contained cooling device that has all required parts, such as condenser, compressor, and evaporator in a single enclosure.

- A. screw chiller
- B. packaged chiller ✓
- C. flooded type chiller
- D. scroll chiller

Q72 Part B

The SI unit of 'ultimate stress' is _____.

- A. pascal (Pa) ✓
- B. newton (N)
- C. newton per meter (N/m)
- D. joule per square meter (J/m^2)

Q73 Part B

Which of the following conversions are correct?

- A. 1 L = 1000 dm^3 and 1 mL = 1000 cm^3
- B. 1000 L = 1 dm^3 and 1000 mL = 1 cm^3
- C. 1 L = 1 dm^3 and 1 mL = 1 cm^3 ✓
- D. 1000 L = 1 dm^3 and 1 mL = 1000 cm^3

Q74 Part B

What will be the COP of a refrigeration system if the work input is 80 kJ/kg and refrigeration effect produced is 160 kJ/kg of refrigerant flowing?

- A. 4
- B. 1
- C. 2 ✓
- D. 3

Q75 Part B

Natural rubber is soft at high temperatures and brittle at low temperatures; hence raw rubber is heated with sulphur and other additives at a temperature range between 373 – 415 K to make it strong. This process is called _____ of rubber.

- A. vulcanisation ✓
- B. molding
- C. latex
- D. extrusion

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Q1 Part B

When creating 10 mm single-stroke capital letters in vertical style, what does the 10 mm distance between horizontal parallel lines represent?

A. Letter width

B. Letter height ✓

C. Stroke thickness

D. Interline spacing

Q2 Part B

Which of the following colours is commonly used for caution signs?

A. Blue

B. Yellow ✓

C. Red

D. Green

Q3 Part B

Which of the following is the primary reason why copper is widely used as a conductor in electrical wiring?

A. Copper has low resistance and high conductivity. ✓

B. Copper has a low melting point.

C. Copper is abundant and inexpensive.

D. Copper has high resistance to electricity.

Q4 Part B

Which of the following components of a walk-in cooler is used to mount condensing unit assembly?

A. Condensate water evaporator

B. Condenser unit rack ✓

C. Drain line heater

D. Heat exchanger

Q5 Part B

Which of the following expansion valves functions to maintain a constant pressure in the evaporator?

A. Electronic expansion valve

B. Level master control

C. Automatic expansion valve ✓

D. Thermostatic expansion valve

Q6 Part B

Which of the following care and maintenance of car air-conditioning is INCORRECT?

A. Do not replace the evaporator coil to prevent ice formation. ✓

B. Vacuum the filter if it is dirty from driving in dusty or polluted areas.

C. Replace the cabin air filter regularly to prevent dust and pollen from clogging the system.

D. Perform electrical repairs to resolve issues with the electrical components of the AC unit.

Q7 Part B

A 100-mm prick punch with a 7-mm diameter body could have a 2.5-mm diameter point ground to an angle of _____.

A. 90°

B. 30° ✓

C. 120°

D. 45°

Q8 Part B

In which of the following components of ice cube machine, is the water frozen in tubes, extended vertically within a surrounding casing?

A. Compressor

B. Condenser

C. Tube ice generator ✓

D. Capillary tube

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Q9 Part B

The SI Unit of heat is ____.

A. kilogram

B. Ohm

C. Watt

D. Joule ✓

Q10 Part B

Convert 8.5% into a decimal.

A. 0.85

B. 8.5

C. 0.085 ✓

D. 85

Q11 Part B

Removal of moisture from the air, without change in its dry bulb temperature (DBT), is called _____.

A. latent heat

B. humidification

C. dehumidification ✓

D. sensible heat

Q12 Part B

A machine working on a Carnot cycle operates between 305 K and 260 K. What will be the COP when it is operated as a refrigerating machine?

A. 3.84

B. 5.78 ✓

C. 4.25

D. 2.67

Q13 Part B

HVAC system selection does NOT depend on the _____.

A. owner's desire

B. building configuration

C. number of tubes ✓

D. climate condition

Q14 Part B

For a given subcooling in °C, the increase in refrigeration effect is _____.

A. proportional to the specific heat of the liquid ✓

B. proportional to the entropy of the liquid

C. inversely proportional to the specific heat of the liquid

D. proportional to the irreversibility of the liquid

Q15 Part B

In a series circuit, three resistors of 10 ohms, 20 ohms, and R ohms are connected in series with a 12 V battery. What is the value of resistance R if current flowing in the circuit is 0.2 A?

A. 10 ohms

B. 20 ohms

C. 30 ohms ✓

D. 40 ohms

Q16 Part B

The SI unit of temperature is/are ____.

A. both kelvin and celsius

B. celsius

C. kelvin ✓

D. fahrenheit

Q17 Part B

_____ controllers uses compressed air to control Central Industrial Air Conditioning Systems.

A. Robotic

B. Automated

C. Pneumatic ✓

D. Hydraulic

Q18 Part B

Refrigeration controls are the refrigeration tools used to control the _____.

A. flow of refrigerant at various points throughout the refrigeration cycle ✓

B. pressure of refrigerant at various points throughout the refrigeration cycle

C. heat of refrigerant at various points throughout the refrigeration cycle

D. temperature of refrigerant at various points throughout the refrigeration cycle

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Q19 Part B

Which type of line is used to represent hidden edges or surfaces in a technical drawing, as per BIS SP 46-2003?

A. Continuous thin line

B. Continuous thick line

C. Dashed thin line ✓

D. Chain thin line

Q20 Part B

Which of the following calipers are used for marking lines, parallel to inside and outside edges and for locating the centre of round bars?

A. Spring joint calipers

B. Leg and point calipers ✓

C. Simple calipers

D. Firm joint calipers

Q21 Part B

Who is authorised to conduct road tests on workshop vehicles?

A. Only trained and certified personnel ✓

B. Visitors to the workshop

C. Any employee

D. The company accountant

Q22 Part B

Which of the following statements is INCORRECT about end standard?

A. It measures the distance between two parallel flat surfaces.

B. Faces are subject to wear.

C. It is slower but more accurate.

D. It is used to measure the distance between two engraved lines. ✓

Q23 Part B

What is the effect of scaling in a water cooled condenser?

A. Scale coating prevents the heat transfer from the hot gas to the water. ✓

B. Scale coating acts as a reservoir for excess liquid refrigeration.

C. Scale coating provides necessary pumping action to the refrigerant.

D. Scale coating increases the heat transfer from the hot gas to the water.

Q24 Part B

During which of the following processes of the working of a bus AC system does the cool liquid through the expansion valve become gas and the gaseous refrigerant absorb a lot of heat energy?

A. Evaporation ✓

B. Throttling

C. Condensation

D. Compression

Q25 Part B

The latent heat of fusion of ice is _____ kJ/kg.

A. 536

B. 436

C. 336 ✓

D. 236

Q26 Part B

What is the function of ducts in Central Industrial Air Conditioning System?

A. Used to carry air from one place to another place ✓

B. Located in the liquid line to prevent moisture and dust particles in Air Conditioning System

C. Reducing the pressure and amount of liquid refrigerant into the evaporator

D. Collect liquid refrigerant coming from condenser and supply to the expansion valve

Q27 Part B

What is the typical temperature range of a mercury-based clinical thermometer?

A. 0°C to 100°C

B. 35°C to 42°C ✓

C. 0°C to 50°C

D. −10°C to 110°C

Q28 Part B

Isobutane (R-600a) is never used for _____ of existing CFC-12 or HFC-134 a systems.

A. heating

B. conversion/retrofitting ✓

C. cooling

D. expansion

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Q29 Part B

A voltmeter with a resistance of 10,000 ohms is connected across a circuit that has a voltage of 50 V. What is the current flowing through the voltmeter?

- A. 2 mA
- B. 1 mA
- C. 5 mA ✓
- D. 4 mA

Q30 Part B

Identify the correct statement(s) regarding the Industrial Air-Conditioning System.
Statement 1: Three-way valves are traditionally used in constant-flow pumping systems.
Statement 2: In three-way valves, unused water is bypassed at the coil.

- A. Only Statement 2 is correct.
- B. Both Statement 1 and Statement 2 are correct. ✓
- C. Both Statement 1 and Statement 2 are incorrect.
- D. Only Statement 1 is correct.

Q31 Part B

In refrigeration and air conditioning systems, manual valves regulate the flow of _____ throughout the piping system.

- A. air
- B. milk
- C. refrigerant ✓
- D. nitrogen

Q32 Part B

In air conditioning systems, screw chiller uses ____ compression process.

- A. zigzag rotors
- B. spiral rotors
- C. rotating impeller
- D. helical rotors ✓

Q33 Part B

Which of the following units of a train AC consists of pressure gauges and pressure cutouts to protect the compressor against high pressure?

- A. Gauge board ✓
- B. Condenser
- C. Evaporator unit
- D. Compressor

Q34 Part B

The pencil type double mouth filter drier, used in the refrigerator is made of _____.

- A. titanium
- B. silicon
- C. brass
- D. copper ✓

Q35 Part B

If the length of a resistor is doubled, what happens to its resistance, assuming all other factors remain constant?

- A. The resistance is doubled. ✓
- B. The resistance remains the same.
- C. The resistance is halved.
- D. The resistance quadruples.

Q36 Part B

Find the lateral surface area of a cube with side length 5 cm.

- A. 125 cm^2
- B. 150 cm^2
- C. 200 cm^2
- D. 100 cm^2 ✓

Q37 Part B

Which of the following parts of a vapour compression system allows the liquid refrigerant under high pressure and temperature to pass at a controlled rate after reducing its pressure and temperature?

- A. Evaporator
- B. Condenser
- C. Receiver
- D. Expansion valve ✓

Q38 Part B

Which of the following terms in the 5S concept refers to making a habit of maintaining the established procedures?

- A. Shine
- B. Set
- C. Sort
- D. Sustain ✓

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Q39 Part B

Which of the following metals has the lowest melting point?

- A. Mercury ✓
- B. Iron
- C. Lead
- D. Gold

Q40 Part B

Squirrel cage induction motor is _____ phase induction motor.

- A. not a
- B. a two
- C. a single
- D. a three ✓

Q41 Part B

Match the given halocarbon refrigerants with their correct refrigerant numbers.

Chemical names	Refrigerant numbers
A. Methyl chloride	P. R-14
B. Dichlorodifluoromethane	Q. R-13
C. Monochlorotrifluoromethane	R. R-12
D. Carbon tetrafluoride	S. R-40

- A. A-S, B-Q, C-R, D-P
- B. A-S, B-R, C-Q, D-P ✓
- C. A-S, B-R, C-P, D-Q
- D. A-R, B-S, C-Q, D-P

Q42 Part B

The wave set of hacksaw teeth set has a pitch of _____.

- A. 2.0 mm
- B. 0.5 mm
- C. 0.8 mm ✓
- D. 1.0 mm

Q43 Part B

The temperature at which air becomes saturated with water vapour is called:

- A. dry bulb temperature
- B. wet bulb depression
- C. dew point temperature ✓
- D. wet bulb temperature

Q44 Part B

Which of the following types of chisels is used for separating metals after chain drilling?

- A. Cross-cut chisel
- B. Flat chisel
- C. Web chisel ✓
- D. Diamond point chisel

Q45 Part B

The _____ part in a frost-free refrigerator provides pumping action to the refrigerant.

- A. compressor ✓
- B. capillary tube
- C. receiver
- D. condenser

Q46 Part B

What is the minimum age for employment in factories or mines or other hazardous employment, according to Article 24 of the Indian Constitution?

- A. 14 years ✓
- B. 12 years
- C. 16 years
- D. 18 years

Q47 Part B

Which of the following remote controllers in split AC quickly maximises the cooling effect in any operation mode?

- A. Powerful operation ✓
- B. Swing
- C. Mode selector button
- D. Timer cancel

Q48 Part B

In the case of ammonia, the power consumption per ton refrigeration with wet compression as compared with that of dry compression is ____.

- A. 20% more
- B. 10% less ✓
- C. 20% less
- D. 10% more

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Q49 Part B

When passing stationary vehicles, keep a watch on _____ who may come out suddenly from the front of the stationary vehicle. While overtaking, it should be done on the _____ side. Always keep a good _____ between your vehicle and others.

A. cyclists; left; interval
B. vehicles; right; gap
C. drivers; left; space
D. pedestrians; right; distance ✓

Q50 Part B

What is the SI unit of 'volume'?

A. Litres
B. Cubic centimetre
C. Cubic metre ✓
D. Millilitres

Q51 Part B

Which of the following statements about title block is/are true?

Statement 1: The title block is situated in the bottom right-hand corner of the drawing sheet.
Statement 2: The contents of the title block are standardised and cannot be modified to suit individual company needs.

A. Both statements are false
B. Statement 1 is false, but statement 2 is true
C. Statement 1 is true, but statement 2 is false ✓
D. Both statements are true

Q52 Part B

Which of the following applications of a vapour compression system is a type of refrigerated cabinet that displays merchandise as well as cools it?

A. Bottle cooler
B. Visible cooler ✓
C. Deep freezer
D. Water cooler

Q53 Part B

Which of the following properties of lubricant oils is a measure of the resistance that the oil offers to the flow of electric current?

A. Cloud point
B. Viscosity
C. Dielectric strength ✓
D. Chemical stability

Q54 Part B

What is the function of Air flapper or Louver in refrigeration systems?

A. Increasing the pressure and temperature of the refrigerant gas
B. Controlling the influx of cold air into a refrigerating chamber ✓
C. Lowering the pressure of the refrigerant from high to low
D. Cooling the refrigerant gas, changing it to a liquid

Q55 Part B

Vertical type bottle coolers employ _____ convection of air inside storage cooling compartment.

A. gravitational
B. forced ✓
C. natural
D. buoyant

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Q56 Part B

Match the following types of lines with their correct descriptions according to their orientation and characteristics.

Description	Type of Line
A. A line that is neither parallel to a horizontal plane nor perpendicular to it.	1. Horizontal line
B. A line that is perpendicular to horizontal lines.	2. Vertical line
C. A line that changes its direction continuously.	3. Inclined line
D. A line that is parallel to a horizontal plane.	4. Curved line

A. A - 1, B - 2, C - 3, D - 4

B. A - 2, B - 3, C - 4, D - 1

C. A - 3, B - 2, C - 4, D - 1 ✓

D. A - 2, B - 1, C - 4, D - 3

Q57 Part B

Which of the following remote controllers in split AC is used to start or stop the fast cooling?

A. Timer off button

B. Timer on button

C. Power saver button

D. Turbo button ✓

Q58 Part B

In which of the following unitary air conditioners, are all components in one unit, like a rooftop package unit?

A. Window air conditioners

B. Ducted split systems

C. Ductless systems ✓

D. Central air conditioners

Q59 Part B

Which of the following parts of VRF or VRV system is used to return oil from the oil separator to the compressor?

A. Solenoid valve ✓

B. Electronic expansion valve

C. High pressure sensor

D. Four-way valve

Q60 Part B

Which of the following chemicals is NOT added to ordinary water for making brine solution?

A. Sodium chloride

B. Ethylene glycol

C. Propylene glycol

D. Hydrochloric acid ✓

Q61 Part B

Which of the following regarding ventilation inspection and commissioning is INCORRECT?

A. Proper ventilation is crucial for maintaining good indoor air quality

B. A well-balanced ventilation system cannot help optimise energy usage by preventing unnecessary over-ventilation ✓

C. Testing the functionality of automated controls that regulate the ventilation system, such as sensors and actuators

D. Many building codes and standards require regular ventilation system checks to ensure compliance

Q62 Part B

The automatic expansion valve is a ____ reducing device in a refrigeration system.

A. temperature

B. density

C. pressure ✓

D. volume

Q63 Part B

Which of the following types of control is NOT used in air-conditioning system?

A. Electric

B. Electronics

C. Pneumatic

D. Hydraulic ✓

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Q64 Part B

It is always desirable to sub cool the liquid refrigerant before the _____.

- A. expansion valve ✓
- B. condenser
- C. evaporator
- D. compressor

Q65 Part B

Which of the following information is necessary to construct a rectangle?

- A. Length of two adjacent sides ✓
- B. Length of one side and the area of the rectangle
- C. Only the length of one side
- D. Only the length of the diagonal

Q66 Part B

In a logic circuit, two inputs A and B are applied to an AND gate, and the output of the AND gate is connected to the input of a NOT gate. If the inputs A and B are both at logic 0, what will be the output of the entire circuit?

- A. Undefined
- B. 0
- C. 1 ✓
- D. 2

Q67 Part B

_____ type of controllers have semiconductor sensors in Air conditioning system.

- A. Electronic ✓
- B. Electric
- C. Pneumatic
- D. Hydraulic

Q68 Part B

For your safety at work, which of the following should be ensured?
1. All the required protective clothing and equipment are used.
2. Training and instruction necessary for performing tasks safely have been received.

- A. Only statement 1
- B. Neither statement 1 nor 2
- C. Only statement 2
- D. Both statements 1 and 2 ✓

Q69 Part B

In an air-conditioning system, control systems are used to _____.

- A. clean air, either fresh, recirculated or both
- B. regulate automatically the amount of cooling or warming ✓
- C. connect to heat exchange surfaces
- D. direct the air to the room through the outlets

Q70 Part B

Which of the following electrical components is NOT used by hydrocarbon appliances?

- A. The overload protector is sealed bimetal.
- B. The compressor relay is in solid state.
- C. ON/OFF and door switches should be of non-sealed type. ✓
- D. The thermostat is either located in a sealed electrical box or a solid state.

Q71 Part B

In a refrigeration system, _____ equipment is used for measuring the dry bulb and wet bulb temperature simultaneously.

- A. orificemeter
- B. psychrometer ✓
- C. barometer
- D. manometer

Q72 Part B

Which of the following 'V' blocks will have one 'V' groove and two grooves (slots) on either side for clamping in two positions?

- A. Double level single groove 'V' block
- B. Matched pair 'V' block
- C. Single level double groove 'V' block ✓
- D. Single level single groove 'V' block

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Q73 Part B

Which of the following statements is NOT correct for using scribers?

A. Scriber points are very sharp, so they are to be handled very carefully.

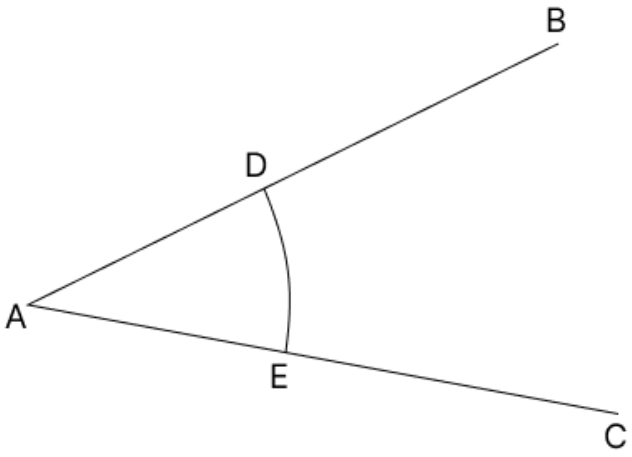
B. While scribing lines, the scriber is used like a pencil.

C. Do not put the scriber in your pocket.

D. Place a cork on the point when in use to prevent accidents. ✓

Q74 Part B

In the process of bisecting angle BAC in the given figure, why do we draw arcs from points D and E?



A. To find midpoint AB

B. To mark equal lengths

C. To intersect line AC

D. To intersect above A ✓

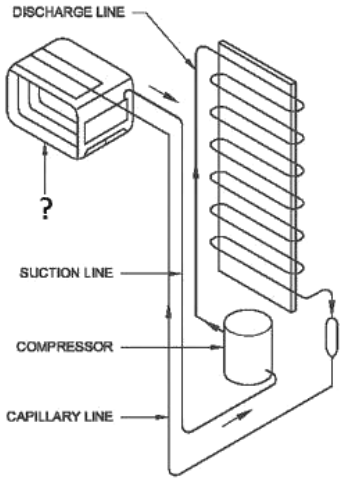
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Q75 Part B

Identify the part labelled with a question mark (?) from the skeleton of conventional household refrigerator.



A. Heating coil

B. Cooling coil ✓

C. Steam engine

D. Turbine

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Q1 Part B

Which of the following is NOT the correct characteristic of an I-head combustion chamber used in a petrol engine?

- A. I-head has higher surface to volume ratio and therefore there is a high amount of heat loss. ✓
- B. I-head is superior to an L-head engine at high compression ratios.
- C. I-head has a higher volumetric efficiency from larger valves or valve lifts.
- D. I-head has less flame travel length and hence there is a greater freedom from knock.

Q2 Part B

What is the name of the tool used for force amplification?

- A. Wheel
- B. Allen key
- C. Screw driver
- D. Lever ✓

Q3 Part B

A drawing instrument box is used to carry all _____ instruments.

- A. drawing ✓
- B. screening
- C. drilling
- D. casting

Q4 Part B

A circular hole of radius 3 cm is cut from a rectangular sheet of dimensions 12 cm × 10 cm. Find the remaining area.

(Take π = 3.14)

- A. 100 cm^2
- B. 91.74 cm^2 ✓
- C. 95.86 cm^2
- D. 75.74 cm^2

Q5 Part B

In which part of the IC engine are the cylinder liners fitted?

- A. Piston
- B. Cylinder head
- C. Cylinder block ✓
- D. Crankcase

Q6 Part B

Why is it important for every person to follow safety procedures in the workplace?

- A. To increase overall production efficiency
- B. To minimise risks and avoid accidents ✓
- C. To reduce operational costs significantly
- D. To limit the need for frequent supervision

Q7 Part B

Which of the following metals is NOT used for manufacturing of piston bearing?

- A. Copper
- B. Lead
- C. Cast iron ✓
- D. Silicon

Q8 Part B

When measuring the resistance of a resistor using an ohmmeter, what does a reading of zero resistance indicate?

- A. The resistor is functioning normally.
- B. The resistor is open-circuited.
- C. The resistor is short-circuited. ✓
- D. The ohmmeter is malfunctioning.

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Q9 Part B

Arrange the following steps in the correct order to draw an equilateral triangle with each side of 35 mm.

1. Join CA and CB.
2. Draw a line and mark AB 35 mm as the side of the triangle.
3. With radius AB and center A and B, draw arcs cutting at C.
4. ABC is the required triangle.

- A. 2, 3, 1, 4 ✓
- B. 1, 2, 4, 3
- C. 2, 1, 3, 4
- D. 3, 2, 1, 4

Q10 Part B

When selecting a sheet size for an original drawing, what should be the primary consideration?

- A. The standard size of the drawing office.
- B. The clarity and resolution required. ✓
- C. The orientation of the drawing (horizontal or vertical).
- D. The size of the reproduction.

Q11 Part B

If the current flowing through a conductor is 5 A and the resistance of the conductor is 10 ohms, what will be the voltage across the conductor, according to Ohm's Law?

- A. 15 V
- B. 50 V ✓
- C. 5 V
- D. 10 V

Q12 Part B

What should you do to ensure your personal safety at work?

- A. Wear personal protective equipment. ✓
- B. Work in a hurry without checking equipment.
- C. Ignore warning signs and instructions.
- D. Take risks to finish tasks quickly.

Q13 Part B

Which component connects the fuel tank to the feed pump?

- A. Vent pipe
- B. High-pressure pipe
- C. Suction pipe ✓
- D. Overflow pipe

Q14 Part B

The intercooler is an additional component that looks like a:

- A. air filter
- B. turbocharger
- C. fuel pump
- D. radiator ✓

Q15 Part B

Which of the following type of lubricants are used as solid particles?

- A. Solid wax
- B. Grease
- C. Graphite ✓
- D. Silica

Q16 Part B

Which of the following parts of a file is the part fitted to the tang for holding the file?

- A. Tip or Point
- B. Handle ✓
- C. Edge
- D. Tang

Q17 Part B

Which of the following is an important safety measure during a power failure?

- A. Using candles for lighting
- B. Continuing to use equipment without verifying power status
- C. Ensuring all machines and electrical equipment are turned off ✓
- D. Ignoring alarm systems

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Q18 Part B

What is a key advantage of using MOSFETs in electronic circuits compared to other types of transistors?

A. High frequency response

B. High input impedance and low power consumption ✓

C. Ability to handle higher voltages and currents than BJTs

D. Ability to amplify both AC and DC signals

Q19 Part B

What is the main function of a master cylinder in a braking system?

A. To build up hydraulic pressure to operate the brakes ✓

B. To measure the brake fluid level

C. To control the engine speed

D. To absorb vibrations from the road

Q20 Part B

Which of the following organisations is responsible for enforcing workplace safety regulations in India?

A. World Health Organization (WHO)

B. Food and Drug Administration (FDA)

C. Directorate General of Factory Advice Service and Labour Institutes (DGFASLI) ✓

D. Environmental Protection Agency (EPA)

Q21 Part B

Which component stores electrical energy in a vehicle?

A. DC Generator/Dynamo

B. Battery ✓

C. Alternator

D. Starter motor

Q22 Part B

Read the statements carefully and select the correct option.

The basic requirements of a good combustion chamber is to provide:

I) low power output
II) high thermal efficiency and low specific fuel consumption
III) smooth engine operation
IV) reduced exhaust pollutants

A. II, III and IV ✓

B. I and II

C. I and IV

D. Only I

Q23 Part B

A circuit consists of three resistors; 15 ohms, 10 ohms, and 20 ohms. The 15-ohm resistor is in series with the parallel combination of the 10-ohm and 20-ohm resistors. If a 24 V battery is applied across the circuit, what is the total current flowing through the circuit?

A. 3.1 A

B. 0.1 A

C. 1.1 A ✓

D. 2.1 A

Q24 Part B

Which of the following statements is INCORRECT about the four-stroke diesel engine?

A. Cycles in both petrol and diesel engines consist of suction, compression, ignition, expansion and exhaust.

B. In C.I. engines, air-fuel mixture is sucked during the stroke and the fuel is injected in the cylinder near the end of the compression stroke. ✓

C. In C.I. engines, only air is sucked during the stroke and the fuel is injected in the cylinder near the end of the compression stroke.

D. The operation of C.I. engines (or diesel engines) is practically the same as those of S.I. engines.

Q25 Part B

Which of the following instruments is used for the measurement of piston ring end gap in the cylinder?

A. Micrometer

B. Vernier caliper

C. Dial gauge

D. Feeler gauge ✓

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Q26 Part B

In a lead-acid battery, what is the chemical composition of the material used for the positive plate during discharge?

- A. Sulphuric acid (H_2SO_4)
- B. Lead (Pb)
- C. Lead dioxide (PbO_2) ✓
- D. Lead sulfate ($PbSO_4$)

Q27 Part B

For what purpose are pins and clips used in engineering drawings?

- A. To transfer dimensions and dividing lines into a number of equal parts
- B. To draw horizontal lines, parallel lines and to guide/hold the set squares
- C. To fasten the drawing sheet on to the drawing board firmly so that it does not shake ✓
- D. To support the drawing paper/tracing paper for making drawings

Q28 Part B

Which of the following systems is used to transmit engine torque to the driving wheels to drive a vehicle on the road?

- A. Transmission system ✓
- B. Steering system
- C. Differential gear mechanism
- D. Four bar chain mechanism

Q29 Part B

What is the limiting value of compression ratio on which usually a petrol engine works?

- A. Compression ratio = 6
- B. Compression ratio = 8 ✓
- C. Compression ratio = 22
- D. Compression ratio = 14

Q30 Part B

Which of the following is NOT a component of an alternator?

- A. Carburetor ✓
- B. Voltage regulator
- C. Rotor
- D. Stator

Q31 Part B

In a velocity-time graph, the negative slope represents _____.

- A. retardation ✓
- B. displacement
- C. acceleration
- D. distance

Q32 Part B

The percentage of energy loss per unit deformation from friction happening inside the rubber, which creates heat build-up in the rubber, and is measured as in terms of the temperature, is known as _____.

- A. creep
- B. resilience
- C. stress-strain test
- D. hysteresis ✓

Q33 Part B

A fuel water separator is used to:

- A. remove water from diesel fuel ✓
- B. remove lubricant from diesel fuel
- C. reduce engine noise
- D. control fuel flow rate

Q34 Part B

In intercooler, cooler air from outside is blown across the intercooler's fins by:

- A. the vehicle's motion
- B. the turbocharger
- C. a separate, dedicated fan
- D. the engine cooling fan ✓

Q35 Part B

Which of the following elements is used in lubrication oil as an anti-wear additive?

- A. Copper (Cu) ✓
- B. Barium (Ba)
- C. Boron (B)
- D. Calcium (Ca)

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Q36 Part B

Read the given statements carefully and select the most appropriate option.

In three-way catalytic converters (TWC), where the term 'three-way' is in relation to the three regulated emissions, the converter is designed to reduce:
1. unburnt hydrocarbons are oxidised into water/steam
2. oxides are converted into nitrogen and oxygen
3. carbon monoxide is oxidised into carbon dioxide

A. Only I and III
B. I, II and III ✓
C. Only I and II
D. Only II and III

Q37 Part B

The primary function of the float in the float chamber is to:

A. regulate air intake
B. mix air and fuel
C. increase the fuel pressure
D. maintain a constant fuel level ✓

Q38 Part B

The unit for specific gravity is _____.

A. m/s^2
B. g/cm^3
C. kg/m^3
D. no unit (dimensionless) ✓

Q39 Part B

In an F-shaped combustion chamber, which of the following parts is generally NOT located on the extended side of the combustion chamber in a petrol engine?

A. Inlet valve
B. Spark plug
C. Outlet valve
D. Camshaft ✓

Q40 Part B

What is the advantage of giving heat treatment to a material?

A. To decrease the melting point of the material
B. To increase the weight of the material
C. To change it from one element to another element
D. To make surgical knives of sharp edges ✓

Q41 Part B

A vital component of a car's clutch system positioned on the clutch housing, which slides along a hollow shaft and moves through the clutch fork aided by hydraulic or cable pressure, is known as:

A. cushion spring
B. clutch release bearing ✓
C. lever
D. fork arm

Q42 Part B

Which of the following types of lube oils are used in airline industries?

A. Grease and bee wax lubricants
B. Natural petroleum lubricants
C. Synthetic lubricants ✓
D. Biodiesel lubricants

Q43 Part B

A tube-like structure lies between a piston and cylinder wall that regulates the flow of air and fuel inside the cylinder. This valve has a small hole in the side that promptly lines up with the hole of a cylinder. This valve is known as:

A. butterfly valve
B. sleeve valve ✓
C. valve in form of port
D. poppet valve

Q44 Part B

Nitrogen oxides are formed during combustion primarily due to:

A. the absence of oxygen
B. the presence of water vapour
C. low temperatures and pressure
D. high temperatures and pressure ✓

Q45 Part B

A mechanism that can split the power of a propeller shaft to the rear axle and produce variation in the speed of rear wheels when the vehicle takes a turn is called a/an:

A. integral unit
B. automatic clutch unit
C. torque convertor
D. differential unit ✓

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Q46 Part B

Which of the following methods helps the easier assembly and disassembly by providing a more efficient way to fit the connecting rod around the crankshaft journal, particularly in tight engine compartment, in an internal combustion engine?

- A. Small end trimming linearly on a connecting rod
- B. Big end split orthogonally on a connecting rod
- C. Big end split obliquely on a connecting rod ✓
- D. Small end union linearly on a connecting rod

Q47 Part B

According to BIS SP 46-2003, which of the following applications is correctly represented by a chain-thin line in engineering drawings?

- A. Center lines ✓
- B. Hidden edges
- C. Dimension lines
- D. Visible edges

Q48 Part B

In a diesel engine, heat is supplied at which of the following thermodynamic processes?

- A. At constant pressure process ✓
- B. At constant volume process
- C. At constant temperature process
- D. At adiabatic compression process

Q49 Part B

What is the purpose of an emergency evacuation plan?

- A. To ensure safe and orderly evacuation during emergencies ✓
- B. To avoid safety drills
- C. To increase productivity
- D. To allow workers to leave early

Q50 Part B

What is the primary reason for electrical injuries when a person comes in contact with electrical equipment?

- A. Electrical equipment is not properly grounded.
- B. Current flows through the body causing harm. ✓
- C. Devices are used for too long.
- D. Electrical devices are too powerful.

Q51 Part B

A type of internal spring force expands a piston ring based on the design and properties of the material used. It is determined by _____.

- A. forced piston ring gap
- B. compressed spring ring gap
- C. compressed ring gap
- D. free piston ring gap ✓

Q52 Part B

What is the goal of quiet diesel technology?

- A. To reduce the noise, vibration and harshness (NVH) to the level of petrol engines ✓
- B. To eliminate the need for fuel injection systems
- C. To make diesel engines larger in size
- D. To increase the combustion pressure in diesel engines

Q53 Part B

Which of the following options is correct when the pressure plate position is such that the cushion spring of clutch is NOT compressed?

- A. It is in the engagement phase.
- B. It is in the partial engagement phase.
- C. The clutch is closed.
- D. The clutch is open. ✓

Q54 Part B

Which of the following designs have the advantage of effectively preventing contact slippage and axial misplacement of the connecting rod cover and connecting rod body?

- A. Straight cut design
- B. Oval cut design
- C. Obliquely cut design ✓
- D. Curvilinear cut design

Q55 Part B

When does a vacuum booster create a vacuum?

- A. When the engine is off, and brake is applied
- B. When the engine is running, and the brake is not applied ✓
- C. When the fuel level is low
- D. When the brake is applied

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Q56 Part B

When using a multimeter to measure current, which of the following is correct?

- A. The multimeter is connected directly to the power source.
- B. The multimeter is connected in series with the load. ✓
- C. The multimeter is connected only across resistive components.
- D. The multimeter is connected in parallel with the load.

Q57 Part B

The temperature of the air after compression stroke in a CI engine is:

- A. less than ambient temperature
- B. ambient temperature only
- C. high but not enough to ignite the fuel as spark plug is used to ignite the fuel
- D. high enough to auto-ignite the fuel without any external ignition source ✓

Q58 Part B

Which type of gear applies in a car when the engine is running and the clutch is engaged, and the clutch shaft gear drives the drive gear of the lay shaft and thus lay shaft also rotates and the main shaft remains stationary as no gears in main shaft are engaged with lay shaft gears?

- A. Top gear
- B. First gear
- C. Neutral gear ✓
- D. Reverse gear

Q59 Part B

Which of the following steps is INCORRECT for micrometer adjustment?

- A. Insert the large end of wrench in the hole on the external cylinder.
- B. Use the wrench to rotate the cylinder until zero is aligned.
- C. Find set screw and loosen it.
- D. Open the micrometer using friction stop. ✓

Q60 Part B

Which of the following methods are commonly used for detecting cracks in a cylinder block?

- A. Ultrasonic testing and magnetic particle inspection ✓
- B. Compression gauge
- C. Feeler gauge
- D. Valve seat grinding machine

Q61 Part B

Which of the following statements is correct about engine valves?

- A. The camshaft and its associated parts control the flame of sparks during ignition of the enigne.
- B. The valve's head is perfectly positioned at a 30-45 degree angle that ideally fits with the valve seat, creating a firm seal. ✓
- C. Valves with their conical shapes control the flow of the entry of gasses into an engine.
- D. Poppet or mushroom valves are commonly found in two stroke engines for their remarkable features.

Q62 Part B

Gaskets, seals and spacers are made using:

- A. centre punch
- B. hollow punch ✓
- C. pin punch
- D. prick punch

Q63 Part B

Which of the following files is used for filing narrow grooves and angles above 10°?

- A. Knife-edge file ✓
- B. Half round file
- C. Square file
- D. Triangular file

Q64 Part B

Which of the following hand-operated drilling machines is used for drilling small diameter holes up to 6 mm?

- A. Electric hand drill
- B. Ratchet drilling machine
- C. Breast drilling machine
- D. Bevel gear type drilling machine ✓

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Q65 Part B

Non-functional dimensions are _____.

- A. not essential for the function of the space or component ✓
- B. essential for the function of the space or component
- C. derived from the values of the related features of a drawing
- D. directly derived from the values given on a drawing

Q66 Part B

A hydraulic press is a designated special tool for:

- A. crankshaft checking
- B. piston clearance
- C. bearing oil-clearance check
- D. refitting of liner ✓

Q67 Part B

Which of the following types of pliers is used to shape loops in wires and to form curves in light metal strips?

- A. Flat nose pliers
- B. Round nose pliers ✓
- C. Slip-joint pliers
- D. End cutting pliers

Q68 Part B

When the thermostat is closed, it prevents water from entering the:

- A. engine block
- B. water pump
- C. radiator ✓
- D. cylinder head

Q69 Part B

What is the correct name of the top portion of the valve that interacts with the camshaft during operation of the engine?

- A. Tip ✓
- B. Puppet
- C. Mushroom
- D. Butterfly

Q70 Part B

In Fuel Cell Electric Vehicles (FCEV), energy is stored as:

- A. gasoline in a fuel tank
- B. hydrogen in a gas tank ✓
- C. electricity in a battery
- D. kinetic energy in a flywheel

Q71 Part B

Which of the following instruments works on the principle of the magnification of the small movement of the plunger or stylus that is converted into a rotary motion of the pointer on a circular scale?

- A. Pressure gauge
- B. Micrometer
- C. Vernier caliper
- D. Dial test indicator ✓

Q72 Part B

Which of the following vices consists of a handle and a small collet chuck at one end?

- A. Hand vice
- B. Pin vice ✓
- C. Pipe vice
- D. Toolmaker's vice

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Q73 Part B

$(\frac{3}{8}) + (\frac{5}{12})$

A. $\frac{17}{24}$

B. $\frac{19}{24}$ ✓

C. $\frac{8}{20}$

D. $\frac{7}{12}$

Q74 Part B

Which of the following is the correct expression for power developed at the crankshaft in terms of mechanical efficiency?

Consider BP - brake power, IP - Indicated power

A. $\text{BP} = \text{IP} \times \text{Mechanial efficiency}$ ✓

B. $\text{IP} = \text{Mechanical efficiency} \times \text{PB}$

C. $\text{BP} = \frac{(\text{Mechanical efficiency} + \text{IP})}{100}$

D. $\text{BP} = \frac{\text{Mechanical Efficiency}}{\text{IP}}$

Q75 Part B

$\cos\theta$

A. $\frac{3}{5}$

B. $\frac{4}{5}$ ✓

C. $\frac{5}{4}$

D. $\frac{3}{4}$

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Part B — 75 Questions • Answer Key

Q1 Part B

In a plunger-type oil pump, the plunger moves in the cylinder:

A. rotationally
B. in a circular motion
C. up and down ✓
D. side to side

Q2 Part B

Which of the following types of shafts allows easy implementation of a 4 valve per cylinder configuration?

A. Single overhead cam setup
B. Dual overhead cam setup ✓
C. Crankshaft of multicylinder engine setup
D. Cam and follower rocker arm setup

Q3 Part B

In air-cooled engines, the cylinders are typically:

A. fully Independent
B. liquid-cooled
C. grouped together in a single block
D. semi-independent ✓

Q4 Part B

Which of the following is a key advantage of using Thyristors in power control applications?

A. High frequency switching ✓
B. High efficiency and low power loss
C. Small size and low cost
D. Low voltage handling capabilities

Q5 Part B

The cooling system's main purpose is to:

A. increase engine temperature
B. control vehicle suspension
C. supply fuel to the engine
D. maintain engine temperature within operating limits ✓

Q6 Part B

Which of the following methods is implemented for locking a semi floating type piston pin?

A. Riveting
B. Gluing
C. Screw ✓
D. Welding

Q7 Part B

A constant mesh gearbox usually comes with how many manual transmission configurations?

A. It comes with a 5-speed 1-reverse manual transmission configuration.
B. It comes with a 4-speed 1-reverse manual transmission configuration. ✓
C. It comes with a 3-speed 1-reverse manual transmission configuration.
D. It comes with a 6-speed 1-reverse manual transmission configuration.

Q8 Part B

Match the correct length and breadth of the Trimmed sizes of sheets.

Designation	Trimmed size
A. A0	P. 297 × 420
B. A1	Q. 420× 594
C. A2	R. 594 × 841
D. A3	S. 841 × 1189

A. A - R, B - S, C - Q, D - P
B. A - P, B - R, C - Q, D - S
C. A - S, B - R, C - P, D - Q
D. A - S, B - R, C - Q, D - P ✓

Q9 Part B

Which of the following parts of a hammer-head is used for shaping and forming work like riveting and bending?

A. Face
B. Eyehole
C. Pein ✓
D. Cheek

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Q10 Part B

Which of the following is the key difference between a fuse and a circuit breaker?

- A. A fuse can be reset after tripping, while a circuit breaker must be replaced.
- B. A fuse is used for high-voltage circuits, while a circuit breaker is used for low-voltage circuits.
- C. A fuse is a mechanical device, while a circuit breaker is an electronic device.
- D. A fuse is a one-time-use device, while a circuit breaker can be reset and reused. ✓

Q11 Part B

What do the SAE viscosity rating numbers denote, such as 0W or 5W?

- A. Denotes thicker oil that better resists viscosity breakdown when hot
- B. High viscosity oil and difficult flow for cold starting
- C. Easier oil flow for cold starting ✓
- D. Denotes thicker oil that better resists viscosity breakdown when cold

Q12 Part B

What is the chemical effect that occurs in a battery during the charging process of a Lead Acid battery?

- A. Lead reacts with sulphur to form lead sulphate
- B. Water dissociation into hydrogen and oxygen
- C. Lead sulphate decomposes into lead and sulphuric acid ✓
- D. Sulphuric acid dissociates into hydrogen and sulphate ions

Q13 Part B

In which part of the IC engine does a piston move during operation?

- A. Cylinder head
- B. Cylinder liner ✓
- C. Sump
- D. Crankcase

Q14 Part B

The primary purpose of European emission standards is to set limits on:

- A. the physical dimensions of vehicles
- B. vehicle noise levels
- C. vehicle fuel efficiency
- D. exhaust emissions from vehicles ✓

Q15 Part B

Pencils are rated in engineering drawings based on the _____.

- A. hardness or softness of the lead ✓
- B. colour of the lead
- C. durability of the lead
- D. shape of the lead

Q16 Part B

A fuel with lower viscosity will flow:

- A. if the temperature is higher
- B. at the same rate regardless of viscosity
- C. less easily
- D. more easily ✓

Q17 Part B

Which of the following parts of a dial bore gauge is used to hold all the components together and contains a mechanism for transmitting the plunger motion to the dial?

- A. Sliding plunger
- B. Anvil
- C. Stem ✓
- D. Extension rings

Q18 Part B

What type of bearing is fitted into the connecting rod, allowing the gudgeon pin to provide bearing for the oscillating small end of the connecting rod?

- A. Needle bearing ✓
- B. Tapper roller bearing
- C. Journal bearing
- D. Ball bearing

Q19 Part B

The power source(s) used by Hybrid Electric Vehicles (HEVs) is/are:

- A. only an internal combustion engine
- B. only an electric motor
- C. a fuel cell and an electric motor
- D. both an internal combustion engine and an electric motor ✓

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Q20 Part B

What is the blade length of the T1 'T' square, as per IS:1360-1989?

- A. 500 mm
- B. 1500 mm
- C. 700 mm
- D. 1000 mm ✓

Q21 Part B

The distance a cam lobe rises away from the base circle of the camshaft is known as:

- A. mushroom valve lift
- B. rocker arm lift
- C. gross lift
- D. lobe lift ✓

Q22 Part B

Which of the following types of valves is NOT used in the four stroke engine?

- A. Butterfly valves ✓
- B. Rotary valves
- C. Reed valves
- D. Poppet valves

Q23 Part B

What happens when the brake pedal is pressed in a pedal-assisted type brake?

- A. The power cylinder is activated. ✓
- B. The engine shuts down.
- C. The clutch is released.
- D. The accelerator is engaged.

Q24 Part B

Which of the following is an example of a p-type semiconductor?

- A. Silicon doped with phosphorus
- B. Silicon doped with arsenic
- C. Silicon doped with boron ✓
- D. Germanium doped with phosphorus

Q25 Part B

Which of the following punch marks is used for the correct location and seating of the divider point?

- A. Centre punch marks of 30°
- B. Centre punch marks of 60°
- C. Prick punch marks of 120°
- D. Prick punch marks of 30° ✓

Q26 Part B

When did India implement the Hazardous Wastes (Management and Handling) Rules to regulate the disposal and handling of hazardous waste?

- A. 1987
- B. 2000
- C. 1989 ✓
- D. 1982

Q27 Part B

Which of the following is a benefit of Variable Geometry Turbochargers (VGT)?

- A. Minimal turbo lag ✓
- B. Increased turbo lag
- C. Lower efficiency at high engine speeds
- D. Higher boost threshold

Q28 Part B

The exhaust gases in a two stroke engine are driven out by:

- A. fresh charge of fuel entering the cylinder nearly at the end of the compression stroke
- B. fresh air entering the casing nearly at the end of the suction stroke
- C. fresh charge of fuel entering the cylinder nearly at the end of the working stroke ✓
- D. left out charge of fuel from exhaust entering the cylinder nearly at the end of the working stroke

Q29 Part B

Which of the following parts of an engine adjusts the opening times of the valves to suit all operating conditions and ensures ideal charge cycles within a wide range of engine speeds and loads?

- A. Rocker arm
- B. Crankshaft
- C. Camshaft ✓
- D. Crank

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Q30 Part B

What does an optical pyrometer measure?

A. The relative density of liquids

B. The temperature of the surface ✓

C. The volume of liquids

D. The pressure of gases

Q31 Part B

What is the accuracy level of a vernier caliper that can be read?

A. 0.02 mm ✓

B. 0.01 mm

C. 0.2 mm

D. 0.1 mm

Q32 Part B

Which of the following is true for a given fixed compression ratio?

A. Both Otto and Diesel cycles are equally efficient.

B. Otto cycle is the most efficient. ✓

C. Dual cycle is the most efficient.

D. Diesel cycle is the most efficient.

Q33 Part B

Which of the following statements is/are correct?
Statement I - The annealing process uses heat to reduce the hardness and increase the ductility and toughness of various steels, cast iron, and alloys.
Statement II - Quenching is a rapid cooling process that alters specific properties of materials by manipulating the cooling rate.

A. Statement (I) is correct but Statement (II) is incorrect.

B. Statement (I) and (II) both are correct. ✓

C. Statement (I) is incorrect but Statement (II) is correct.

D. Statement (I) and (II) both are incorrect.

Q34 Part B

Which of the following types of wooden mallets are used for general purpose work such as flattening and bending?

A. Bossing mallets

B. Side-faked mallets

C. Standard wooden mallets ✓

D. End-faked mallets

Q35 Part B

A cylinder head gasket is incorporated between which of the following two parts of the engine?

A. Puppet valve and cylinder block

B. Piston ring and cylinder head

C. Cylinder head and water jacket

D. Cylinder block and cylinder head ✓

Q36 Part B

Which of the following is a fundamental unit?

A. newton

B. metre ✓

C. pascal

D. watt

Q37 Part B

The primary purpose of the absorption mufflers is to reduce:

A. fuel consumption

B. engine temperature

C. engine power

D. noise and pollution ✓

Q38 Part B

In engineering drawing (lettering and numbering), a single stroke means that the _____.

A. thickness of the line of the letter or number is obtained in one stroke of the pencil ✓

B. thickness of the line of the letter or number is obtained in three strokes of the pencil

C. thickness of the line of the letter or number is obtained in no strokes of the pencil

D. thickness of the line of the letter or number is obtained in two strokes of the pencil

Q39 Part B

What force (effort) will be required to push a load, initially at rest, of mass 500 g, so that at a distance of 20 m, its final velocity is 20 m/sec [Assume that there is no friction and 'g' = 10 m/s^2].

A. 5 J

B. 10 N

C. 5 N ✓

D. 10 J

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Q40 Part B

Which of the following types of engines has irregular operation that occurs because the amount of fresh mixture entering the cylinder is not enough to clear all the exhaust gases and a part of it remains in the cylinder to contaminate the charge?

A. Four-stroke petrol engine
B. Two-stroke diesel engine
C. Four-stroke diesel cycle
D. Two-stroke petrol engine ✓

Q41 Part B

Which of the following statements correctly describes the placement and purpose of orientation marks on a drawing sheet?

1. Orientation marks are placed at two opposite corners of the drawing sheet to indicate the correct orientation on the drawing board.
2. Orientation marks consist of arrow heads placed across the frame, with one at the shorter side and one at the longer side, coinciding with the centering marks.
3. One of the orientation marks always points towards the draughtsman, indicating the direction in which the drawing sheet should be placed.
4. Orientation marks are used to mark the midpoint of each side of the drawing sheet for accurate centering.

A. 1, 2, and 3 only
B. 1 and 4 only
C. 2 and 3 only ✓
D. 1, 2, and 4 only

Q42 Part B

What is the primary principle behind the generation of electrical energy in a piezoelectric device?

A. Conversion of thermal energy into electrical energy
B. Conversion of chemical energy into electrical energy
C. Conversion of light energy into electrical energy
D. Conversion of mechanical stress into electrical energy ✓

Q43 Part B

Which of the following punches is used to make deeper witness marks on scribed lines and make it easier for the drill to start correctly?

A. Solid punch
B. Centre punch ✓
C. Pin punch
D. Prick punch

Q44 Part B

The basic function of the connecting rod is to convert:

A. the reciprocating motion of piston to the rotary motion of the crankshaft ✓
B. the curvilinear motion of piston to the linear motion of the camshaft
C. the reciprocating motion of piston head to the rotary motion of the camshaft
D. the linear motion of the crankshaft into rotary motion of piston

Q45 Part B

_____ brakes are a type of brake in which the fluid from the master cylinder is forced into a caliper where it presses against a piston. The piston in turn squeezes two brake pads against the disc (rotor), which is attached to wheel, forcing it to slow down or stop.

A. Vacuum
B. Electrical
C. Disk ✓
D. Drum

Q46 Part B

As per the SAE viscosity rating, which of the following numbers reflects thicker oil that better resists viscosity breakdown in the summer season?

A. 0W to 5W
B. −6W to −70W
C. 100W to 160W
D. 40W to 50W ✓

Q47 Part B

Which of the following statements is NOT correct about the steering system in vehicles?

A. It should multiply the turning effort applied on the steering wheel by the driver.
B. It should minimise the turning effort applied on the steering wheel by the driver by use of overdamped damper. ✓
C. The function of the steering system is to convert the rotary movement of the steering wheel into the angular turn of the front wheels.
D. It should not transmit the shocks of the road surface encountered by wheels to the driver hands.

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Q48 Part B

Why are metal dispersants or detergents used as additives in lubrication oil?

A. These are used to control the formation of sedimentation of particles throughout the system

B. These are used to control bubbles formation and mist throughout the system

C. These are used to control viscosity index and wax formation throughout the system at high temperature

D. These are used to control deposit formation throughout the system ✓

Q49 Part B

_____ is a type of spring that is often used as part of the vehicle clutch assembly, and its main function is to engage and disengage the pressure plate and the driven plate (clutch disk).

A. Spiral spring

B. Leaf spring

C. Diaphragm spring ✓

D. Laminated spring

Q50 Part B

Which of the following statements is correct about a protractor?

Statements:
1. A protractor can be used to measure angles from both sides.
2. A protractor is typically made of a rigid metal material.

A. Neither statement is true

B. Only statement 2 is true

C. Only statement 1 is true ✓

D. Both statements are true

Q51 Part B

In engineering drawing, what is defined as the path of a moving point with no thickness?

A. Angle

B. Curve

C. Point

D. Line ✓

Q52 Part B

In an induction system, after passing through the air cleaner, the air goes to the:

A. intake port

B. combustion chamber

C. turbocharger ✓

D. induction manifold

Q53 Part B

When drawing a curved line of a specific length in an engineering drawing, which tool is most appropriate for ensuring accuracy?

A. Protractor

B. Straightedge

C. French Curve ✓

D. Compass

Q54 Part B

Which of the given statements is/are correct?

Carbon monoxide is described as:
I. flammable.
II. toxic, odourless and tasteless
III. as a product of incomplete combustion

A. I, II and III ✓

B. Only III

C. Only II

D. Only I

Q55 Part B

What is waste?

A. Natural resources for living organisms

B. Valuable substances for agriculture

C. Useful materials for industries

D. Unwanted or unusable materials ✓

Q56 Part B

What is the primary purpose of applying brakes in a vehicle?

A. To increase the speed of the vehicle

B. To improve fuel efficiency

C. To stop or slow down the vehicle ✓

D. To open the fuel tank

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Q57 Part B

An 'excessively rich' air-fuel mixture means there is:

- A. too much air compared to fuel
- B. the perfect balance of air and fuel
- C. too much fuel compared to air ✓
- D. no fuel present

Q58 Part B

As the piston moves up to create a compression force, which of the following parts movements leads to inlet valve closure in engine?

- A. Connecting rod movement
- B. Helical spring movement
- C. Crankshaft movement
- D. Camshaft movement ✓

Q59 Part B

In spark-ignition engines, particulates are primarily caused by:

- A. incomplete combustion of rich air-fuel mixtures ✓
- B. perfect combustion of stoichiometric air-fuel mixtures
- C. complete combustion of lean air-fuel mixtures
- D. the use of high-octane fuel

Q60 Part B

How is the heat produced in the diodes dissipated?

- A. By the battery
- B. By the heat sink ✓
- C. By the voltage regulator
- D. By the alternator

Q61 Part B

Which of the following uses of wire gauge is INCORRECT?

- A. It measures the diameter of a wire.
- B. It does not help determine how much current a wire can carry. ✓
- C. Using the wrong wire gauge can damage appliances and electronic devices.
- D. It is used in electrical installations, welding and other applications.

Q62 Part B

Final drive is the last stage of power transmission from the propeller shaft to rear axles and then to the wheels. To which of the following angles does it turn the propeller shaft motion?

- A. Right angle to drive the rear axle ✓
- B. 45 degree angle to drive the rear axle
- C. −45 degree to drive the front axle
- D. Equal and opposite angle to drive the rear axle

Q63 Part B

If the coefficient of linear expansion of a material is 2×10^{-5} $°C^{-1}$, what does it mean?

- A. The material expands by 2×10^{-5} times its original area per degree Celsius
- B. The material expands by 2×10^{-5} times its original volume per degree Celsius
- C. The material expands by 2×10^{-5} times its original length per degree Celsius ✓
- D. The material always increases by 2×10^{-5} kg when temperature is increased by 1°C

Q64 Part B

In a cloth-type filter insert, the cloth is wound over:

- A. a plastic mesh
- B. a solid metal rod
- C. a paper element
- D. a perforated tube ✓

Q65 Part B

Why is it important to follow proper disposal procedures for industrial waste?

- A. To allow waste to decompose anywhere
- B. To reduce the number of trash bins needed
- C. To save time and effort in sorting waste
- D. To comply with environmental regulations and reduce pollution ✓

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Q66 Part B

What is the typical operating voltage range for a standard passenger car with an internal combustion engine when the engine is running?

- A. 12–12.8 volts DC
- B. 24–28 volts DC
- C. 13.5–14.7 volts DC ✓
- D. 9–11 volts DC

Q67 Part B

Which of the following is NOT a correct statement about the torsion spring?

- A. This spring needs less space.
- B. It is lighter than leaf spring system.
- C. It takes the driving or braking torque, and additional link mechanisms are not required for this purpose. ✓
- D. This spring provides very neat and compact design.

Q68 Part B

A type of chamber in which the combustion space is essentially a single cavity with little restriction on one part of the chamber to the other, and hence with no large difference in pressure between parts of the chamber during the combustion process is known as:

- A. air-cell combustion chamber
- B. open combustion chamber ✓
- C. pre-combustion chamber
- D. shallow depth combustion chamber

Q69 Part B

Which of the following types of wooden mallets are used for hollowing panel beatings?

- A. Standard wooden mallets
- B. End-faked mallets
- C. Side-faked mallets
- D. Bossing mallets ✓

Q70 Part B

A device operates at 240 V and consumes 480 W of power. What is the current flowing through the device?

- A. 2 A ✓
- B. 1 A
- C. 1.5 A
- D. 2.5 A

Q71 Part B

If a machine has an efficiency of 80%, it means:

- A. the machine produces more output than input
- B. the machine has a velocity ratio and mechanical advantage both equal to 80
- C. the machine does not have any loss in input energy
- D. the machine loses 20% of the input ✓

Q72 Part B

A torsion bar is a steel bar operated by:

- A. both compressive stress and twisting stress
- B. both tensile and compressive stresses
- C. both shear strain and longitudinal strain
- D. both twisting and shear stresses ✓

Q73 Part B

Which of the following statements is correct about a diesel cycle and its air standard efficiency with respect to the compression ratio?

- A. The air standard efficiency of a diesel cycle increases with the increase in the compression ratio. ✓
- B. The maximum compression ratio for the diesel engine is limited by detonation.
- C. The air standard efficiency decreases with the increase in the compression ratio.
- D. For a given compression ratio, Otto cycle is the least efficient while the diesel cycle is the most efficient.

Q74 Part B

Which of the following is a correct function of the indirect injection combustion chamber?

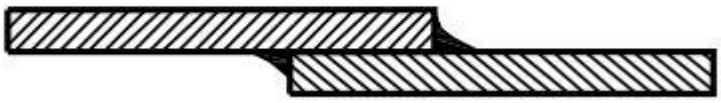
- A. It accommodates the port (Inlet and Outlet) for In & Out of air.
- B. There is a confined space in it, in which the air and fuel mixtures are burned. ✓
- C. It does not have properties to withstand temperature variations.
- D. It houses and guides the crankshaft.

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Q75 Part B

Identify the type of brazed joint shown below.



A. Joggle Lap

B. Simple Lap ✓

C. Strapped Lap

D. Butted Flange

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Q1 Part B

The catalytic converter helps to convert unburnt hydrocarbons into:

A. carbon monoxide and water

B. nitrogen oxides

C. carbon dioxide and water ✓

D. pure oxygen

Q2 Part B

A 100-mm centre-punch could have a 10-mm diameter body and a 6-mm diameter point ground to an angle of _____.

A. 120°

B. 90° ✓

C. 60°

D. 30°

Q3 Part B

Which of the following types of materials is NOT used in an oil filter as a strainer?

A. Thin aluminum foil ✓

B. Felt

C. Cloth

D. Wire screen

Q4 Part B

The primary function of the preliminary strainer is to remove:

A. coarser impurities from the fuel ✓

B. only the finest particles from the fuel

C. air from the fuel

D. water from the fuel

Q5 Part B

What happens to the fuel in a vehicle left in the sun?

A. It evaporates from the tank ✓

B. It decomposes into water and carbon dioxide

C. It solidifies

D. It becomes more efficient

Q6 Part B

Which of the following statements is/are true about Non-Functional Dimensions (NF) in engineering drawing?

Statement 1: Non-functional Dimensions are shown without limits, as they do not affect the functionality of the component or space.
Statement 2: Non-Functional Dimensions are typically used for reference purposes only, and do not impact the assembly or performance of the component or space.

A. Only statement 2 is true ✓

B. Only statement 1 is true

C. Both statements are true

D. Neither statement is true

Q7 Part B

Which of the following components is a part of a diesel engine only?

A. Spray nozzle ✓

B. Fuel tank

C. Carburetor

D. Spark plug

Q8 Part B

When the crank is at the dead centre, what will be the magnitude of bending moment and twisting moment at the crankshaft?

A. Bending moment on the shaft is maximum and the twisting moment is zero. ✓

B. Both bending moment and the twisting moment are zero in the shaft

C. Bending moment on the shaft is minimum and the twisting moment is maximum.

D. Both bending moment and twisting moment on the shaft are maximum

Q9 Part B

The clutch slave cylinder disengages the clutch from the engine by moving the:

A. spline shaft

B. pressure plate ✓

C. cushion spring

D. leaf spring

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Q10 Part B

In a logic circuit, three SPST (Single Pole Single Throw) switches are used to implement a logic gate. The switches are connected in series. What is the output of the circuit if all switches are closed?

A. Undefined

B. 1 ✓

C. The output will depend on the type of gate used

D. 0

Q11 Part B

In contexts such as automotive clutches, the spring is used to absorb shock during engagement. It is often referred to as a:

A. leaf spring of circular shape

B. tensile spring in helical shape

C. cushion spring in flat shape ✓

D. spiral spring of rectangular shape

Q12 Part B

During regenerative braking, the electric motor acts as a:

A. generator ✓

B. heater

C. compressor

D. pump

Q13 Part B

Which of the following statements is NOT correct about the functions of a lube oil pump?

A. Maintains consistent oil circulation throughout the engine.

B. Provides direction for the oil's passage through the galleries and to various areas.

C. The movement of engine lubricant around the engine is made difficult ✓

D. Oil is transferred to the engine's key components under high pressure,.

Q14 Part B

An angle greater than 180 degrees is referred to as _____.

A. a right angle

B. an acute angle

C. an obtuse angle

D. a reflex angle ✓

Q15 Part B

The boiling point of water in a cooling system can be raised by:

A. decreasing the system pressure

B. increasing the system pressure ✓

C. removing water from the system

D. adding more water to the system

Q16 Part B

Which of the following components in the axle is the most likely to fail if there is an unusual loud clanking or clunking as you put your vehicle into gear, or if a vehicle seems to struggle to get power as it starts to move?

A. Bearing at the wheel is damaged

B. Bending in the shaft induced

C. There is a crack initiated in the axle at cross sectional area perpendicular to axis

D. Axle-joint damage ✓

Q17 Part B

Which of the statements is correct about a compression ignition engine?

A. Diesel engine produces less noise compared to petrol engine.

B. Operating speed range is less compared to petrol engine. ✓

C. Starting is easy for diesel engine since less cranking effort is required compared to petrol engine.

D. Initial and maintenance costs of diesel engine is less compared to petrol engine.

Q18 Part B

_____ is a type of single thin sheet of metal that yields when pressure is applied and is widely used in most modern cars. When pressure is removed, the metal springs back to its original shape.

A. Spiral spring

B. Diaphragm spring ✓

C. Leaf spring

D. Cushion spring

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Q19 Part B

Which of the following materials is used as a binding agent in organic brake linings?

- A. Metal powder
- B. Rubber
- C. Cotton
- D. Resin ✓

Q20 Part B

In a star-type paper filter insert, the fuel flows:

- A. in a circular motion
- B. from inside to outside
- C. radially from outside to inside ✓
- D. axially from top to bottom

Q21 Part B

The accuracy of the dial bore gauge instrument depends on which of the following parts?

- A. A dot indicator on a linear scale
- B. An arrow on a semi-circular scale
- C. A pointer on a graduated dial ✓
- D. A marking on a logarithmic dial

Q22 Part B

Why do cars have treaded tyres?

- A. To increase friction and grip on the road ✓
- B. To reduce weight
- C. To decrease friction
- D. To increase speed

Q23 Part B

The function of a steering system is to convert the rotary movement of the steering wheel into:

- A. angular velocity of the front wheels
- B. angular turn of the front wheels ✓
- C. linear motion of the front wheels
- D. angular turns of the rear wheels

Q24 Part B

Evaporative emissions are primarily caused by:

- A. exhaust gases escaping from the tailpipe
- B. fuel burning in the engine
- C. fuel leaking onto the ground
- D. fuel evaporating from the fuel tank and carburetor ✓

Q25 Part B

The SI unit of 'ultimate stress' is _____.

- A. pascal (Pa) ✓
- B. newton (N)
- C. newton per meter (N/m)
- D. joule per square meter (J/m^2)

Q26 Part B

In a two stroke petrol engine, during the upward stroke of the piston, the gases are compressed in the piston, and at the same time, which of the following is also performed during the operation?

- A. Fresh fuel enters in the cylinder from the crank chamber through the valve.
- B. Fresh air for petrol engine enters the cylinder from the chamber through the valve exhaust port.
- C. Fresh air and fuel (petrol) mixture enters the crank chamber through the valve. ✓
- D. Exhaust gases enter the crank chamber through the valve.

Q27 Part B

Diesel fuel is generally used in which of the following types of vehicles?

- A. Aerospace vehicles
- B. Scooters
- C. Cars
- D. Heavy trucks and buses ✓

Q28 Part B HINDI

रूट्स एयर-ब्लोअर (roots air-blower) प्रकार के सुपरचार्जर में रोटर किस ज्यामितीय आकृति में डिज़ाइन किए जाते हैं?

- A. सर्पिल आकृति (Spiral shape)
- B. बेलनाकार आकृति (Cylindrical shape)
- C. कुंडलिनी आकृति (Helical shape)
- D. अधिचक्रज आकृति (Epicycloid shape) ✓

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Q29 Part B

Which of the following statements is NOT correct about the procedure of calculating balancing of crankshaft of an engine?

- A. To balance a crankshaft, metal can be added by welding material deposition on the 'heavy' side until balance is achieved. ✓
- B. To balance a crankshaft, metal can be removed by drilling holes on the 'heavy' side until balance is achieved.
- C. Crankshaft balancing involves calculating the rotating and reciprocating masses of a crankshaft.
- D. It involves determining the balancing couple and counterweight mass required to balance the crankshaft.

Q30 Part B

The hand priming device is used to:

- A. inject fuel into the engine cylinder
- B. pump fuel from the tank to the Fuel Injection Pump (FIP) ✓
- C. control the fuel injection timing
- D. increase fuel pressure for combustion

Q31 Part B

Which of the following is a primary difference between a primary and a secondary electrochemical cell?

- A. A secondary cell produces more energy than a primary cell.
- B. A primary cell can be recharged, while a secondary cell cannot be recharged.
- C. A primary cell cannot be recharged, while a secondary cell can be recharged. ✓
- D. There is no difference between primary and secondary cells.

Q32 Part B

Which of the following is a key electrical safety tip in a workshop?

- A. Operate machines with wet hands
- B. Ignore frayed wires if the device is still working
- C. Use water to clean electrical panels
- D. Ensure electrical equipment is properly grounded ✓

Q33 Part B

The accuracy of measurement by a try square is about:

- A. 0.02 mm per 10 mm length
- B. 0.001 mm per 10 mm length
- C. 0.004 mm per 10 mm length
- D. 0.002 mm per 10 mm length ✓

Q34 Part B

For which of the following calipers, a screw and nut are provided for opening and closing the caliper legs?

- A. Spring joint calipers ✓
- B. Firm joint calipers
- C. Simple calipers
- D. Leg and point calipers

Q35 Part B

What is the primary reason for conducting a vehicle road test?

- A. To test how fast the vehicle can go
- B. To avoid the need for inspections
- C. To increase fuel efficiency
- D. To ensure the vehicle is functioning safely and correctly ✓

Q36 Part B

In what form is the speed of information processing in the ECM (Engine Control Module) typically measured?

- A. Bits (8-bit, 16-bit, 32-bit, etc.) ✓
- B. RPM (Revolutions Per Minute)
- C. Bar
- D. Volts

Q37 Part B

What is the function of the drive end frame in an alternator?

- A. Acting as the main power storage unit.
- B. Controlling the current flow to the battery.
- C. Regulating voltage output of the alternator.
- D. Supporting a pre-lubricated sealed bearing for rotor shaft rotation. ✓

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Q38 Part B

What is the primary purpose of preventive maintenance?

A. To increase the workload of employees

B. To reduce unexpected equipment failures ✓

C. To delay repairs until breakdowns occur

D. To eliminate the need for regular inspections

Q39 Part B

Which of the following stages of an automatic transmission system locks the transmission, restricting a vehicle from moving?

A. Park (P) stage ✓

B. Drive (D) stage

C. Low (L) stage

D. Neutral (N) stage

Q40 Part B

What is the primary goal of the 5S concept?

A. To replace traditional safety measures

B. To increase the number of safety regulations

C. To improve workplace organisation and efficiency ✓

D. To eliminate the need for maintenance

Q41 Part B

Which option shows the correct answer when 27°C is converted to the kelvin scale?

A. – 300 K

B. 246 K

C. 300 K ✓

D. – 246 K

Q42 Part B

What is the primary reason for the heating effect in a conductor when an electric current passes through it?

A. The electric field in the conductor causes heat generation.

B. The movement of electrons causes heat generation. ✓

C. The conductor absorbs heat from the surrounding environment.

D. The movement of protons causes heat generation.

Q43 Part B

Which of the following types of brakes can be used with drum, disc or a combination, with air pressure providing the power instead of hydraulic fluid?

A. Air brakes ✓

B. Electric brakes

C. Pneumatic brakes

D. Magnetic brakes

Q44 Part B

Which of the following types of piston ring is placed at the top of the piston in an IC engine?

A. Oil ring

B. Compression ring ✓

C. Wiper ring

D. Pressure ring

Q45 Part B

Which of the following is INCORRECT about line standard?

A. More accurate due to line thickness ✓

B. Subject to parallax error

C. Quick measurements over a wide range

D. Used to measure the distance between two engraved lines

Q46 Part B

A statement and conclusion for pictorial drawing are given below. Determine the logical relationship between them.

Statement: Pictorial drawings are three-dimensional and provide a visual representation of an object.

Conclusion: Therefore, pictorial drawings are useful for describing the shape of a piece part or component.

A. The conclusion does not logically follow from the statement.

B. The conclusion is partially supported by the statement.

C. The conclusion is unrelated to the statement.

D. The conclusion logically follows from the statement. ✓

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Q47 Part B

How many divisions are there on a vernier scale as used in a modern vernier caliper for metric measurement?

- A. 50 ✓
- B. 25
- C. 75
- D. 100

Q48 Part B

Which of the following processes is carried out on connecting rods to locate the two halves relative to one another?

- A. Dimples are created on the surface
- B. Tapper threads are used
- C. Mirror finishing is done by diamond turning machine
- D. Serrations are used ✓

Q49 Part B

_____ recommend(s) 20 mm wide margins for sheet sizes AO and A1 in engineering drawings.

- A. Borders and frames: SP: 46 (2003) ✓
- B. Geographic coordinate systems
- C. Custom grids
- D. Grid reference system

Q50 Part B

In a circuit with a NTC type thermistor and a fixed resistor connected in series connected to a DC power supply, what will happen to the output voltage if there is a rise in temperature?

- A. The output voltage will increase. ✓
- B. The output voltage will remain constant.
- C. The output voltage will fluctuate depending on the resistor value.
- D. The output voltage will decrease.

Q51 Part B

Which of the following locations is correct for installing the oil filter in the engine?

- A. After lines going to supply the oil to the bearing after coolers
- B. In between coolers and the oil lines coming from sump
- C. Downstream of coolers in order to filter if any solid part from coolers enters the oil lines ✓
- D. Up stream of coolers in order to filter if any solid part from coolers lives the oil lines

Q52 Part B

The main function of an Electronic Control Unit (ECU) is to:

- A. store fuel in the engine
- B. store air in the engine
- C. receive data from sensors and control actuators ✓
- D. work as a battery backup

Q53 Part B

Which of the following types of seats is made of hardened alloys and pressed or shrunk into the cylinder head, often used in aluminium engines for better durability?

- A. Integral valve seats
- B. Ring valve seats
- C. Butterfly valve seats
- D. Insert valve seats ✓

Q54 Part B

What is the primary purpose of shielding in electrical cables?

- A. To increase the voltage capacity of the cable
- B. To increase the current-carrying capacity of the cable
- C. To protect the cable from external electromagnetic interference ✓
- D. To prevent heat loss from the cable

Q55 Part B

A type of brake has a diaphragm operating in a cylinder. For application of brakes on one side, a diaphragm is subjected to atmospheric pressure while the other is applied negative pressure by exhausting air known as ____ brake.

- A. air
- B. electric
- C. vacuum ✓
- D. hydraulic

Q56 Part B

Which of the following processes is used to fit a bearing into the connecting rod, allowing the gudgeon pin to provide the oscillating movement at the small end of the connecting rod?

- A. Interference fit
- B. Press fit ✓
- C. Autofrettage fit
- D. Loose fit

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Q57 Part B

The space enclosed in the upper part of a cylinder, by the cylinder head and the piston top, during the combustion process is called:

- A. combustion chamber ✓
- B. fuel digestion chamber
- C. air suction zone
- D. compression ratio

Q58 Part B

Which of the following is a major risk associated with fuel spillage?

- A. Fire hazards and environmental contamination ✓
- B. Better lubrication for workshop floors
- C. Increased productivity
- D. Reduced need for ventilation

Q59 Part B

Which of the following actions is a part of the emergency response team's responsibilities during an active emergency?

- A. Preparing reports on emergency incidents
- B. Rescuing persons in immediate danger ✓
- C. Conducting routine safety checks
- D. Scheduling regular evacuation drills

Q60 Part B

Match the following designations of sheets with their respective trimmed sizes in length and breadth.

Designation Trimmed Size
A) A0 P) 297 × 420
B) A1 Q) 420 × 594
C) A2 R) 594 × 841
D) A3 S) 841 × 1189

- A. A-S ; B-R ; C-Q ; D-P ✓
- B. A-Q ; B-R ; C-S ; D-P
- C. A-S ; B-P ; C-Q ; D-R
- D. A-P ; B-R ; C-Q ; D-S

Q61 Part B

What is the term used to describe programs that distinguish between uppercase and lowercase letters, treating "yes" and "YES" as different inputs?

- A. Case-insensitive
- B. Numerical
- C. Case-sensitive ✓
- D. Alphabetical

Q62 Part B

The piston rings are placed in the ring groove and provide sealing between which of the following two parts to prevents leakage of high-pressure gases?

- A. Piston and the cylinder liner ✓
- B. Piston and the cylinder block
- C. Piston and the cylinder head
- D. Piston and the cylinder fins

Q63 Part B

Which of the following conversions are correct?

- A. 1 L = 1000 dm^3 and 1 mL = 1000 cm^3
- B. 1000 L = 1 dm^3 and 1000 mL = 1 cm^3
- C. 1 L = 1 dm^3 and 1 mL = 1 cm^3 ✓
- D. 1000 L = 1 dm^3 and 1 mL = 1000 cm^3

Q64 Part B

What is the primary function of an alternator in a modern vehicle?

- A. Storing electrical energy for later use
- B. Supplying power directly to the spark plugs
- C. Controlling the fuel injection system
- D. Generating Alternating Current (AC) and converting it into Direct Current (DC) ✓

Q65 Part B

Which of the following terms is associated with the cams that control the valves and directly influence the breathing process of the engine?

- A. Shape and timing of the cams ✓
- B. Speed of the cams
- C. Material of construction of the cams
- D. Location and length of the cams

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Q66 Part B

Which of the following care and maintenance of a marking table is INCORRECT?

A. The marking table should be protected from damage.

B. The marking table should be protected from rust.

C. After use, the marking table should be cleaned with a soft cloth.

D. The surface of the marking table should not be given a thin layer of oil. ✓

Q67 Part B

Natural rubber is soft at high temperatures and brittle at low temperatures; hence raw rubber is heated with sulphur and other additives at a temperature range between 373 – 415 K to make it strong. This process is called _____ of rubber.

A. vulcanisation ✓

B. molding

C. latex

D. extrusion

Q68 Part B

Which of the following statements is NOT correct about the parts associated with the cylinder head?

A. Space enclosed between the cylinder head and piston top during combustion is the combustion chamber.

B. Through the metal screw the spark plug is fitted in the cylinder head plug.

C. The fuel injector is used to spray fuel into the engine cylinder. It is fixed to the cylinder head.

D. The combustion of fuel and the consequent release of thermal energy results in the building up of pressure in the casing. ✓

Q69 Part B

In Variable Geometry Turbochargers (VGT), if the aspect ratio is too small, the turbo will likely:

A. reduce exhaust manifold pressure

B. work perfectly at all speeds

C. fail to create boost at low speeds

D. choke the engine at high speeds ✓

Q70 Part B

The process of aligning a principal inertia axis with the geometric axis of rotation of the shaft through the addition or removal of material in a shaft is known as:

A. balancing ✓

B. parallel alignment

C. equilibrium

D. angular alignment

Q71 Part B

Which of the following is NOT the correct statement when fitting rings in an internal combustion (IC) engine?

A. Cleaning the piston head sealing surface area thoroughly is required. ✓

B. This is vital for maintaining proper combustion pressure and preventing oil consumption issues.

C. Use of specialised tools to install the rings without twisting or damaging them is essential.

D. The most crucial precaution is to ensure proper ring gap and alignment by carefully checking the end gap of each ring.

Q72 Part B

A rectangular floor measuring 10 m × 8 m is to be tiled. If each tile covers 0.25 m^2, how many tiles are needed?

A. 200

B. 300

C. 320 ✓

D. 250

Q73 Part B

Sine bars are used when a high degree of accuracy less than _____ is needed for measuring angles.

A. 1 degree

B. 30 degrees

C. 1 minute ✓

D. 30 minutes

Q74 Part B

In the combustion process, electronically managed fuel injection systems control combustion by:

A. increasing unburnt fuel emissions

B. controlling the air-fuel ratio using sensors and catalytic converters ✓

C. decreasing fuel atomisation

D. eliminating the need for oxygen

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Q75 Part B

Which of the following screwdrivers has cross-shaped tips that are unlikely to slip from the cruciform slots in Philips recessed head screws?

A. Stumpy screwdriver

B. Offset screwdriver

C. Cross-recess screwdriver ✓

D. Ratchet screwdriver

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Part B — 75 Questions • Answer Key

Q1 Part B

In a logic circuit, two inputs A and B are applied to an AND gate, and the output of the AND gate is connected to the input of a NOT gate. If the inputs A and B are both at logic 0, what will be the output of the entire circuit?

- A. Undefined
- B. 0
- C. 1 ✓
- D. 2

Q2 Part B

What is the accuracy level of metric micrometer reading?

- A. 0.5 mm
- B. 1.0 mm
- C. 0.1 mm
- D. 0.01 mm ✓

Q3 Part B

Ethylene glycol is added to antifreeze primarily because it has a:

- A. lower freezing point than water ✓
- B. lower viscosity than water
- C. special additive that uses microorganisms to prevent freezing
- D. higher boiling point than water

Q4 Part B

If the length of a resistor is doubled, what happens to its resistance, assuming all other factors remain constant?

- A. The resistance is doubled. ✓
- B. The resistance remains the same.
- C. The resistance is halved.
- D. The resistance quadruples.

Q5 Part B

Which of the following is NOT a part of the gear changing mechanism in an automatic transmission system?

- A. Universal coupling ✓
- B. Epicyclic gear arrangement
- C. Fluid coupling
- D. Torque converter

Q6 Part B

In a hydraulic brake booster system, where is the hydraulic pressure stored before it is used to assist braking?

- A. Power steering pump
- B. Master cylinder
- C. Accumulator ✓
- D. Brake caliper

Q7 Part B

The field winding in an alternator is formed by winding a large number of turns of insulated wire around the _____.

- A. alternator housing
- B. cylindrical iron core ✓
- C. slip rings
- D. rotor shaft

Q8 Part B

The main purpose of a turbocharger is to:

- A. increase the amount of air entering the engine cylinder ✓
- B. reduce engine noise
- C. cool the exhaust gases
- D. decrease the amount of air entering the engine

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Q9 Part B

Which of the following parts of the engine is used to compress the charge during compression stroke and to transmit the gas force to the connecting rod and then to the crankshaft during power stroke?

- A. Crankcase
- B. Cylinder head
- C. Cylinder block
- D. Piston ✓

Q10 Part B

Who is authorised to conduct road tests on workshop vehicles?

- A. Only trained and certified personnel ✓
- B. Visitors to the workshop
- C. Any employee
- D. The company accountant

Q11 Part B

What is the reason that cam lobe causes the engine to make a ticking or tapping noise, especially when idling, and is often rhythmic and varies in loudness?

- A. When the cam lobe is subjected to higher load.
- B. When the cam lobe wears out. ✓
- C. When the cam lobe is hot.
- D. When cam lobe is has insufficient lubrication.

Q12 Part B

What is the best method of manufacturing of connecting rod used in an engine?

- A. Drop forging ✓
- B. Investment casting
- C. Sand casting
- D. Machining operation

Q13 Part B

A single plate friction clutch consists of a clutch disk between the:

- A. differential gear and transmission gear box
- B. pressure plate and driving shaft
- C. driving shaft and differential gear
- D. flywheel and a pressure plate ✓

Q14 Part B

The wave set of hacksaw teeth set has a pitch of _____.

- A. 2.0 mm
- B. 0.5 mm
- C. 0.8 mm ✓
- D. 1.0 mm

Q15 Part B

Why are baffles installed inside the fuel tank?

- A. To increase the fuel storage capacity
- B. To filter foreign particles from the fuel
- C. To minimise fuel slushing caused by movement ✓
- D. To cool the fuel during engine operation

Q16 Part B

For the given tire size, as per specification as 205/55R16, what is the width of the tire?

- A. 205/55 mm
- B. 550 mm
- C. 205 mm ✓
- D. 880 mm

Q17 Part B

Which type of line is used to represent hidden edges or surfaces in a technical drawing, as per BIS SP 46-2003?

- A. Continuous thin line
- B. Continuous thick line
- C. Dashed thin line ✓
- D. Chain thin line

Q18 Part B

Consider the following statements about turbocharger.

I. A turbocharger is mounted on the exhaust manifold.
II. It has a turbine wheel and a compressor wheel on the same shaft.
III. Exhaust gases enter in turbine housing and rotate the turbine wheel.

Which of the given statements is/are correct?

- A. II and III only
- B. I and II only
- C. I, II and III ✓
- D. I only

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Q19 Part B

Which of the following parts is NOT associated with camshaft responsible for the opening and closing of engine valves?

- A. Tappets
- B. Connecting rod ✓
- C. Rocker arms
- D. Push rods

Q20 Part B

Which of the following is NOT the purpose of lubrication oil in an engine?

- A. Separation of lighter boiling materials such as gasoline, jet fuel, diesel, etc.
- B. Finishing to improve oxidation and heat stability
- C. Mixing of impurities uniformly that include aromatics and polar compounds ✓
- D. Dewaxing to improve low-temperature fluidity

Q21 Part B

When creating 10 mm single-stroke capital letters in vertical style, what does the 10 mm distance between horizontal parallel lines represent?

- A. Letter width
- B. Letter height ✓
- C. Stroke thickness
- D. Interline spacing

Q22 Part B

The process in which an oil pump housing is first filled with oil, especially for oil pumps that are driven by the crankshaft, is known as:

- A. alignment of a pump
- B. ferrography of a pump
- C. priming of a new oil pump ✓
- D. cavitation of a pump

Q23 Part B

What is the minimum age for employment in factories or mines or other hazardous employment, according to Article 24 of the Indian Constitution?

- A. 14 years ✓
- B. 12 years
- C. 16 years
- D. 18 years

Q24 Part B

When passing stationary vehicles, keep a watch on _____ who may come out suddenly from the front of the stationary vehicle. While overtaking, it should be done on the _____ side. Always keep a good _____ between your vehicle and others.

- A. cyclists; left; interval
- B. vehicles; right; gap
- C. drivers; left; space
- D. pedestrians; right; distance ✓

Q25 Part B

Which of the following calipers are used for marking lines, parallel to inside and outside edges and for locating the centre of round bars?

- A. Spring joint calipers
- B. Leg and point calipers ✓
- C. Simple calipers
- D. Firm joint calipers

Q26 Part B

A carburetor used in a petrol engine is designed so as to fit in which of the following parts of the engine?

- A. Piston
- B. Casing
- C. Cylinder head ✓
- D. Connecting rod

Q27 Part B

Which of the following types of additives are blended with the lubricant to reduce the surface tension of the oil?

- A. Tackiness agents
- B. Demulsifiers
- C. Mist suppressors
- D. Emulsifiers ✓

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Q28 Part B

Which of the following statements about title block is/are true?

Statement 1: The title block is situated in the bottom right-hand corner of the drawing sheet.
Statement 2: The contents of the title block are standardised and cannot be modified to suit individual company needs.

A. Both statements are false
B. Statement 1 is false, but statement 2 is true
C. Statement 1 is true, but statement 2 is false ✓
D. Both statements are true

Q29 Part B

Which of the following 'V' blocks will have one 'V' groove and two grooves (slots) on either side for clamping in two positions?

A. Double level single groove 'V' block
B. Matched pair 'V' block
C. Single level double groove 'V' block ✓
D. Single level single groove 'V' block

Q30 Part B

Which of the following symptom or indicator does NOT show the failure of an oil pump?

A. When the engine oil flow slows or stops, the components continue to be lubricated by hot oil that is not permitted to flow
B. When the engine runs at a normal temperature and oil flow is steady. ✓
C. If a hydraulic lifter in a vehicle creates noise
D. Able to push oil through the system adequately and with low pressure in oil lines

Q31 Part B

Which of the following types of chisels is used for separating metals after chain drilling?

A. Cross-cut chisel
B. Flat chisel
C. Web chisel ✓
D. Diamond point chisel

Q32 Part B

Over the last 15 years, by what percentage have the emissions of nitrogen oxides (NOx) and particulate matter (PM) from diesel car engines reduced due to technical innovation?

A. 60% for NOx and 80% for PM
B. 84% for NOx and 90% for PM ✓
C. 100% for NOx and 90% for PM
D. 70% for NOx and 85% for PM

Q33 Part B

Which of the following types of engine classifications is based on cylinder arrangement?

A. Diesel cycle enigne
B. Dual cycle engine
C. V-engine ✓
D. Otto cycle engine

Q34 Part B

Which of the following is NOT a component of the CRDI (Common Rail Direct Injection) system?

A. High-pressure pump
B. Common rail and pipes
C. Electronic engine Control Unit (ECU)
D. Carburetor ✓

Q35 Part B

The primary function of a supercharger is to:

A. decrease the pressure of the air-fuel mixture
B. increase the pressure of the air-fuel mixture ✓
C. filter the air-fuel mixture
D. decrease the temperature of the air-fuel mixture

Q36 Part B

A crucial engine component that ensures proper sealing of the intake and exhaust valves is known as:

A. valve barrier
B. valve gasket
C. valve seat ✓
D. valve ring

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Q37 Part B

For your safety at work, which of the following should be ensured?
1. All the required protective clothing and equipment are used.
2. Training and instruction necessary for performing tasks safely have been received.

A. Only statement 1
B. Neither statement 1 nor 2
C. Only statement 2
D. Both statements 1 and 2 ✓

Q38 Part B

Which of the following types of engine classifications is based on the thermodynamic cycle?

A. In-line cylinder engine
B. V-engine
C. Radial engine
D. Otto cycle engine ✓

Q39 Part B

Match the following types of lines with their correct descriptions according to their orientation and characteristics.

Description	Type of Line
A. A line that is neither parallel to a horizontal plane nor perpendicular to it.	1. Horizontal line
B. A line that is perpendicular to horizontal lines.	2. Vertical line
C. A line that changes its direction continuously.	3. Inclined line
D. A line that is parallel to a horizontal plane.	4. Curved line

A. A - 1, B - 2, C - 3, D - 4
B. A - 2, B - 3, C - 4, D - 1
C. A - 3, B - 2, C - 4, D - 1 ✓
D. A - 2, B - 1, C - 4, D - 3

Q40 Part B

The feed pump is usually driven by:

A. the camshaft of the Fuel Injection Pump (FIP) ✓
B. the crankshaft
C. an electric motor
D. the alternator

Q41 Part B

In Hand Priming Pump, during the downward stroke of the plunger, the:

A. suction valve closes, and the pressure valve opens ✓
B. suction valve opens, and fuel enters the chamber
C. fuel returns to the fuel tank
D. suction valve opens, and the pressure valve closes

Q42 Part B

Which of the following information is necessary to construct a rectangle?

A. Length of two adjacent sides ✓
B. Length of one side and the area of the rectangle
C. Only the length of one side
D. Only the length of the diagonal

Q43 Part B

Which of the following colours is commonly used for caution signs?

A. Blue
B. Yellow ✓
C. Red
D. Green

Q44 Part B

What is the typical temperature range of a mercury-based clinical thermometer?

A. 0°C to 100°C
B. 35°C to 42°C ✓
C. 0°C to 50°C
D. −10°C to 110°C

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Q45 Part B

Which of the following is NOT the correct function of the front axle?

- A. It transmits the torque of a vehicle through springs to the front wheels. ✓
- B. It absorbs torque applied on it due to braking of vehicle.
- C. An axle is a central shaft for a rotating wheel or gear.
- D. It supports the weight of the front part of the vehicle.

Q46 Part B

Which of the following provisions is provided in the cylinder head during design for increasing the air cooling effect?

- A. Fins or extended surfaces are provided on the cylinder walls and cylinder blocks. ✓
- B. Cylinder head is provided with water jackets.
- C. Cylinder block is provided with high speed cooling air flow.
- D. Dimple like shapes on surfaces are provided on the cylinder walls.

Q47 Part B

Which of the following statements is correct about the clutch used in vehicles?

- A. It allows the driver to couple or decouple the power transmission at will without stopping the engine. ✓
- B. It allows the driver to lift and unload the bulk material from engine and transmission.
- C. It allows the driver to change the drive of engine in any direction.
- D. It allows the driver to change the speed of engine.

Q48 Part B

In two-stroke engines, one power cycle is completed in how many revolutions of the crankshaft?

- A. Two revolutions
- B. Four revolutions
- C. Three revolutions
- D. One revolution ✓

Q49 Part B

A 100-mm prick punch with a 7-mm diameter body could have a 2.5-mm diameter point ground to an angle of _____.

- A. 90°
- B. 30° ✓
- C. 120°
- D. 45°

Q50 Part B

The SI unit of temperature is/are ____.

- A. both kelvin and celsius
- B. celsius
- C. kelvin ✓
- D. fahrenheit

Q51 Part B

Which of the following metals has the lowest melting point?

- A. Mercury ✓
- B. Iron
- C. Lead
- D. Gold

Q52 Part B

Which of the following devices is used to insert a micrometer in the hole of an external cylinder for zero aligning?

- A. Spanner
- B. Allen key
- C. Screw driver
- D. Wrench ✓

Q53 Part B

Which of the following statements is NOT correct for using scribers?

- A. Scriber points are very sharp, so they are to be handled very carefully.
- B. While scribing lines, the scriber is used like a pencil.
- C. Do not put the scriber in your pocket.
- D. Place a cork on the point when in use to prevent accidents. ✓

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Q54 Part B

What is the role of oxygen in a 'perfect combustion' engine?

- A. It is converted into hydrocarbons.
- B. It converts hydrogen to water and carbon to carbon dioxide. ✓
- C. It converts nitrogen into nitrogen oxides.
- D. It remains unaffected.

Q55 Part B

A voltmeter with a resistance of 10,000 ohms is connected across a circuit that has a voltage of 50 V. What is the current flowing through the voltmeter?

- A. 2 mA
- B. 1 mA
- C. 5 mA ✓
- D. 4 mA

Q56 Part B

Which of the following statements is INCORRECT about end standard?

- A. It measures the distance between two parallel flat surfaces.
- B. Faces are subject to wear.
- C. It is slower but more accurate.
- D. It is used to measure the distance between two engraved lines. ✓

Q57 Part B

How much clearance is to be provided for compression ring fitted into the piston of an IC engine?

- A. Approximately 0.035 – 0.080 mm for compression rings
- B. Approximately 0.095 – 1.80 mm for compression rings
- C. 0.002 D to 0.004 D where D is the cylinder bore ✓
- D. Approximately 0.9 – 1.80 mm for compression rings

Q58 Part B

Which of the following types of valve seats are commonly used in cast iron head of the engine?

- A. Integral valve seats ✓
- B. Insert valve seats
- C. Elliptical valve seats
- D. Two piece valve seats

Q59 Part B

Where is a typical clutch actuated by a number of coil springs?

- A. On a pitch circle near the central axis of the shaft
- B. On a base circle near the centre of the circle
- C. On an addendum circle near the centre of the radius
- D. On a pitch circle near the periphery ✓

Q60 Part B

What is the SI unit of 'volume'?

- A. Litres
- B. Cubic centimetre
- C. Cubic metre ✓
- D. Millilitres

Q61 Part B

What happens if air is NOT removed from a hydraulic brake system?

- A. The fuel efficiency improves.
- B. The engine runs smoother.
- C. The tires wear out faster.
- D. The brakes feel spongy and less effective. ✓

Q62 Part B

Convert 8.5% into a decimal.

- A. 0.85
- B. 8.5
- C. 0.085 ✓
- D. 85

Q63 Part B

The camshaft is driven by the crankshaft through which of the following types of power transmission techniques?

- A. Flat belt transmission drive
- B. Timing gears drive ✓
- C. Chain drive
- D. Epicyclic gear train drive

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Q64 Part B

In gasoline-engine vehicles, catalytic converters are designed to convert:

A. carbon dioxide to carbon monoxide
B. water to oxygen
C. nitrogen to oxygen
D. carbon monoxide to carbon dioxide ✓

Q65 Part B

The primary function of electronic mufflers is to produce:

A. more engine noise
B. anti-noise ✓
C. increased exhaust back pressure
D. higher exhaust gas temperature

Q66 Part B

Find the lateral surface area of a cube with side length 5 cm.

A. 125 cm^2
B. 150 cm^2
C. 200 cm^2
D. 100 cm^2 ✓

Q67 Part B

A type of piston which provides an even distribution of the air-fuel mixture, consistent flame front during combustion and it has the smallest surface area on top is known as:

A. semi-spherical piston
B. dish piston
C. flat piston ✓
D. dome piston

Q68 Part B

Which of the following terms in the 5S concept refers to making a habit of maintaining the established procedures?

A. Shine
B. Set
C. Sort
D. Sustain ✓

Q69 Part B

In a series circuit, three resistors of 10 ohms, 20 ohms, and R ohms are connected in series with a 12 V battery. What is the value of resistance R if current flowing in the circuit is 0.2 A?

A. 10 ohms
B. 20 ohms
C. 30 ohms ✓
D. 40 ohms

Q70 Part B

Which of the following is the primary reason why copper is widely used as a conductor in electrical wiring?

A. Copper has low resistance and high conductivity. ✓
B. Copper has a low melting point.
C. Copper is abundant and inexpensive.
D. Copper has high resistance to electricity.

Q71 Part B

Consider the following statements.

I. A Battery Electric Vehicle (BEV) uses electric motors.
II. Most BEVs use lithium batteries.
III. Battery packs are charged using electricity.

Which of the given statements is/are true?

A. I and II only
B. I only
C. II and III only
D. I, II and III ✓

Q72 Part B

The emergency brake locks the wheels by bypassing which system?

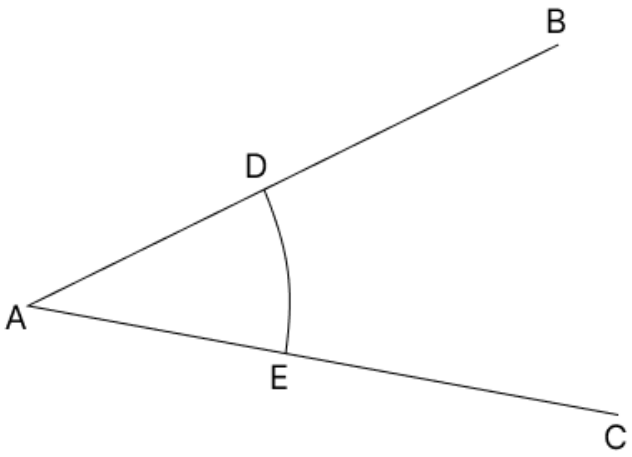
A. Electric brake system
B. Air pressure system
C. Hydraulic brake system ✓
D. Fuel injection system

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Q73 Part B

In the process of bisecting angle BAC in the given figure, why do we draw arcs from points D and E?



A. To find midpoint AB

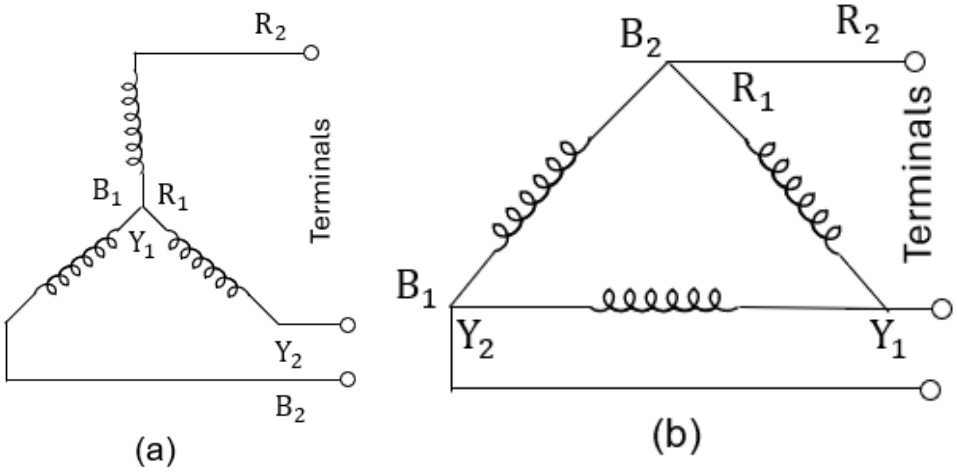
B. To mark equal lengths

C. To intersect line AC

D. To intersect above A ✓

Q74 Part B

In the given diagram, labelled (a) and (b), identify which connection is Delta (Δ) and which is Wye (Y).



A. Both (a) and (b) are Delta (Δ) connections

B. Both (a) and (b) are Wye (Y) connections

C. (a) is Wye (Y) connection; (b) is Delta (Δ) connection ✓

D. (a) is Delta (Δ) connection; (b) is Wye (Y) connection

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Q75 Part B

For the given tire size, as per specification as 205/55R16, what is the width of the tire?

A. $880\ \text{mm}$

B. $550\ \text{mm}$

C. $\frac{205}{55}\ \text{mm}$

D. $205\ \text{mm}$ ✓

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Part B 75 Questions • Answer Key

Q1 Part B

In general, a softer material will produce an indentation that is:

- A. larger and deeper ✓
- B. smaller and shallower
- C. identical in all cases
- D. unpredictable

Q2 Part B

Gaskets, seals and spacers are made using:

- A. centre punch
- B. hollow punch ✓
- C. pin punch
- D. prick punch

Q3 Part B

For what purpose are pins and clips used in engineering drawings?

- A. To transfer dimensions and dividing lines into a number of equal parts
- B. To draw horizontal lines, parallel lines and to guide/hold the set squares
- C. To fasten the drawing sheet on to the drawing board firmly so that it does not shake ✓
- D. To support the drawing paper/tracing paper for making drawings

Q4 Part B

Which of the following is an important safety measure during a power failure?

- A. Using candles for lighting
- B. Continuing to use equipment without verifying power status
- C. Ensuring all machines and electrical equipment are turned off ✓
- D. Ignoring alarm systems

Q5 Part B

A drawing instrument box is used to carry all _____ instruments.

- A. drawing ✓
- B. screening
- C. drilling
- D. casting

Q6 Part B

Which of the following drilling machines is designed for operations requiring mobility and is suitable for working on large or immovable workpieces?

- A. Gang drilling machine
- B. Sensitive drilling machine – Bench mounting
- C. Portable drilling machine ✓
- D. Deep hole drilling machine

Q7 Part B

If the basic size of the diameter of a shaft is 75 mm and variation limit of ± 0.02 mm is given, then its tolerance in mm is:

- A. −0.02
- B. −0.04
- C. +0.04 ✓
- D. +0.02

Q8 Part B

In Lathe Machine operation, the act of making plain ends of a job in their actual length is called _____.

- A. knurling
- B. chamfering
- C. facing ✓
- D. step turning

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Q9 Part B

When using a multimeter to measure current, which of the following is correct?

- A. The multimeter is connected directly to the power source.
- B. The multimeter is connected in series with the load. ✓
- C. The multimeter is connected only across resistive components.
- D. The multimeter is connected in parallel with the load.

Q10 Part B

Threading is an operation of cutting _____ on the external cylindrical surface of the job.

- A. rectangular grooves
- B. helical grooves ✓
- C. circular grooves
- D. v-shaped grooves

Q11 Part B

The process of _____ involves using a cutting tool called a tap to sever internal threads in a hole.

- A. facing
- B. chamfering
- C. tapping ✓
- D. knurling

Q12 Part B

What does the additional value 1.25 in the designation M12 × 1.25 indicate in an ISO metric thread?

- A. The diameter of the thread
- B. The depth of the internal thread
- C. The angle of the thread form
- D. The fine pitch of the thread ✓

Q13 Part B

When the size of the shaft or male part of a job is more than hole or female part, the difference between the two will be known as _____.

- A. positive allowance
- B. either positive or negative allowance
- C. neither positive nor negative allowance
- D. negative allowance ✓

Q14 Part B

In a forward Vernier scale, the size of one Vernier scale division is:

- A. equal to 1 main scale division
- B. 1 mm
- C. larger than 1 main scale division
- D. smaller than 1 main scale division ✓

Q15 Part B

If the current flowing through a conductor is 5 A and the resistance of the conductor is 10 ohms, what will be the voltage across the conductor, according to Ohm's Law?

- A. 15 V
- B. 50 V ✓
- C. 5 V
- D. 10 V

Q16 Part B

Which hardness test uses a diamond pyramid-shaped indenter?

- A. Brinell
- B. Vickers ✓
- C. Shore
- D. Rockwell

Q17 Part B

When two pulleys are more than 8 metres apart, then which of the following belt drives is used for power transmission?

- A. Circular belt ✓
- B. Flat belt
- C. V-belt
- D. Light drive

Q18 Part B

A circuit consists of three resistors; 15 ohms, 10 ohms, and 20 ohms. The 15-ohm resistor is in series with the parallel combination of the 10-ohm and 20-ohm resistors. If a 24 V battery is applied across the circuit, what is the total current flowing through the circuit?

- A. 3.1 A
- B. 0.1 A
- C. 1.1 A ✓
- D. 2.1 A

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Q19 Part B

What is the main working principle of a slotting machine?

A. Both the tool and workpiece move vertically together.

B. The tool moves vertically while the workpiece remains stationary. ✓

C. The tool reciprocates horizontally while the workpiece moves.

D. The workpiece reciprocates while the tool remains stationary.

Q20 Part B

Which of the following hand-operated drilling machines is used for drilling small diameter holes up to 6 mm?

A. Electric hand drill

B. Ratchet drilling machine

C. Breast drilling machine

D. Bevel gear type drilling machine ✓

Q21 Part B

Which part of a hand reamer is responsible for holding and driving the tool?

A. Bevel lead

B. Shank ✓

C. Body

D. Recess

Q22 Part B

What is a key advantage of using MOSFETs in electronic circuits compared to other types of transistors?

A. High frequency response

B. High input impedance and low power consumption ✓

C. Ability to handle higher voltages and currents than BJTs

D. Ability to amplify both AC and DC signals

Q23 Part B

What is the effect of an open structure on a grinding wheel?

A. It removes less metal and produces less heat.

B. It removes more metal but produces more heat.

C. It removes less metal and produces more heat.

D. It removes more metal and produces less heat. ✓

Q24 Part B

Which of the following types of thread is usually found on the machine spindle?

A. Square thread ✓

B. Buttress thread

C. Unified standard thread

D. Knuckle thread

Q25 Part B

The unit for specific gravity is _____.

A. m/s^2

B. g/cm^3

C. kg/m^3

D. no unit (dimensionless) ✓

Q26 Part B

Match the following terminologies in riveted joint with their corresponding meanings.

Column I Column II
Pitch (A) distance between centres of adjoining rivets in the same row (P)
Margin (B) distance between an edge of the plate and the nearest rivet-hole (Q)
Lap joint (C) plates to be connected overlap each other (R)
Row pitch (D) distance between the rows of rivets (S)

A. A-S, B-R, C-Q, D-P

B. A-P, B-R, C-Q, D-S

C. A-S, B-Q, C-R, D-P ✓

D. A-S, B-P, C-Q, D-R

Q27 Part B

Which of the following vices consists of a handle and a small collet chuck at one end?

A. Hand vice

B. Pin vice ✓

C. Pipe vice

D. Toolmaker's vice

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Q28 Part B

The terms _____ and _____ refer to the greatest and smallest variance, respectively, specified on a fundamental size or nominal measurement.

- A. jig; fixture
- B. low limit; high limit
- C. limit; fit
- D. high limit; low limit ✓

Q29 Part B

What type of surfaces can a telescopic gauge measure?

- A. Only deep holes
- B. Both circular and irregular bores ✓
- C. Only circular bores
- D. Only external cylindrical surfaces

Q30 Part B

In a CNC lathe, the movement of the cutting tool is primarily controlled over which axes?

- A. X and Z ✓
- B. X and Y
- C. Z and W
- D. Y and Z

Q31 Part B

What is the advantage of giving heat treatment to a material?

- A. To decrease the melting point of the material
- B. To increase the weight of the material
- C. To change it from one element to another element
- D. To make surgical knives of sharp edges ✓

Q32 Part B

The term _____ refers to the limit of variation allowed on either side of the correct dimension to provide the job property of interchangeability (in mass production of part).

- A. tolerance ✓
- B. low limit
- C. fit
- D. high limit

Q33 Part B

What is single-riveted lap joint?

- A. Joint made with two row of rivets
- B. Joint made with three row of rivets
- C. Joint made with only one row of rivets ✓
- D. Joint made with four row of rivets

Q34 Part B

In a velocity-time graph, the negative slope represents _____.

- A. retardation ✓
- B. displacement
- C. acceleration
- D. distance

Q35 Part B

Which characteristic of cellulosic electrodes makes them unsuitable for high-strength steels?

- A. They produce high levels of hydrogen in the weld. ✓
- B. They operate only on a low-voltage DC supply.
- C. They have a very thin coating, causing rapid wear.
- D. They create excessive slag, leading to contamination.

Q36 Part B

Arrange the following steps in the correct order to draw an equilateral triangle with each side of 35 mm.

1. Join CA and CB.
2. Draw a line and mark AB 35 mm as the side of the triangle.
3. With radius AB and center A and B, draw arcs cutting at C.
4. ABC is the required triangle.

- A. 2, 3, 1, 4 ✓
- B. 1, 2, 4, 3
- C. 2, 1, 3, 4
- D. 3, 2, 1, 4

Q37 Part B

Which of the following is/are NOT a defining dimension of a taper?

- A. Length of the tapered section
- B. Included angle of the taper
- C. Diameters at the large and small ends
- D. Surface finish of the tapered section ✓

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Q38 Part B

What is the primary function of the CNC controller/console in a CNC machine?

A. It serves only as a display unit without controlling the motors.

B. It directly moves the axes without processing any inputs.

C. It processes manual inputs only and ignores G-code commands.

D. It processes G-code and manual inputs to control axis motors. ✓

Q39 Part B

A/An _____ is provided to keep the micrometer fixed so that the reading can be done easily and without any difficulty.

A. sleeve or barrel

B. thimble

C. lock nut ✓

D. anvil

Q40 Part B

Which of the following types of pliers is used to shape loops in wires and to form curves in light metal strips?

A. Flat nose pliers

B. Round nose pliers ✓

C. Slip-joint pliers

D. End cutting pliers

Q41 Part B

Which of the following statements best describes an involute spline?

A. It features parallel keyways both internally and externally for torque transmission.

B. It is used for high-power transmission and is cut by using hobbing cutters. ✓

C. It is commonly used in feed mechanisms of milling machines for low power.

D. It enables the longitudinal sliding of gears without transmitting any torque.

Q42 Part B

What is the difference between a bevel gauge and a bevel protractor?

A. There is no difference; both tools are the same.

B. A bevel protractor is used for depth measurement, while a bevel gauge is used for height measurement.

C. A bevel gauge is fixed, while a bevel protractor is adjustable.

D. A bevel gauge is adjustable, while a bevel protractor provides precise angular measurements. ✓

Q43 Part B

When measuring the resistance of a resistor using an ohmmeter, what does a reading of zero resistance indicate?

A. The resistor is functioning normally.

B. The resistor is open-circuited.

C. The resistor is short-circuited. ✓

D. The ohmmeter is malfunctioning.

Q44 Part B

Why is a negative top rake commonly used when turning hard metals with carbide tools?

A. It reduces tool wear and improves surface finish.

B. It decreases cutting temperature and improves chip flow.

C. It enhances cutting speed and reduces power consumption.

D. It increases tool strength and withstands cutting forces better. ✓

Q45 Part B

Which of the following organisations is responsible for enforcing workplace safety regulations in India?

A. World Health Organization (WHO)

B. Food and Drug Administration (FDA)

C. Directorate General of Factory Advice Service and Labour Institutes (DGFASLI) ✓

D. Environmental Protection Agency (EPA)

Q46 Part B

What is the unit of specifying slip gauges?

A. Millimetres ✓

B. Kilograms

C. Kilometres

D. Newtons

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Q47 Part B

Which of the following is a key characteristic of a low-pressure blowpipe/torch in welding?

- A. It requires an external pump to supply acetylene gas.
- B. It directly mixes acetylene and oxygen in equal proportions.
- C. It operates only with high-pressure acetylene cylinders.
- D. It uses high-pressure oxygen to create a vacuum for acetylene suction. ✓

Q48 Part B

Which M code is used in CNC milling to change the tool automatically?

- A. M08
- B. M06 ✓
- C. M30
- D. M19

Q49 Part B

What should you do to ensure your personal safety at work?

- A. Wear personal protective equipment. ✓
- B. Work in a hurry without checking equipment.
- C. Ignore warning signs and instructions.
- D. Take risks to finish tasks quickly.

Q50 Part B

The key difference between a marking gauge and a mortise gauge is:

- A. method of adjustment
- B. material of construction
- C. number of scribing pins ✓
- D. size of the tool

Q51 Part B

Which of the following files is used for filing narrow grooves and angles above 10°?

- A. Knife-edge file ✓
- B. Half round file
- C. Square file
- D. Triangular file

Q52 Part B

The type of workpieces that can be successfully held in a 4-jaw chuck, and might be difficult to hold in a 3-jaw chuck, are:

- A. only round workpieces
- B. only hexagonal workpieces
- C. only small diameter workpieces
- D. irregular or eccentric workpieces ✓

Q53 Part B

When selecting a sheet size for an original drawing, what should be the primary consideration?

- A. The standard size of the drawing office.
- B. The clarity and resolution required. ✓
- C. The orientation of the drawing (horizontal or vertical).
- D. The size of the reproduction.

Q54 Part B

Which of the following tools is NOT under the requirement to complete the Step Turning Process?

- A. Snipping tool
- B. Parting Tool
- C. Vernier Caliper ✓
- D. Turning tool

Q55 Part B

Toughness is the ability of a material to:

- A. resist elastic deformation
- B. resist scratches and indentation
- C. undergo plastic deformation without failure
- D. absorb energy before fracture ✓

Q56 Part B

Which of the following parts of a file is the part fitted to the tang for holding the file?

- A. Tip or Point
- B. Handle ✓
- C. Edge
- D. Tang

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Q57 Part B

Where can tool offset values be inputted in a CNC lathe to compensate for differences between the actual and imagined tool position?

- A. Machine zero reference page
- B. Program parameter settings
- C. Work coordinate page
- D. Geometry page ✓

Q58 Part B

What do the X and Z coordinate systems represent in CNC lathe absolute programming?

- A. X represents cutting depth and Z represents tool feed rate.
- B. X represents the diameter and Z represents a distance from the finished end. ✓
- C. X represents the tool position and Z represents spindle speed.
- D. X represents the radius and Z represents a distance from the spindle centre.

Q59 Part B

According to BIS SP 46-2003, which of the following applications is correctly represented by a chain-thin line in engineering drawings?

- A. Center lines ✓
- B. Hidden edges
- C. Dimension lines
- D. Visible edges

Q60 Part B

Which of the following advantages of chain drive over belt drive is INCORRECT?

- A. It may be used for both long as well as short distances.
- B. It gives a high transmission efficiency.
- C. The production cost of chains is relatively high. ✓
- D. It gives less load on the shafts.

Q61 Part B

A circular hole of radius 3 cm is cut from a rectangular sheet of dimensions 12 cm × 10 cm. Find the remaining area.

(Take π = 3.14)

- A. 100 cm^2
- B. 91.74 cm^2 ✓
- C. 95.86 cm^2
- D. 75.74 cm^2

Q62 Part B

Non-functional dimensions are _____.

- A. not essential for the function of the space or component ✓
- B. essential for the function of the space or component
- C. derived from the values of the related features of a drawing
- D. directly derived from the values given on a drawing

Q63 Part B

The purpose of providing a side relief angle of 1° to 2° on a grooving tool is to:

- A. reduce the cutting force
- B. increase the cutting speed
- C. prevent rubbing against the sides of the groove ✓
- D. improve the surface finish

Q64 Part B

In CNC turning, what is the recommended Length-to-Diameter (L/D) ratio range for using a tail stock, and up to what L/D ratio can it hold the workpiece with reduced cutting parameters?

- A. L/D less than 3; can hold up to L/D 5
- B. L/D between 6 and 12; can hold up to L/D 20
- C. L/D between 3 and 6; can hold up to L/D 10 ✓
- D. L/D between 1 and 3; can hold up to L/D 5

Q65 Part B

In conventional milling, also known as up-milling, how is the workpiece fed relative to the cutter's rotation?

- A. Perpendicular to the cutter's rotation
- B. At an angle to the cutter's rotation
- C. Opposite to the cutter's rotation ✓
- D. In the same direction as the cutter's rotation

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Q66 Part B

In a lead-acid battery, what is the chemical composition of the material used for the positive plate during discharge?

- A. Sulphuric acid (H_2SO_4)
- B. Lead (Pb)
- C. Lead dioxide (PbO_2) ✓
- D. Lead sulfate ($PbSO_4$)

Q67 Part B

What is the primary reason for electrical injuries when a person comes in contact with electrical equipment?

- A. Electrical equipment is not properly grounded.
- B. Current flows through the body causing harm. ✓
- C. Devices are used for too long.
- D. Electrical devices are too powerful.

Q68 Part B

An electronic digital caliper displays the measurement on a _____.

- A. liquid crystal display screen ✓
- B. dial gauge
- C. Vernier scale
- D. mechanical counter

Q69 Part B

What is the purpose of an emergency evacuation plan?

- A. To ensure safe and orderly evacuation during emergencies ✓
- B. To avoid safety drills
- C. To increase productivity
- D. To allow workers to leave early

Q70 Part B

In thread cutting, 'BSW' stands for _____.

- A. British Standard Whitworth ✓
- B. British Standard Weight
- C. Bharath Standard Whitworth
- D. British Stationary Whitworth

Q71 Part B

Why is it important for every person to follow safety procedures in the workplace?

- A. To increase overall production efficiency
- B. To minimise risks and avoid accidents ✓
- C. To reduce operational costs significantly
- D. To limit the need for frequent supervision

Q72 Part B

What does the given surface finish symbol represent?



- A. Machining must be performed to remove material.
- B. Special machining characteristics must be specified.
- C. Material removal is not allowed on this surface. ✓
- D. The surface should be finished using grinding only.

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Q73 Part B

$(\frac{3}{8}) + (\frac{5}{12})$

A. $\frac{17}{24}$

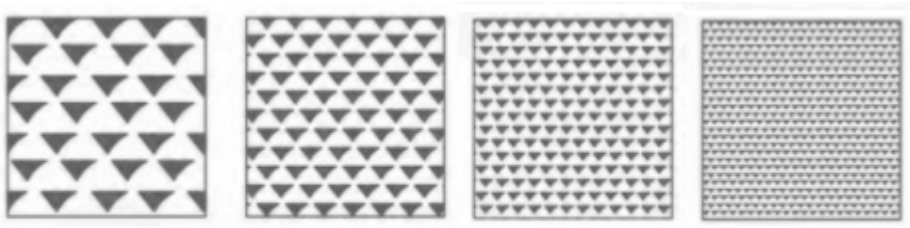
B. $\frac{19}{24}$ ✓

C. $\frac{8}{20}$

D. $\frac{7}{12}$

Q74 Part B

Identify the rough file grade from the figures given below.



(a) (b) (c) (d)

A. (b)

B. (d)

C. (c)

D. (a) ✓

Q75 Part B

$\cos\theta$

A. $\frac{3}{5}$

B. $\frac{4}{5}$ ✓

C. $\frac{5}{4}$

D. $\frac{3}{4}$

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Part B — 75 Questions • Answer Key

Q1 Part B

What is the significant limitation of using a taper-turning attachment on a lathe?

A. It can only be used for internal taper-turning operations.

B. It is limited to turning of slow taper angles only. ✓

C. It cannot be used for cutting threads on taper portions.

D. It is not suitable for producing duplicate tapers.

Q2 Part B

Which of the following is the Outer operation of the lathe?

A. Boring

B. Tapping

C. Drilling

D. Facing ✓

Q3 Part B

What should be done to ensure proper alignment of the reamer before starting the reaming operation?

A. Place the reamer vertically and check with a try square. ✓

B. Fix the tap wrench and apply downward pressure.

C. Turn the tap wrench clockwise with full pressure.

D. Apply equal pressure without checking the alignment.

Q4 Part B

Which of the following types of wooden mallets are used for hollowing panel beatings?

A. Standard wooden mallets

B. End-faked mallets

C. Side-faked mallets

D. Bossing mallets ✓

Q5 Part B

What force (effort) will be required to push a load, initially at rest, of mass 500 g, so that at a distance of 20 m, its final velocity is 20 m/sec [Assume that there is no friction and 'g' = 10 m/s^2].

A. 5 J

B. 10 N

C. 5 N ✓

D. 10 J

Q6 Part B

Which of the following is the key difference between a fuse and a circuit breaker?

A. A fuse can be reset after tripping, while a circuit breaker must be replaced.

B. A fuse is used for high-voltage circuits, while a circuit breaker is used for low-voltage circuits.

C. A fuse is a mechanical device, while a circuit breaker is an electronic device.

D. A fuse is a one-time-use device, while a circuit breaker can be reset and reused. ✓

Q7 Part B

In engineering drawing, what is defined as the path of a moving point with no thickness?

A. Angle

B. Curve

C. Point

D. Line ✓

Q8 Part B

Which tool can be used along with a radius gauge to check curvature of a workpiece for better accuracy?

A. Bevel protractor

B. Feeler gauge ✓

C. Surface plate

D. Micrometer

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Q9 Part B

Which of the following uses of wire gauge is INCORRECT?

A. It measures the diameter of a wire.

B. It does not help determine how much current a wire can carry. ✓

C. Using the wrong wire gauge can damage appliances and electronic devices.

D. It is used in electrical installations, welding and other applications.

Q10 Part B

If the coefficient of linear expansion of a material is 2×10^{-5} °C^{-1}, what does it mean?

A. The material expands by 2×10^{-5} times its original area per degree Celsius

B. The material expands by 2×10^{-5} times its original volume per degree Celsius

C. The material expands by 2×10^{-5} times its original length per degree Celsius ✓

D. The material always increases by 2×10^{-5} kg when temperature is increased by 1°C

Q11 Part B HINDI

CNC मशीन में फीडबैक सिस्टम का प्राथमिक कार्य क्या है?

A. यह ट्रांसड्यूसर और सेंसरों से स्वतंत्र रूप से प्रचालित होता है।

B. यह बाहरी संकेतों के बिना कटिंग टूल के संचलन को नियंत्रित करता है।

C. यह कटिंग टूल की स्थिति और चाल को मापता है और उसे मॉनीटर करता है। ✓

D. यह वास्तविक स्थिति से मेल खाने के लिए निर्देश संकेतों को समायोजित करता है।

Q12 Part B

In screw gauge, the term 'lead of a screw' is defined by the:

A. material the screw is made of

B. diameter of the screw

C. number of threads on the screw

D. distance the screw moves axially with one complete turn ✓

Q13 Part B

A _____ chisel is used for making an oil groove in a bearing and for cutting slits at corners.

A. side cut

B. flat

C. round nose ✓

D. cross cut

Q14 Part B

Identify the correct combination of a rivet parts.

A. Hardie hole, chipping block, pritchel hole

B. Head, cylindrical body of shank, a slightly tapered tail ✓

C. Anvil, stock, top fuller

D. Bottom fuller, shank, horn

Q15 Part B

What is the primary function of the base in a milling machine?

A. Holds the worktable and feed

B. Houses the motor and drive

C. Serves as a foundation for parts ✓

D. Supports the spindle and tool

Q16 Part B

The property of _____ is important, while repairing a machine, if a broken part is to be replaced, we need a new part. Only if the new part is made of accurately similar measurement, it can be fitted, otherwise not.

A. allowance

B. interchangeability ✓

C. interference

D. tolerance

Q17 Part B

Which of the following cutting parameters most significantly affects tool life?

A. Feed rate and depth of cut affect tool wear equally, more than surface speed.

B. Depth of cut affects tool wear more than surface speed and feed rate.

C. Surface speed affects tool wear more than feed rate and depth of cut. ✓

D. Feed rate affects tool wear more than surface speed and depth of cut.

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Q18 Part B HINDI

CNC टर्निंग सेंटर में टरेट (turret) का प्राथमिक कार्य क्या है?

- A. कई औजारों को सक्रिय स्थिति में माउंट करना और घुमाना ✓
- B. मशीनिंग प्रक्रिया के लिए स्थायी आधार प्रदान करना
- C. मशीनिंग के दौरान कार्यवस्तु की विमाओं को मापना
- D. मशीनिंग के दौरान कार्यवस्तु को पकड़ना और घुमाना

Q19 Part B

A triple-riveted butt joint with two cover-straps is used for the _____.

- A. radial joint
- B. circumferential joint
- C. longitudinal joint ✓
- D. angle joint

Q20 Part B

Tapping is the operation of _____.

- A. cutting internal threads in a hole ✓
- B. machining flat surfaces on work pieces
- C. providing tapered entrance to the hole
- D. sizing and improving the geometry and finish of a previously drilled hole

Q21 Part B

Which of the following punch marks is used for the correct location and seating of the divider point?

- A. Centre punch marks of 30°
- B. Centre punch marks of 60°
- C. Prick punch marks of 120°
- D. Prick punch marks of 30° ✓

Q22 Part B

Why should the blade of a bevel gauge be wiped clean after use?

- A. To make it look new in appearance
- B. To ensure it remains flexible to use
- C. To prevent rust and maintain accuracy ✓
- D. To make it a multipurpose tool/gauge

Q23 Part B

How is the stroke length of the slotting machine adjusted in the driving mechanism?

- A. By altering the weight balance on the slotted link
- B. By varying the speed of the motor connected to the gear
- C. By adjusting the length of the connecting link
- D. By changing the position of the sliding block on the slotted link ✓

Q24 Part B

What is the coating factor range for medium-coated electrodes?

- A. 1.25 to 1.3
- B. 1.4 to 1.5 ✓
- C. 1.1 to 1.2
- D. 1.6 to 2.2

Q25 Part B

_____ are used to hold previously drilled or bored holes for outer surface machining.

- A. Lathe carriers
- B. Carriages
- C. Rests
- D. Lathe mandrels ✓

Q26 Part B

What is the chemical effect that occurs in a battery during the charging process of a Lead Acid battery?

- A. Lead reacts with sulphur to form lead sulphate
- B. Water dissociation into hydrogen and oxygen
- C. Lead sulphate decomposes into lead and sulphuric acid ✓
- D. Sulphuric acid dissociates into hydrogen and sulphate ions

Q27 Part B

What is the primary advantage of rutile electrodes in welding?

- A. They provide good weld shape and easy slag removal. ✓
- B. They are suitable for welding high-carbon steels.
- C. They produce deep penetration for high-strength welding.
- D. They generate minimal heat during the welding process.

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Q28 Part B

Which of the following shafts is an example of a machine shaft?

- A. Line shaft
- B. Overhead shaft
- C. Crank shaft ✓
- D. Counter shaft

Q29 Part B

What is the main reason copper turns green over time?

- A. Hydrogen embrittlement
- B. Formation of an oxide layer ✓
- C. Absorption of nitrogen from the air
- D. Reaction with UV light

Q30 Part B

Match the correct length and breadth of the Trimmed sizes of sheets.

Designation	Trimmed size
A. A0	P. 297 × 420
B. A1	Q. 420× 594
C. A2	R. 594 × 841
D. A3	S. 841 × 1189

- A. A - R, B - S, C - Q, D - P
- B. A - P, B - R, C - Q, D - S
- C. A - S, B - R, C - P, D - Q
- D. A - S, B - R, C - Q, D - P ✓

Q31 Part B

A device operates at 240 V and consumes 480 W of power. What is the current flowing through the device?

- A. 2 A ✓
- B. 1 A
- C. 1.5 A
- D. 2.5 A

Q32 Part B

Which of the following is NOT a correct practice when using a telescopic gauge?

- A. Using a micrometer to measure the gauge's expanded size
- B. Locking the gauge before removing it from the bore
- C. Measuring at multiple points for accuracy
- D. Measuring a rough or dirty bore without cleaning it ✓

Q33 Part B

Which of the following non-metals is naturally black?

- A. Alumina
- B. Graphite ✓
- C. Silicon
- D. Quartz

Q34 Part B

What is waste?

- A. Natural resources for living organisms
- B. Valuable substances for agriculture
- C. Useful materials for industries
- D. Unwanted or unusable materials ✓

Q35 Part B

The 'merit number' in toughness measurement is used for:

- A. determining a material's density
- B. finding the modulus of rigidity
- C. comparing different materials ✓
- D. measuring a material's elasticity

Q36 Part B

Which of the following is a key advantage of using Thyristors in power control applications?

- A. High frequency switching ✓
- B. High efficiency and low power loss
- C. Small size and low cost
- D. Low voltage handling capabilities

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Q37 Part B

Which of the following is an effective way to minimise the risk of collisions in CNC machining centres?

- A. Increasing spindle speed beyond recommended limits
- B. Using low-cost tools without monitoring the process
- C. Reducing manual data entry and human intervention ✓
- D. Ignoring machine alignment after minor collisions

Q38 Part B

Why is it important to follow proper disposal procedures for industrial waste?

- A. To allow waste to decompose anywhere
- B. To reduce the number of trash bins needed
- C. To save time and effort in sorting waste
- D. To comply with environmental regulations and reduce pollution ✓

Q39 Part B

Which of the following belts is acid proof and water proof and is NOT affected by animal oils or alkalies?

- A. Cotton or fabric belts
- B. Rubber belts
- C. Balata belts ✓
- D. Leather belts

Q40 Part B

Which of the following statements correctly describes the placement and purpose of orientation marks on a drawing sheet?

1. Orientation marks are placed at two opposite corners of the drawing sheet to indicate the correct orientation on the drawing board.
2. Orientation marks consist of arrow heads placed across the frame, with one at the shorter side and one at the longer side, coinciding with the centering marks.
3. One of the orientation marks always points towards the draughtsman, indicating the direction in which the drawing sheet should be placed.
4. Orientation marks are used to mark the midpoint of each side of the drawing sheet for accurate centering.

- A. 1, 2, and 3 only
- B. 1 and 4 only
- C. 2 and 3 only ✓
- D. 1, 2, and 4 only

Q41 Part B

Why is the drilling machine considered an important machine tool in a workshop?

- A. It produces surface finishes on metal parts at high speed.
- B. It primarily sharpens cutting tools for various machines.
- C. It can perform several operations and originates holes efficiently. ✓
- D. It is mainly used to shape metal sheets into desired forms.

Q42 Part B HINDI

2-अक्ष CNC मशीन में द्रवचालित तंत्र का प्राथमिक कार्य क्या है?

- A. कार्यवस्तु का चकन (Chucking) और उसे अपने स्थान पर पकड़े रखना ✓
- B. ऑपरेशन के दौरान कर्तन औजार का शीतलन
- C. मशीनिंग के लिए स्पिंडल चाल को नियंत्रित करना
- D. निघर्षण कम करने के लिए मशीन घटकों का स्नेहन

Q43 Part B

Which of the following is a fundamental unit?

- A. newton
- B. metre ✓
- C. pascal
- D. watt

Q44 Part B

In engineering drawing (lettering and numbering), a single stroke means that the _____.

- A. thickness of the line of the letter or number is obtained in one stroke of the pencil ✓
- B. thickness of the line of the letter or number is obtained in three strokes of the pencil
- C. thickness of the line of the letter or number is obtained in no strokes of the pencil
- D. thickness of the line of the letter or number is obtained in two strokes of the pencil

Q45 Part B HINDI

CNC मशीन में, Z-अक्ष के अनुदिश स्पिंडल का संचलन मुख्य रूप से किसके लिए उत्तरदायी होता है?

- A. कर्तन प्रचालनों के लिए टूल को ऊपर उठाने या नीचे करने के लिए ✓
- B. ऑपरेटर के सापेक्ष टूल को आगे और पीछे ले जाने के लिए
- C. वर्कपीस को निर्देशांक प्रणाली के साथ संरेखित करने के लिए उसे घुमाने के लिए
- D. XY तल में वर्कपीस को बाएं और दाएं स्थानांतरित करने के लिए

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Q46 Part B

If a machine has an efficiency of 80%, it means:

- A. the machine produces more output than input
- B. the machine has a velocity ratio and mechanical advantage both equal to 80
- C. the machine does not have any loss in input energy
- D. the machine loses 20% of the input ✓

Q47 Part B

When did India implement the Hazardous Wastes (Management and Handling) Rules to regulate the disposal and handling of hazardous waste?

- A. 1987
- B. 2000
- C. 1989 ✓
- D. 1982

Q48 Part B

What is the primary principle behind the generation of electrical energy in a piezoelectric device?

- A. Conversion of thermal energy into electrical energy
- B. Conversion of chemical energy into electrical energy
- C. Conversion of light energy into electrical energy
- D. Conversion of mechanical stress into electrical energy ✓

Q49 Part B

What is a possible cause of tool breakage in CNC turning machine tools?

- A. Using a tool with a lower spindle speed than required
- B. Excessive cutting depth beyond the allowable limit ✓
- C. Proper selection of tool material for rough machining
- D. Applying coolant at high pressure continuously

Q50 Part B

Which of the following types of wooden mallets are used for general purpose work such as flattening and bending?

- A. Bossing mallets
- B. Side-faked mallets
- C. Standard wooden mallets ✓
- D. End-faked mallets

Q51 Part B

When the size of the hole or female part of a job is more than shaft or male part, the difference between the two will be known as _____.

- A. neither positive nor negative allowance
- B. either positive or negative allowance
- C. positive allowance ✓
- D. negative allowance

Q52 Part B

What does the 'Grade' of a grinding wheel indicate?

- A. The grit size and type of abrasive
- B. The wheel's speed and power rating
- C. The type of bonding material used
- D. The strength of the bond and wheel hardness ✓

Q53 Part B

The digital interface of an electronic digital caliper improves the reliability of measurement records by:

- A. eliminating the need for manual data entry
- B. allowing direct connection to a statistical control system ✓
- C. providing secured storage for a series of readings
- D. enabling the instrument to be used as a limit gauge

Q54 Part B

When drawing a curved line of a specific length in an engineering drawing, which tool is most appropriate for ensuring accuracy?

- A. Protractor
- B. Straightedge
- C. French Curve ✓
- D. Compass

Q55 Part B

Pencils are rated in engineering drawings based on the _____.

- A. hardness or softness of the lead ✓
- B. colour of the lead
- C. durability of the lead
- D. shape of the lead

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Q56 Part B

Which of the following punches is used to make deeper witness marks on scribed lines and make it easier for the drill to start correctly?

A. Solid punch

B. Centre punch ✓

C. Pin punch

D. Prick punch

Q57 Part B

Which of the following parts of a hammer-head is used for shaping and forming work like riveting and bending?

A. Face

B. Eyehole

C. Pein ✓

D. Cheek

Q58 Part B

The principle behind the vernier scale in a vernier caliper is:

A. subtracting the vernier scale reading from the main scale reading

B. dividing a known length into a certain number of equal divisions

C. adding the main scale and auxiliary scale readings ✓

D. multiplying the main scale reading

Q59 Part B

In multiple start threads, the relation between lead and pitch is given by which of the following?

A. There is no relation between them.

B. Lead is equal to the pitch.

C. Lead is always greater than the pitch. ✓

D. Lead is always less than the pitch.

Q60 Part B

Which method is most suitable for producing small lengths of taper during mass production on a lathe?

A. Employing a taper-turning attachment for consistent feed

B. Using a form tool set at right angles to the work axis ✓

C. Using a compound rest set at the desired angle

D. Offsetting the tailstock to achieve a taper

Q61 Part B

In the limit system, the distinction between allowance and deviation is:

A. allowance is used for single parts, while deviation is used for assemblies

B. allowance is the difference between the maximum material limits of the mating parts, while deviation is the difference between a size and the corresponding basic size ✓

C. allowance is always positive, while deviation can be positive or negative

D. allowance is the difference between a size and the corresponding basic size, while deviation is the difference between the maximum material limits of the mating parts

Q62 Part B

Which of the following statements is/are correct?
Statement I - The annealing process uses heat to reduce the hardness and increase the ductility and toughness of various steels, cast iron, and alloys.
Statement II - Quenching is a rapid cooling process that alters specific properties of materials by manipulating the cooling rate.

A. Statement (I) is correct but Statement (II) is incorrect.

B. Statement (I) and (II) both are correct. ✓

C. Statement (I) is incorrect but Statement (II) is correct.

D. Statement (I) and (II) both are incorrect.

Q63 Part B

When the size of a shaft is less and the size of the hole is more, the difference between the two is called _____.

A. deviation

B. clearance ✓

C. tolerance

D. interference

Q64 Part B

The included angle of the tip of a standard lathe centre is ____.

A. 60° ✓

B. 30°

C. 90°

D. 45°

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Q65 Part B

What does an optical pyrometer measure?

- A. The relative density of liquids
- B. The temperature of the surface ✓
- C. The volume of liquids
- D. The pressure of gases

Q66 Part B

What is the blade length of the T1 'T' square, as per IS:1360-1989?

- A. 500 mm
- B. 1500 mm
- C. 700 mm
- D. 1000 mm ✓

Q67 Part B

Which of the following is an example of a p-type semiconductor?

- A. Silicon doped with phosphorus
- B. Silicon doped with arsenic
- C. Silicon doped with boron ✓
- D. Germanium doped with phosphorus

Q68 Part B

Key way on a shaft is made with a _____ chisel.

- A. side cut
- B. cross cut
- C. flat ✓
- D. round nose

Q69 Part B

_____ is a metal removal process that employs an abrasive grinding wheel (GW) whose cutting elements are grains of abrasive materials of high hardness and high refractoriness.

- A. Taper turning
- B. Step turning
- C. Boring
- D. Grinding ✓

Q70 Part B

Which of the following statements is correct about a protractor?

Statements:
1. A protractor can be used to measure angles from both sides.
2. A protractor is typically made of a rigid metal material.

- A. Neither statement is true
- B. Only statement 2 is true
- C. Only statement 1 is true ✓
- D. Both statements are true

Q71 Part B

Which of the following is an advantage of chain drives over belt drives?

- A. The production cost of chains is relatively high.
- B. The chain drive needs accurate mounting and careful maintenance, particularly lubrication and slack adjustment.
- C. The chain drive has velocity fluctuations especially when unduly stretched.
- D. It gives a high transmission efficiency. ✓

Q72 Part B HINDI

स्लॉट मशीन पर धातु के चिप्स को साफ करने से पूर्व क्या किया जाना चाहिए?

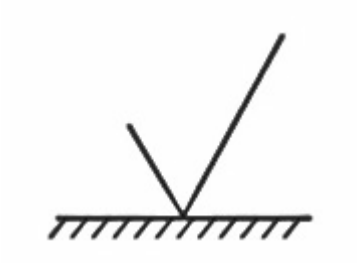
- A. मशीन को रोकने से पहले सहायता लें।
- B. मशीन चालू करने से पहले क्लैम्प (clamps) को समायोजित करें।
- C. नुकीले किनारों को नंगे हाथों से मजबूती से पकड़ें।
- D. सफाई करने से पहले मशीन को पूरी तरह से स्टॉप कर दें। ✓

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Q73 Part B

What does the surface finish symbol shown in the given figure represent?



A. The surface requires a specific finishing process

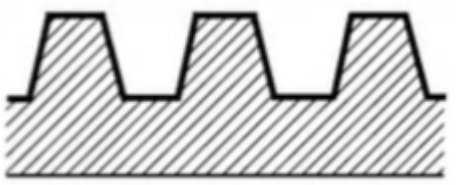
B. A general machining indication without roughness details ✓

C. Material removal is strictly prohibited

D. The surface must be left without machining

Q74 Part B

Identify the type of thread given below.



A. Acme thread ✓

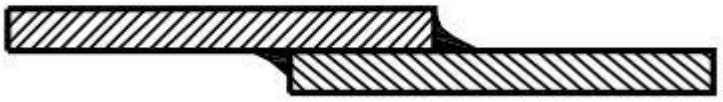
B. Knuckle thread

C. V-thread

D. Square thread

Q75 Part B

Identify the type of brazed joint shown below.



A. Joggle Lap

B. Simple Lap ✓

C. Strapped Lap

D. Butted Flange

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Part B — 75 Questions • Answer Key

Q1 Part B

The SI unit of 'ultimate stress' is _____.

- A. pascal (Pa) ✓
- B. newton (N)
- C. newton per meter (N/m)
- D. joule per square meter (J/m^2)

Q2 Part B

Why do cars have treaded tyres?

- A. To increase friction and grip on the road ✓
- B. To reduce weight
- C. To decrease friction
- D. To increase speed

Q3 Part B

Match the following columns.

Column I Column II
Hinge (A) Reinforcing the downward projecting sand mass (P)
Welding (B) Finishing flat surfaces and joints (Q)
Trowels (C) Permanent joint (R)
Gaggers (D) Movable joint (S)

- A. A-R, B-S, C-Q, D-P
- B. A-S, B-R, C-P, D-Q
- C. A-S, B-R, C-Q, D-P ✓
- D. A-S, B-P, C-Q, D-R

Q4 Part B

A rectangular floor measuring 10 m × 8 m is to be tiled. If each tile covers 0.25 m^2, how many tiles are needed?

- A. 200
- B. 300
- C. 320 ✓
- D. 250

Q5 Part B

What is the term used to describe programs that distinguish between uppercase and lowercase letters, treating "yes" and "YES" as different inputs?

- A. Case-insensitive
- B. Numerical
- C. Case-sensitive ✓
- D. Alphabetical

Q6 Part B

What is the primary purpose of shielding in electrical cables?

- A. To increase the voltage capacity of the cable
- B. To increase the current-carrying capacity of the cable
- C. To protect the cable from external electromagnetic interference ✓
- D. To prevent heat loss from the cable

Q7 Part B

What is the primary purpose of employing a quick return mechanism in a slotting machine?

- A. To increase the cutting force of the ram
- B. To extend the duration of the cutting stroke
- C. To slow down the machine's overall operation
- D. To reduce the idle time during the return stroke ✓

Q8 Part B

What is the orientation of the slope for a positive top rake angle on a cutting tool?

- A. From the top of the tool towards the bottom of the cutting edge
- B. From the front of the cutting edge towards the back of the tool ✓
- C. From the bottom of the cutting edge towards the top of the tool
- D. From the back of the tool towards the front of the cutting edge

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Q9 Part B

Which of the following is a key electrical safety tip in a workshop?

A. Operate machines with wet hands
B. Ignore frayed wires if the device is still working
C. Use water to clean electrical panels
D. Ensure electrical equipment is properly grounded ✓

Q10 Part B

The main drawback of using a 4-jaw chuck compared to a 3-jaw chuck is:

A. it provides a less secure grip
B. it cannot grip work on the inside surface
C. it requires more setting time ✓
D. it can only hold regular shaped jobs

Q11 Part B

Which option shows the correct answer when 27°C is converted to the kelvin scale?

A. – 300 K
B. 246 K
C. 300 K ✓
D. – 246 K

Q12 Part B

Which of the following is an advantage of using a recirculating ball screw system in CNC machine tools?

A. It operates with increased resistance and slow traverse speed.
B. It has high friction and frequent wear.
C. It requires high drive power and causes a temperature rise.
D. It eliminates the stick-slip effect and has high efficiency. ✓

Q13 Part B

Which material is commonly used for hand reamers made as a one-piece construction?

A. Cast iron
B. Mild steel
C. High-carbon steel
D. High-speed steel ✓

Q14 Part B

In riveted joint, diameter (d) for a given thickness of the plates is given by _____, where t = thickness of plates in mm.

A. $d = 6\ (t)^{1/2}$ ✓
B. $d = 3.5\ (t)^{1/2}$
C. $d = 15\ (t)^{1/2}$
D. $d = 12\ (t)^{1/2}$

Q15 Part B

Which of the following is NOT a component of twist drill?

A. Flutes
B. Shank
C. Body
D. Neck ✓

Q16 Part B

Which of the following is a function of the top section of a steady rest in a CNC lathe?

A. It swings away from the bottom portion for easy workpiece removal. ✓
B. It provides axial support similar to a tailstock during turning.
C. It adjusts automatically to compensate for machining forces.
D. It locks the workpiece in place to prevent rotational movement.

Q17 Part B

What type of surfaces can be checked using a radius gauge?

A. Both internal and external curved surfaces ✓
B. Only flat surfaces
C. Only internal curved surfaces
D. Only external curved surfaces

Q18 Part B

_____ recommend(s) 20 mm wide margins for sheet sizes AO and A1 in engineering drawings.

A. Borders and frames: SP: 46 (2003) ✓
B. Geographic coordinate systems
C. Custom grids
D. Grid reference system

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Q19 Part B

Which of the following care and maintenance of a marking table is INCORRECT?

A. The marking table should be protected from damage.

B. The marking table should be protected from rust.

C. After use, the marking table should be cleaned with a soft cloth.

D. The surface of the marking table should not be given a thin layer of oil. ✓

Q20 Part B

Which of the following is an advantage of taper turning by swiveling the compound slide?

A. Allows taper length beyond the top slide movement

B. Suitable for producing threads on the taper portion

C. Enables both internal and external tapers to be produced ✓

D. Allows automatic feed during operation

Q21 Part B

What is the purpose of axes motors in a CNC machine?

A. To provide lubrication to moving parts

B. To drive each axis of the machine separately ✓

C. To operate the cooling system of the machine

D. To control the spindle speed of the machine

Q22 Part B

In a logic circuit, three SPST (Single Pole Single Throw) switches are used to implement a logic gate. The switches are connected in series. What is the output of the circuit if all switches are closed?

A. Undefined

B. 1 ✓

C. The output will depend on the type of gate used

D. 0

Q23 Part B

Which hardness test uses a hardened steel ball as an indenter?

A. Knoop Hardness Test

B. Vickers Hardness Test

C. Brinell Hardness Test ✓

D. Rockwell Hardness Test

Q24 Part B

Which of the following flat belt drives is provided to obtain high velocity ratio and when the required belt tension cannot be obtained by other means?

A. Crossed or twist belt drive

B. Belt drive with idler pulleys ✓

C. Quarter turn belt drive

D. Open belt drive

Q25 Part B

Which of the following instruments is used to draw mutually perpendicular lines over a plane surface?

A. Bevel square

B. Try Square ✓

C. Straight edge

D. Folding rule

Q26 Part B

_____ is the line of zero deviation and represents the basic size.

A. Zero line

B. Actual size

C. Nominal size ✓

D. Tolerable size

Q27 Part B

The accuracy of measurement by a try square is about:

A. 0.02 mm per 10 mm length

B. 0.001 mm per 10 mm length

C. 0.004 mm per 10 mm length

D. 0.002 mm per 10 mm length ✓

Q28 Part B

Which of the following is a primary difference between a primary and a secondary electrochemical cell?

A. A secondary cell produces more energy than a primary cell.

B. A primary cell can be recharged, while a secondary cell cannot be recharged.

C. A primary cell cannot be recharged, while a secondary cell can be recharged. ✓

D. There is no difference between primary and secondary cells.

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Q29 Part B

Which of the following statements is/are true about Non-Functional Dimensions (NF) in engineering drawing?

Statement 1: Non-functional Dimensions are shown without limits, as they do not affect the functionality of the component or space.
Statement 2: Non-Functional Dimensions are typically used for reference purposes only, and do not impact the assembly or performance of the component or space.

- A. Only statement 2 is true ✓
- B. Only statement 1 is true
- C. Both statements are true
- D. Neither statement is true

Q30 Part B

Which of the following is NOT a valid method for setting the tailstock offset when performing taper turning on a lathe?

- A. Using a feeler gauge with a cross-slide graduated collar
- B. Using a dial test indicator for precise measurement
- C. Adjusting the tool holder angle manually ✓
- D. Using the graduated scale on the tailstock base

Q31 Part B

Which of the following is INCORRECT about line standard?

- A. More accurate due to line thickness ✓
- B. Subject to parallax error
- C. Quick measurements over a wide range
- D. Used to measure the distance between two engraved lines

Q32 Part B

_____ work best for cutting soft materials like wood and plastic.

- A. Bi-metal blades
- B. Coarse-toothed blades ✓
- C. Fine-toothed blades
- D. High-carbon steel blades

Q33 Part B

Heavy belt drives are used to transmit large powers at belt speeds _____.

- A. between 15 m/s and 22 m/s
- B. above 22 m/s ✓
- C. up to about 10 m/s
- D. between 10 m/s and 15 m/s

Q34 Part B

Force fit will give _____ type of allowance.

- A. positive
- B. negative ✓
- C. neither positive nor negative
- D. either positive or negative

Q35 Part B

Identify the roughness grade number for a roughness value of 0.025 µm.

- A. N1 ✓
- B. N4
- C. N3
- D. N2

Q36 Part B

Which of the following is a major risk associated with fuel spillage?

- A. Fire hazards and environmental contamination ✓
- B. Better lubrication for workshop floors
- C. Increased productivity
- D. Reduced need for ventilation

Q37 Part B

Why is acetylene gas not stored in its gaseous form under pressure above 1 kg/cm^2 in cylinders?

- A. Because it loses its flammability and becomes ineffective
- B. Because it reacts with the cylinder's material and causes corrosion
- C. Because it becomes unstable and may explode under high pressure ✓
- D. Because it condenses into a liquid and reduces efficiency

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Q38 Part B

What is the primary reason for the heating effect in a conductor when an electric current passes through it?

- A. The electric field in the conductor causes heat generation.
- B. The movement of electrons causes heat generation. ✓
- C. The conductor absorbs heat from the surrounding environment.
- D. The movement of protons causes heat generation.

Q39 Part B

Which of the following is NOT a component of the Vernier caliper?

- A. Locking screw
- B. Vernier scale
- C. Anvil ✓
- D. Main scale

Q40 Part B

When one side of a job with parallel diameter is cut turned completely or partially to reduce its diameter by the lathe machine, it is called _____.

- A. knurling
- B. chamfering
- C. taper turning
- D. turning ✓

Q41 Part B

What is the speed ratio of the forward stroke to the return stroke in a slotting machine's quick return mechanism?

- A. 2 : 1
- B. 1 : 1
- C. 3 : 2
- D. 2 : 3 ✓

Q42 Part B

Which of the following conversions are correct?

- A. 1 L = 1000 dm^3 and 1 mL = 1000 cm^3
- B. 1000 L = 1 dm^3 and 1000 mL = 1 cm^3
- C. 1 L = 1 dm^3 and 1 mL = 1 cm^3 ✓
- D. 1000 L = 1 dm^3 and 1 mL = 1000 cm^3

Q43 Part B

A statement and conclusion for pictorial drawing are given below. Determine the logical relationship between them.

Statement: Pictorial drawings are three-dimensional and provide a visual representation of an object.

Conclusion: Therefore, pictorial drawings are useful for describing the shape of a piece part or component.

- A. The conclusion does not logically follow from the statement.
- B. The conclusion is partially supported by the statement.
- C. The conclusion is unrelated to the statement.
- D. The conclusion logically follows from the statement. ✓

Q44 Part B

A shaft with a basic size of 40 mm has an allowance of 0.06 mm for clearance. The design size of the shaft is _____.

- A. 39.94 mm ✓
- B. 40.00 mm
- C. 40.06 mm
- D. 39.04 mm

Q45 Part B

Match the following designations of sheets with their respective trimmed sizes in length and breadth.

Designation Trimmed Size
A) A0 P) 297 × 420
B) A1 Q) 420 × 594
C) A2 R) 594 × 841
D) A3 S) 841 × 1189

- A. A-S ; B-R ; C-Q ; D-P ✓
- B. A-Q ; B-R ; C-S ; D-P
- C. A-S ; B-P ; C-Q ; D-R
- D. A-P ; B-R ; C-Q ; D-S

Q46 Part B

Which of the following is a characteristic of a flat drill?

- A. It has a parallel and taper shank design for different applications.
- B. It is mainly used for drilling deep holes with high efficiency.
- C. It has a helical flute along its length for smooth chip removal.
- D. It is inexpensive to produce but has poor chip removal. ✓

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Q47 Part B

Malleability is most important for which type of industrial application?

- A. Bearing production
- B. Cutting tool manufacturing
- C. Wire manufacturing
- D. Sheet metal fabrication ✓

Q48 Part B

As per the BS standards, the Environment Management code is:

- A. BS ISO 45001
- B. BS EN ISO 14001 ✓
- C. BS EN ISO/IEC 27001
- D. BS EN ISO 9001

Q49 Part B

What is the first step when entering offset data in the offset page?

- A. Press the function key ✓
- B. Enter the tool wear offset value first
- C. Adjust the work offset value before enabling settings
- D. Directly input the tool offset value

Q50 Part B

An angle greater than 180 degrees is referred to as _____.

- A. a right angle
- B. an acute angle
- C. an obtuse angle
- D. a reflex angle ✓

Q51 Part B

What is the primary reason for conducting a vehicle road test?

- A. To test how fast the vehicle can go
- B. To avoid the need for inspections
- C. To increase fuel efficiency
- D. To ensure the vehicle is functioning safely and correctly ✓

Q52 Part B

_____ is a measuring device that uses the difference between two separate measuring instrument scales to determine a job's measurement.

- A. Either the principle of Vernier caliper or micrometer
- B. The principle of the micrometer
- C. Neither the principle of Vernier caliper nor micrometer
- D. The principle of Vernier caliper ✓

Q53 Part B

Which of the following screwdrivers has cross-shaped tips that are unlikely to slip from the cruciform slots in Philips recessed head screws?

- A. Stumpy screwdriver
- B. Offset screwdriver
- C. Cross-recess screwdriver ✓
- D. Ratchet screwdriver

Q54 Part B

In a lathe machine with a 3-jaw chuck, the jaws are moved:

- A. by pneumatic pressure
- B. by magnetic force
- C. simultaneously in a radial direction by rotating a pinion ✓
- D. independently using individual levers

Q55 Part B

Which of the following instruments is commonly used along with a planer gauge for precise height measurement?

- A. Vernier caliper
- B. Depth gauge
- C. Micrometer
- D. Dial indicator ✓

Q56 Part B

Natural rubber is soft at high temperatures and brittle at low temperatures; hence raw rubber is heated with sulphur and other additives at a temperature range between 373 – 415 K to make it strong. This process is called _____ of rubber.

- A. vulcanisation ✓
- B. molding
- C. latex
- D. extrusion

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Q57 Part B

For which of the following calipers, a screw and nut are provided for opening and closing the caliper legs?

- A. Spring joint calipers ✓
- B. Firm joint calipers
- C. Simple calipers
- D. Leg and point calipers

Q58 Part B

Which of the following materials is most malleable?

- A. Glass
- B. Copper
- C. Gold ✓
- D. Cast iron

Q59 Part B

Which of the following characteristics best describes angular milling cutters?

- A. They have teeth on the periphery and edges on a conical surface. ✓
- B. They are used only for vertical milling operations.
- C. They have straight teeth arranged perpendicular to the axis.
- D. They have teeth parallel to the axis and a cylindrical shape.

Q60 Part B

What is the function of the work part zero point in CNC machining?

- A. It sets the reference position for the workpiece coordinate system. ✓
- B. It adjusts the tool offset for different machining processes.
- C. It limits the movement range of the machine table in operation.
- D. It defines the highest point reached by the machine spindle.

Q61 Part B

Which of the following actions is a part of the emergency response team's responsibilities during an active emergency?

- A. Preparing reports on emergency incidents
- B. Rescuing persons in immediate danger ✓
- C. Conducting routine safety checks
- D. Scheduling regular evacuation drills

Q62 Part B

What is the primary goal of the 5S concept?

- A. To replace traditional safety measures
- B. To increase the number of safety regulations
- C. To improve workplace organisation and efficiency ✓
- D. To eliminate the need for maintenance

Q63 Part B

A 100-mm centre-punch could have a 10-mm diameter body and a 6-mm diameter point ground to an angle of _____.

- A. 120°
- B. 90° ✓
- C. 60°
- D. 30°

Q64 Part B

Which of the following options correctly describes the significance of the first letter in an ISO-specified tool insert code, 'C N M G 12 04 08-MP'?

- A. It specifies the coating type applied to the insert for wear resistance.
- B. It represents the shape of the insert used in machining. ✓
- C. It denotes the cutting-edge geometry of the insert.
- D. It indicates the material of the insert used for machining.

Q65 Part B

In a circuit with a NTC type thermistor and a fixed resistor connected in series connected to a DC power supply, what will happen to the output voltage if there is a rise in temperature?

- A. The output voltage will increase. ✓
- B. The output voltage will remain constant.
- C. The output voltage will fluctuate depending on the resistor value.
- D. The output voltage will decrease.

Q66 Part B

What is the primary purpose of preventive maintenance?

- A. To increase the workload of employees
- B. To reduce unexpected equipment failures ✓
- C. To delay repairs until breakdowns occur
- D. To eliminate the need for regular inspections

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Q67 Part B

How is the height of a planer gauge adjusted?

A. By rotating a vernier scale

B. By tightening a micrometer screw

C. By using slip gauges ✓

D. By applying pressure manually

Q68 Part B

Which of the following statements about a Type 4 tapered grinding wheel is correct?

A. It is mainly used for fine grinding and has flat sides.

B. It is mainly used for cutting and has curved edges.

C. It is mainly used for rough grinding and has tapered sides. ✓

D. It is mainly used for polishing and has straight sides.

Q69 Part B

Which of the following statements best describes the application of oxy-other fuel gas welding?

A. It is used for welding metals requiring high heat input.

B. It is mainly used for welding thick steel plates.

C. It produces a higher flame temperature than oxy-acetylene welding.

D. It is preferred for welding metals with lower heat requirements. ✓

Q70 Part B

On a digital vernier caliper, the purpose of pressing the zero button is to:

A. change the units of measurement

B. lock the jaws in a fixed position

C. set the reading to zero ✓

D. turn the LCD display on or off

Q71 Part B

Sine bars are used when a high degree of accuracy less than _____ is needed for measuring angles.

A. 1 degree

B. 30 degrees

C. 1 minute ✓

D. 30 minutes

Q72 Part B

Which of the following is an INCORRECT statement for belt-pulley system?

A. Arc of contact on the smaller pulley may be as small as possible. ✓

B. A long belt tends to swing from side to side, causing the belt to run out of the pulleys.

C. The pulleys should not be too far apart.

D. The pulleys should not be too close together.

Q73 Part B

From the following relation, select relation for taper angle (θ) in taper turning, where l = Length of taper, D = Large diameter and d = small diameter.

A. $\tan\theta = \frac{(D-d)}{21}$ ✓

B. $\tan\theta = \frac{(D+d)}{21}$

C. $\frac{1}{2\tan\theta} = \frac{(D+d)}{21}$

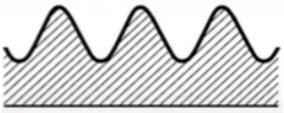
D. $\frac{1}{2\tan\theta} = \frac{(D-d)}{21}$

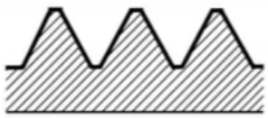
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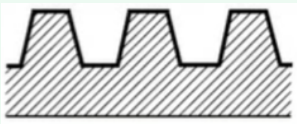
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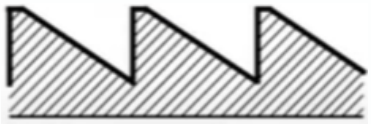
Q74 Part B

Identify the ACME thread.

A. 

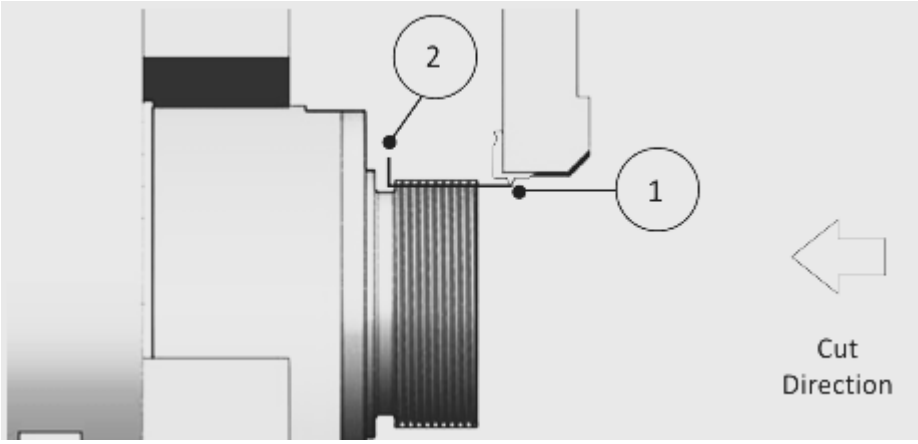
B. 

C.  ✓

D. 

Q75 Part B

In a thread cutting operation, symbols 1 and 2 indicate _____ and _____.



A. Pull Off; Start Cut

B. Start Cut; Start Cut

C. Start Cut; Pull Off ✓

D. Pull Off; Pull Off

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Part B 75 Questions • Answer Key

Q1 Part B

Convert 8.5% into a decimal.

A. 0.85
B. 8.5
C. 0.085 ✓
D. 85

Q2 Part B

For your safety at work, which of the following should be ensured?
1. All the required protective clothing and equipment are used.
2. Training and instruction necessary for performing tasks safely have been received.

A. Only statement 1
B. Neither statement 1 nor 2
C. Only statement 2
D. Both statements 1 and 2 ✓

Q3 Part B

_____ are the greatest option for experts due to their durability and flexibility.

A. Coarse-toothed blades
B. Bi-metal blades ✓
C. Fine-toothed blades
D. High-carbon steel blades

Q4 Part B

Which of the following metals has the lowest melting point?

A. Mercury ✓
B. Iron
C. Lead
D. Gold

Q5 Part B

In an ISO system of Limits and Fits (ISO:286-1:1998), the tolerance size is designated as:

A. basic value followed by a letter
B. basic value followed by a number
C. basic value alone
D. basic value followed by symbol composed of a letter and number ✓

Q6 Part B

Tapering of a small part of a job at its edge or corner is known as _____.

A. knurling
B. chamfering ✓
C. step turning
D. facing

Q7 Part B

Which of the following information is necessary to construct a rectangle?

A. Length of two adjacent sides ✓
B. Length of one side and the area of the rectangle
C. Only the length of one side
D. Only the length of the diagonal

Q8 Part B

Which of the following colours is commonly used for caution signs?

A. Blue
B. Yellow ✓
C. Red
D. Green

Q9 Part B

What is the primary benefit of a slant bed in a CNC lathe compared to a flat bed?

A. It improves operator access to the work area.
B. It allows better chip disposal due to gravity. ✓
C. It enhances the precision of the Z-axis movement.
D. It reduces material usage and machine weight.

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Q10 Part B

Which of the following statements is NOT correct for using scribers?

- A. Scriber points are very sharp, so they are to be handled very carefully.
- B. While scribing lines, the scriber is used like a pencil.
- C. Do not put the scriber in your pocket.
- D. Place a cork on the point when in use to prevent accidents. ✓

Q11 Part B

Which of the following correctly differentiates a cutting blowpipe/torch from a welding blowpipe/torch?

- A. A cutting blowpipe has 3 control valves, while a welding blowpipe has 1.
- B. A cutting blowpipe has 2 control valves and 1 lever, while a welding blowpipe has 2 control valves. ✓
- C. A cutting blowpipe has 2 levers, while a welding blowpipe has 1 lever.
- D. A cutting blowpipe has 1 control valve, while a welding blowpipe has 2 control valves.

Q12 Part B

Who is authorised to conduct road tests on workshop vehicles?

- A. Only trained and certified personnel ✓
- B. Visitors to the workshop
- C. Any employee
- D. The company accountant

Q13 Part B

If the basic size of the diameter of a shaft is 80 mm and the variation limit of ±0.07 mm is given, then its high limit and low limit are _____ and _____.

- A. 79.93, 80.07
- B. 80.07, 79.93 ✓
- C. 80.00, 79.93
- D. 79.00, 80.07

Q14 Part B

A file that is flat on one side and curved on the other side is known as a _____ file.

- A. half-round ✓
- B. triangular
- C. rectangular
- D. square

Q15 Part B

Select the correct representation as Tolerance size for a hole from the given options.

- A. 50H8- c7
- B. 50 H8/g7
- C. 50H8 ✓
- D. 50g7

Q16 Part B

When passing stationary vehicles, keep a watch on _____ who may come out suddenly from the front of the stationary vehicle. While overtaking, it should be done on the _____ side. Always keep a good _____ between your vehicle and others.

- A. cyclists; left; interval
- B. vehicles; right; gap
- C. drivers; left; space
- D. pedestrians; right; distance ✓

Q17 Part B

Which of the following types of chisels is used for separating metals after chain drilling?

- A. Cross-cut chisel
- B. Flat chisel
- C. Web chisel ✓
- D. Diamond point chisel

Q18 Part B

When creating 10 mm single-stroke capital letters in vertical style, what does the 10 mm distance between horizontal parallel lines represent?

- A. Letter width
- B. Letter height ✓
- C. Stroke thickness
- D. Interline spacing

Q19 Part B

A 100-mm prick punch with a 7-mm diameter body could have a 2.5-mm diameter point ground to an angle of _____.

- A. 90°
- B. 30° ✓
- C. 120°
- D. 45°

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Q20 Part B

Which property is the most important for materials used in automobile crash zones?

A. High hardness
B. High stiffness
C. High brittleness
D. High toughness ✓

Q21 Part B

A voltmeter with a resistance of 10,000 ohms is connected across a circuit that has a voltage of 50 V. What is the current flowing through the voltmeter?

A. 2 mA
B. 1 mA
C. 5 mA ✓
D. 4 mA

Q22 Part B

Find the lateral surface area of a cube with side length 5 cm.

A. 125 cm^2
B. 150 cm^2
C. 200 cm^2
D. 100 cm^2 ✓

Q23 Part B

Wrong setting of machine, wrong use of a tool, defect in measuring tools, defective metal, and carelessness of the mechanic have no effect in the utility of the part. This is an advantage of _____.

A. deviation
B. tolerance
C. limit
D. interchangeability ✓

Q24 Part B

Which type of shank is commonly used on hand reamers?

A. Morse taper shank
B. Threaded shank
C. Straight shank with a round end
D. Straight shank with a square end ✓

Q25 Part B

_____ must be ascribed for the sake of convenience and is the size of a part in relation to which all limits of variation are determined.

A. Actual size
B. Nominal size ✓
C. Basic size or zero size
D. Basic size alone

Q26 Part B

The wave set of hacksaw teeth set has a pitch of _____.

A. 2.0 mm
B. 0.5 mm
C. 0.8 mm ✓
D. 1.0 mm

Q27 Part B

Which of the following 'V' blocks will have one 'V' groove and two grooves (slots) on either side for clamping in two positions?

A. Double level single groove 'V' block
B. Matched pair 'V' block
C. Single level double groove 'V' block ✓
D. Single level single groove 'V' block

Q28 Part B

Fine-toothed blades are better suited for:

A. infrequent use
B. cutting metals ✓
C. experts due to their durability and flexibility
D. cutting wood and plastic

Q29 Part B

During a lathe operation, the influence of machining allowance on the total depth of cut taken is that:

A. it directly determines the feed rate corresponding to the speed
B. it has no influence on the depth of cut
C. it directly determines the depth of cut in each pass
D. it sets the total material to be removed, which is then divided into multiple cuts ✓

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Q30 Part B

A material with high toughness must have:

- A. low strength and low ductility
- B. high strength and high ductility ✓
- C. high strength and low ductility
- D. high ductility and low strength

Q31 Part B

What does the grit size number represent in relation to the grain size?

- A. A larger grit size number means coarser grit.
- B. The grit size number indicates the grain's diameter.
- C. A larger grit size number means finer grit. ✓
- D. A smaller grit size number means finer grit.

Q32 Part B

In the standard marking of a grinding wheel (e.g. 51-A 46 H 5 V 8), what does the symbol 'H' represent?

- A. Grain size of the abrasive particles
- B. Type of bond used in the wheel
- C. Grade of the grinding wheel ✓
- D. Type of abrasive used in the wheel

Q33 Part B

Which of the following statements about title block is/are true?

Statement 1: The title block is situated in the bottom right-hand corner of the drawing sheet.
Statement 2: The contents of the title block are standardised and cannot be modified to suit individual company needs.

- A. Both statements are false
- B. Statement 1 is false, but statement 2 is true
- C. Statement 1 is true, but statement 2 is false ✓
- D. Both statements are true

Q34 Part B

Which type of line is used to represent hidden edges or surfaces in a technical drawing, as per BIS SP 46-2003?

- A. Continuous thin line
- B. Continuous thick line
- C. Dashed thin line ✓
- D. Chain thin line

Q35 Part B

Which of the following is NOT a part of the micrometer?

- A. Spindle
- B. Anvil
- C. Jam ✓
- D. Frame

Q36 Part B

What is the unit of measurement used for thread pitch in the metric system?

- A. Newtons
- B. Degrees
- C. Threads per inch (TPI)
- D. Millimetres (mm) ✓

Q37 Part B

Why is a Vernier height gauge preferred over a simple steel rule for height measurement?

- A. It does not require a surface plate.
- B. It provides more precise measurements. ✓
- C. It is comparatively more portable.
- D. It is cheaper than steel rule.

Q38 Part B

_____ is a type of turning where a workpiece is turned into a sequence of steps with varying diameters.

- A. Knurling
- B. Step turning ✓
- C. Chamfering
- D. Facing

Q39 Part B

In taper turning by the tailstock offset method, a job has a large diameter (D) of 60 mm, a small diameter (d) of 40 mm, a taper length (ℓ) of 200 mm and a total job length (L) of 800 mm. What will be the required tailstock offset?

- A. 40 mm ✓
- B. 10 mm
- C. 5 mm
- D. 20 mm

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Q40 Part B

The SI unit of temperature is/are _____.

A. both kelvin and celsius

B. celsius

C. kelvin ✓

D. fahrenheit

Q41 Part B

The type of feed primarily used for grooving operations on a lathe is _____ feed.

A. cross ✓

B. angular

C. rotary

D. longitudinal

Q42 Part B

Which of the following best describes the application of Atomic Hydrogen Welding (AHW)?

A. It generates a lower temperature arc than other arc welding processes.

B. It is commonly used over modern welding methods due to its efficiency.

C. It is used for all ferrous and non-ferrous metals with a high-temperature arc. ✓

D. It is mainly preferred for low-temperature welding of soft metals.

Q43 Part B

Which of the following is the primary reason why copper is widely used as a conductor in electrical wiring?

A. Copper has low resistance and high conductivity. ✓

B. Copper has a low melting point.

C. Copper is abundant and inexpensive.

D. Copper has high resistance to electricity.

Q44 Part B

What is the primary function of the drill head in a drilling machine?

A. It controls the coolant flow during drilling operations.

B. It supports the drill table and workpiece during operation.

C. It houses the driving and feeding mechanism for the spindle. ✓

D. It holds the cutting tool securely in place.

Q45 Part B

Which of the following is a major effect of a collision in a CNC machining centre?

A. Improved tool performance and longevity

B. Enhanced efficiency in CNC operations

C. Automatic correction of machining errors

D. Increased machine downtime and repair costs ✓

Q46 Part B

Which of the following statements about slotting tools is correct?

A. Slotting tools remove metal during the horizontal stroke of cutting.

B. Slotting tools have a front rake and clearance angles but no side rake angle. ✓

C. Slotting tools have angles determined with respect to the horizontal plane.

D. Slotting tools are weaker than the material being cut to ensure easy machining.

Q47 Part B

What is the SI unit of 'volume'?

A. Litres

B. Cubic centimetre

C. Cubic metre ✓

D. Millilitres

Q48 Part B

As we know from the graduation of micrometer, if we give one full round to thimble, its spindle moves ½ mm forward or backward. Therefore, one part of the thimble is its _____.

A. Pitch

B. Least count ✓

C. MSR

D. Lead

Q49 Part B

What is the minimum age for employment in factories or mines or other hazardous employment, according to Article 24 of the Indian Constitution?

A. 14 years ✓

B. 12 years

C. 16 years

D. 18 years

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Q50 Part B

What is the typical temperature range of a mercury-based clinical thermometer?

A. 0°C to 100°C

B. 35°C to 42°C ✓

C. 0°C to 50°C

D. −10°C to 110°C

Q51 Part B

Which of the following correctly describes the use of a screw pitch gauge?

A. It verifies the length of threads on fasteners.

B. It measures the depth of internal threads in nuts.

C. It measures the external diameter of cylindrical objects.

D. It determines the pitch of a thread on screws or bolts. ✓

Q52 Part B

Which type of spindle drive motor is preferred in CNC machine tools due to advancements in microprocessor-based technology?

A. Separately excited DC shunt motor

B. Series excited DC motor

C. Three-phase AC induction motor ✓

D. Single-phase AC synchronous motor

Q53 Part B

As we know from the graduation of micrometer, if we give one full round to thimble, its spindle moves ½ mm forward or backward. A buck part can be divided into 0 to 50 parts. The least count of the micrometer is ____ mm.

A. 0.05

B. 0.10

C. 0.01 ✓

D. 0.50

Q54 Part B

On what basis is a joint said to be double-riveted lap joint or triple riveted lap joint?

A. Based on number of rows of rivets in joint ✓

B. Based on strength of joint

C. Based on type of joint

D. Based on number of columns of rivets in joint

Q55 Part B

Which of the following statements is INCORRECT about end standard?

A. It measures the distance between two parallel flat surfaces.

B. Faces are subject to wear.

C. It is slower but more accurate.

D. It is used to measure the distance between two engraved lines. ✓

Q56 Part B

In a logic circuit, two inputs A and B are applied to an AND gate, and the output of the AND gate is connected to the input of a NOT gate. If the inputs A and B are both at logic 0, what will be the output of the entire circuit?

A. Undefined

B. 0

C. 1 ✓

D. 2

Q57 Part B

Match the following types of lines with their correct descriptions according to their orientation and characteristics.

Description	Type of Line
A. A line that is neither parallel to a horizontal plane nor perpendicular to it.	1. Horizontal line
B. A line that is perpendicular to horizontal lines.	2. Vertical line
C. A line that changes its direction continuously.	3. Inclined line
D. A line that is parallel to a horizontal plane.	4. Curved line

A. A - 1, B - 2, C - 3, D - 4

B. A - 2, B - 3, C - 4, D - 1

C. A - 3, B - 2, C - 4, D - 1 ✓

D. A - 2, B - 1, C - 4, D - 3

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Q58 Part B

If the length of a resistor is doubled, what happens to its resistance, assuming all other factors remain constant?

- A. The resistance is doubled. ✓
- B. The resistance remains the same.
- C. The resistance is halved.
- D. The resistance quadruples.

Q59 Part B

The driving mechanism of the slotting machine converts the rotary motion of the bull gear into the _____ motion of the ram.

- A. circular
- B. oscillating
- C. twisting
- D. reciprocating ✓

Q60 Part B

What is a possible consequence if a CNC machine stops suddenly during actual cutting movement?

- A. No effect on the tool or the workpiece
- B. Automatic tool replacement without any damage
- C. Only a minor delay in restarting the program
- D. Tool breakage and tool marks on the workpiece ✓

Q61 Part B

Which of the following options correctly describes the axis convention in a CNC turning centre?

- A. The spindle axis is designated as Z and the radial axis away from the tool post is Y.
- B. The spindle axis is designated as X and the radial axis toward the tool post is Z.
- C. The spindle axis is designated as Z and the radial axis toward the tool post is X. ✓
- D. The spindle axis is designated as Y and the radial axis toward the tool post is X.

Q62 Part B

Which type of rake angle is generally used for milling materials that produce continuous chips?

- A. Negative rake
- B. Positive rake ✓
- C. Zero rake
- D. Neutral rake

Q63 Part B

When used for fits between shaft and hole, ____ is specified or both shaft and hole.

- A. the shaft size is more than the hole size
- B. the same basic size ✓
- C. the hole size is more than the shaft size
- D. different size

Q64 Part B

In a series circuit, three resistors of 10 ohms, 20 ohms, and R ohms are connected in series with a 12 V battery. What is the value of resistance R if current flowing in the circuit is 0.2 A?

- A. 10 ohms
- B. 20 ohms
- C. 30 ohms ✓
- D. 40 ohms

Q65 Part B

Which of the following is a characteristic of incremental programming?

- A. It always measures dimensions from a fixed reference point.
- B. It does not allow the use of direction signs for motion.
- C. It requires all dimensions to be positive values.
- D. It defines each position relative to the last specified point. ✓

Q66 Part B

Which of the following statements about slip gauges is true?

- A. Slip gauges do not require calibration.
- B. Slip gauges are used only for rough measurements.
- C. Slip gauges are flexible and can bend easily.
- D. Slip gauges are used for setting measuring instruments. ✓

Q67 Part B

During the turning operation on lathe, if D is the initial diameter and d is the final diameter of the work piece, the depth of cut, t, is calculated by _____.

- A. $t = D - d$
- B. $t = (D - d) / 2$ ✓
- C. $t = (D + d) / 2$
- D. $t = D / d$

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Q68 Part B

Which of the following terms in the 5S concept refers to making a habit of maintaining the established procedures?

A. Shine

B. Set

C. Sort

D. Sustain ✓

Q69 Part B

Which of the following calipers are used for marking lines, parallel to inside and outside edges and for locating the centre of round bars?

A. Spring joint calipers

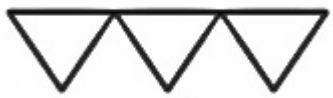
B. Leg and point calipers ✓

C. Simple calipers

D. Firm joint calipers

Q70 Part B

Observe the given roughness grade symbol and identify the corresponding roughness grade number whose corresponding roughness value is 0.2 µm.



A. N1

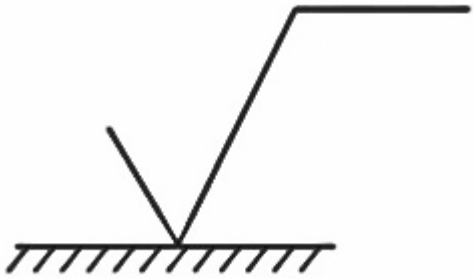
B. N3

C. N4 ✓

D. N2

Q71 Part B

What does the surface finish symbol shown in the given figure represent?



A. A specific surface texture requirement is indicated. ✓

B. The surface must be left in its cast or forged state.

C. The surface should be coated without material removal.

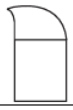
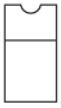
D. No machining is required on this surface.

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Q72 Part B

Match the following.

(A)	Threading tool	(P)	
(B)	Profile tool	(Q)	
(C)	Facing tool	(R)	
(D)	Knurling tool	(S)	

A. A - S, B - R, C - Q, D - P ✓

B. A - P, B - R, C - Q, D - S

C. A - S, B - Q, C - R, D - P

D. A - S, B - R, C - P, D - Q

Q73 Part B

In a Full Lap joint, diagonal pitch is given by ____, where p_d - diagonal pitch, p - pitch, d - diameter of rivets

A. $p_d = \frac{(2p+d)}{3}$ ✓

B. $p_d = \frac{(2p+6d)}{4}$

C. $p_d = \frac{(2p \times d)}{3}$

D. $p_d = \frac{(2p-d)}{3}$

Q74 Part B

Identify the below tool used on the Lathe.



A. Threading tool ✓

B. Knurling tool

C. Parting tool

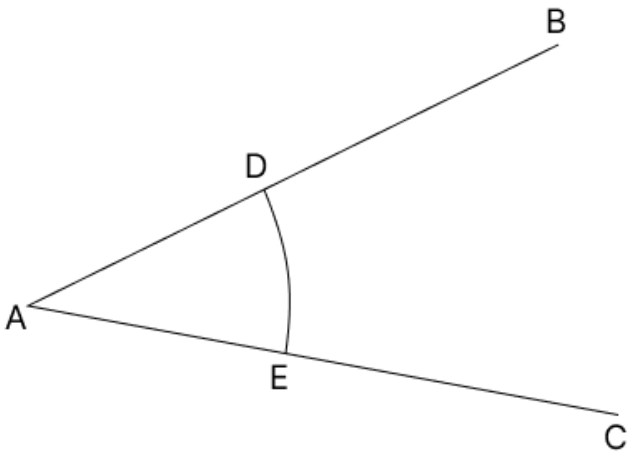
D. Boring tool

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Q75 Part B

In the process of bisecting angle BAC in the given figure, why do we draw arcs from points D and E?



A. To find midpoint AB

B. To mark equal lengths

C. To intersect line AC

D. To intersect above A ✓

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Part B 75 Questions • Answer Key

Q1 Part B

If the current flowing through a conductor is 5 A and the resistance of the conductor is 10 ohms, what will be the voltage across the conductor, according to Ohm's Law?

A. 15 V
B. 50 V ✓
C. 5 V
D. 10 V

Q2 Part B

What is the purpose of an emergency evacuation plan?

A. To ensure safe and orderly evacuation during emergencies ✓
B. To avoid safety drills
C. To increase productivity
D. To allow workers to leave early

Q3 Part B HINDI

ब्रिटिश मानक (BS), व्हिटवर्थ पेंच चूड़ी (Whitworth screw thread) को _____ के रूप में परिभाषित करता है।

A. BS 84 ✓
B. BS 21
C. BS 970
D. BS 408

Q4 Part B

Which of the following vices consists of a handle and a small collet chuck at one end?

A. Hand vice
B. Pin vice ✓
C. Pipe vice
D. Toolmaker's vice

Q5 Part B

A circuit consists of three resistors; 15 ohms, 10 ohms, and 20 ohms. The 15-ohm resistor is in series with the parallel combination of the 10-ohm and 20-ohm resistors. If a 24 V battery is applied across the circuit, what is the total current flowing through the circuit?

A. 3.1 A
B. 0.1 A
C. 1.1 A ✓
D. 2.1 A

Q6 Part B

What is the difference between a bevel gauge and a bevel protractor?

A. There is no difference; both tools are the same.
B. A bevel protractor is used for depth measurement, while a bevel gauge is used for height measurement.
C. A bevel gauge is fixed, while a bevel protractor is adjustable.
D. A bevel gauge is adjustable, while a bevel protractor provides precise angular measurements. ✓

Q7 Part B

Which of the following organisations is responsible for enforcing workplace safety regulations in India?

A. World Health Organization (WHO)
B. Food and Drug Administration (FDA)
C. Directorate General of Factory Advice Service and Labour Institutes (DGFASLI) ✓
D. Environmental Protection Agency (EPA)

Q8 Part B HINDI

घिसने वाले पहिये (grinding wheel) में ग्रिट साइज़ (grit size) क्या दर्शाता है?

A. गति (speed), जिस से पहिया घूमता है
B. उपयोग की जाने वाले बॉन्डिंग मटिरियल (bonding material) का प्रकार
C. अपघर्षक कणों का साइज़ (size of the abrasive particles) ✓
D. अपघर्षक की कठोरता (hardness of the abrasive)

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Q9 Part B

Why is it important for every person to follow safety procedures in the workplace?

A. To increase overall production efficiency

B. To minimise risks and avoid accidents ✓

C. To reduce operational costs significantly

D. To limit the need for frequent supervision

Q10 Part B HINDI

CNC प्रोग्रामिंग में पुनरावृत्ति वाले सब-प्रोग्रामों का उपयोग क्यों किया जाता है?

A. कोड को दोबारा लिखे बिना कुछ ऑपरेशनों की कई बार पुनरावृत्ति के लिए ✓

B. मैनुअल ऑपरेटर नियंत्रण में सुधार करने के लिए

C. स्पिंडल की स्पीड बढ़ाने के लिए

D. टूल ऑफसेट को मैन्युअल रूप से समायोजित करने के लिए

Q11 Part B

In thread cutting, 'BSW' stands for _____.

A. British Standard Whitworth ✓

B. British Standard Weight

C. Bharath Standard Whitworth

D. British Stationary Whitworth

Q12 Part B

What is a key advantage of using MOSFETs in electronic circuits compared to other types of transistors?

A. High frequency response

B. High input impedance and low power consumption ✓

C. Ability to handle higher voltages and currents than BJTs

D. Ability to amplify both AC and DC signals

Q13 Part B HINDI

ग्रिट साइज़ (grit size) के संदर्भ में, निम्नलिखित में से कौन-सा कथन सही है?

A. निम्न ग्रिट संख्या का अर्थ है महीन अपघर्षक कण (finer abrasive grains)।

B. अधिक ग्रिट संख्या से महीन सर्फ़ेस फिनिश (fine surface finish) बनती है। ✓

C. ग्रिट साइज़ (grit size), घिसने की प्रक्रिया (grinding process) को प्रभावित नहीं करता है।

D. अधिक ग्रिट संख्या से पदार्थ (material) तेजी से निष्कासित होता है।

Q14 Part B

Which of the following types of pliers is used to shape loops in wires and to form curves in light metal strips?

A. Flat nose pliers

B. Round nose pliers ✓

C. Slip-joint pliers

D. End cutting pliers

Q15 Part B

When the size of the shaft or male part of a job is more than hole or female part, the difference between the two will be known as _____.

A. positive allowance

B. either positive or negative allowance

C. neither positive nor negative allowance

D. negative allowance ✓

Q16 Part B HINDI

कुसंरेखण (misalignment) के पता चलने पर, स्पिंडल की समांतरता (parallelism) को कैसे ठीक किया जा सकता है?

A. टेलस्टॉक संरेखण (tailstock alignment) को समायोजित करके

B. लेथ चक (lathe chuck) को बदलकर

C. क्षतिपूर्ति (compensate) के लिए कर्तन चाल बढ़ा कर

D. टेस्ट संकेतकों (test indicators) का उपयोग करते हुए हेडस्टॉक (headstock) को ढीला और पुनः संरेखित (realigning) करके ✓

Q17 Part B

When selecting a sheet size for an original drawing, what should be the primary consideration?

A. The standard size of the drawing office.

B. The clarity and resolution required. ✓

C. The orientation of the drawing (horizontal or vertical).

D. The size of the reproduction.

Q18 Part B

Toughness is the ability of a material to:

A. resist elastic deformation

B. resist scratches and indentation

C. undergo plastic deformation without failure

D. absorb energy before fracture ✓

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Q19 Part B HINDI

एक मानक स्वतंत्र चक (standard independent chuck) में कितने जॉ (jaws) होते हैं?

- A. चार जॉ (Four jaws) ✓
- B. तीन जॉ (Three jaws)
- C. छह जॉ (Six jaws)
- D. दो जॉ (Two jaws)

Q20 Part B

What is the advantage of giving heat treatment to a material?

- A. To decrease the melting point of the material
- B. To increase the weight of the material
- C. To change it from one element to another element
- D. To make surgical knives of sharp edges ✓

Q21 Part B

If the basic size of the diameter of a shaft is 75 mm and variation limit of $\pm$0.02 mm is given, then its tolerance in mm is:

- A. −0.02
- B. −0.04
- C. +0.04 ✓
- D. +0.02

Q22 Part B

When measuring the resistance of a resistor using an ohmmeter, what does a reading of zero resistance indicate?

- A. The resistor is functioning normally.
- B. The resistor is open-circuited.
- C. The resistor is short-circuited. ✓
- D. The ohmmeter is malfunctioning.

Q23 Part B HINDI

निम्नलिखित में से कौन-सा, मोर्स टेपर (Morse taper) का प्रमुख लाभ है?

- A. स्व-लॉकिंग (self-locking) और आसान निष्कासन होने देता है ✓
- B. मशीनन संचालन (machining operations) के लिए उपयुक्त नहीं है
- C. केवल आधुनिक CNC मशीनों में उपयोग किया जाता है
- D. बाह्य फास्टनरों (external fasteners) की आवश्यकता होती है

Q24 Part B

Which of the following is an important safety measure during a power failure?

- A. Using candles for lighting
- B. Continuing to use equipment without verifying power status
- C. Ensuring all machines and electrical equipment are turned off ✓
- D. Ignoring alarm systems

Q25 Part B

A circular hole of radius 3 cm is cut from a rectangular sheet of dimensions 12 cm × 10 cm. Find the remaining area.

(Take π = 3.14)

- A. 100 cm^2
- B. 91.74 cm^2 ✓
- C. 95.86 cm^2
- D. 75.74 cm^2

Q26 Part B

Threading is an operation of cutting _____ on the external cylindrical surface of the job.

- A. rectangular grooves
- B. helical grooves ✓
- C. circular grooves
- D. v-shaped grooves

Q27 Part B

Non-functional dimensions are _____.

- A. not essential for the function of the space or component ✓
- B. essential for the function of the space or component
- C. derived from the values of the related features of a drawing
- D. directly derived from the values given on a drawing

Q28 Part B

What is the unit of specifying slip gauges?

- A. Millimetres ✓
- B. Kilograms
- C. Kilometres
- D. Newtons

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Q29 Part B

When using a multimeter to measure current, which of the following is correct?

A. The multimeter is connected directly to the power source.

B. The multimeter is connected in series with the load. ✓

C. The multimeter is connected only across resistive components.

D. The multimeter is connected in parallel with the load.

Q30 Part B

A drawing instrument box is used to carry all _____ instruments.

A. drawing ✓

B. screening

C. drilling

D. casting

Q31 Part B HINDI

स्पॉट फेसिंग (spot facing), काउंटरबोरिंग (counterboring) से किस तरह अलग है?

A. स्पॉट फेसिंग, काउंटरबोरिंग से ज़्यादा गहरा होता है।

B. स्पॉट फेसिंग से शुंडित छिद्र (tapered hole) बनता है, जबकि काउंटरबोरिंग से सपाट-तल वाला छिद्र बनता है।

C. स्पॉट फेसिंग एक उथला परिचालन (shallower operation) है जिसका उपयोग बोल्ट हेड, वॉशर या नट के लिए एक सपाट सीट बनाने के लिए किया जाता है। ✓

D. स्पॉट फेसिंग का इस्तेमाल नए छिद्र को ड्रिल करने के लिए किया जाता है, जबकि काउंटरबोरिंग मौजूदा छिद्रों को बड़ा करता है।

Q32 Part B

Which of the following hand-operated drilling machines is used for drilling small diameter holes up to 6 mm?

A. Electric hand drill

B. Ratchet drilling machine

C. Breast drilling machine

D. Bevel gear type drilling machine ✓

Q33 Part B

The purpose of providing a side relief angle of 1° to 2° on a grooving tool is to:

A. reduce the cutting force

B. increase the cutting speed

C. prevent rubbing against the sides of the groove ✓

D. improve the surface finish

Q34 Part B

The type of workpieces that can be successfully held in a 4-jaw chuck, and might be difficult to hold in a 3-jaw chuck, are:

A. only round workpieces

B. only hexagonal workpieces

C. only small diameter workpieces

D. irregular or eccentric workpieces ✓

Q35 Part B

Which of the following advantages of chain drive over belt drive is INCORRECT?

A. It may be used for both long as well as short distances.

B. It gives a high transmission efficiency.

C. The production cost of chains is relatively high. ✓

D. It gives less load on the shafts.

Q36 Part B

Which characteristic of cellulosic electrodes makes them unsuitable for high-strength steels?

A. They produce high levels of hydrogen in the weld. ✓

B. They operate only on a low-voltage DC supply.

C. They have a very thin coating, causing rapid wear.

D. They create excessive slag, leading to contamination.

Q37 Part B

What is the primary reason for electrical injuries when a person comes in contact with electrical equipment?

A. Electrical equipment is not properly grounded.

B. Current flows through the body causing harm. ✓

C. Devices are used for too long.

D. Electrical devices are too powerful.

Q38 Part B

The unit for specific gravity is ____.

A. m/s^2

B. g/cm^3

C. kg/m^3

D. no unit (dimensionless) ✓

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Q39 Part B

What should you do to ensure your personal safety at work?

- A. Wear personal protective equipment. ✓
- B. Work in a hurry without checking equipment.
- C. Ignore warning signs and instructions.
- D. Take risks to finish tasks quickly.

Q40 Part B HINDI

स्पॉट फेसिंग (spot facing) औजार का कौन-सा भाग, पूर्व-ड्रिल किए गए छिद्र के साथ संरेखण सुनिश्चित करता है?

- A. फ्लूट
- B. पायलट ✓
- C. कर्तन कोर
- D. शैंक

Q41 Part B HINDI

CNC लेथ में मशीन जीरो पॉइंट (Machine Zero Point) विशिष्ट रूप से कहाँ स्थित होता है?

- A. टूल चेंज स्टेशन पर
- B. वर्क स्पिंडल नोज़ के केंद्र पर ✓
- C. वर्कपीस के केंद्र पर
- D. मशीन के शक्ति प्रदाय पर

Q42 Part B

Which of the following types of thread is usually found on the machine spindle?

- A. Square thread ✓
- B. Buttress thread
- C. Unified standard thread
- D. Knuckle thread

Q43 Part B

The process of _____ involves using a cutting tool called a tap to sever internal threads in a hole.

- A. facing
- B. chamfering
- C. tapping ✓
- D. knurling

Q44 Part B HINDI

मानक ISO मीटरी चूड़ी के पार्श्व (flanks) के बीच कोण कितना होता है?

- A. 29°
- B. 60° ✓
- C. 55°
- D. 45°

Q45 Part B

According to BIS SP 46-2003, which of the following applications is correctly represented by a chain-thin line in engineering drawings?

- A. Center lines ✓
- B. Hidden edges
- C. Dimension lines
- D. Visible edges

Q46 Part B

In general, a softer material will produce an indentation that is:

- A. larger and deeper ✓
- B. smaller and shallower
- C. identical in all cases
- D. unpredictable

Q47 Part B

Arrange the following steps in the correct order to draw an equilateral triangle with each side of 35 mm.

1. Join CA and CB.
2. Draw a line and mark AB 35 mm as the side of the triangle.
3. With radius AB and center A and B, draw arcs cutting at C.
4. ABC is the required triangle.

- A. 2, 3, 1, 4 ✓
- B. 1, 2, 4, 3
- C. 2, 1, 3, 4
- D. 3, 2, 1, 4

Q48 Part B

In Lathe Machine operation, the act of making plain ends of a job in their actual length is called _____.

- A. knurling
- B. chamfering
- C. facing ✓
- D. step turning

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Q49 Part B HINDI

CNC खरादन प्रचालनों में G75 कोड का प्राथमिक कार्य क्या है?

A. वर्कपीस पर चूड़ी काटना

B. वर्कपीस से पदार्थ को रफ ग्रूविंग चक्र (rough grooving cycle) का उपयोग करके हटाना ✓

C. बाह्य व्यास पर सूक्ष्म फिनिशिंग करना

D. ड्रिलिंग प्रचालन करना

Q50 Part B HINDI

निम्नलिखित में से कौन-सा, शाफ्ट बेसिस प्रणाली (shaft basis system) में मौलिक विचलन प्रतीक 'h' के संदर्भ में सत्य है?

A. शाफ्ट का केवल निचला विचलन शून्य है।

B. शाफ्ट का केवल ऊपरी विचलन शून्य है। ✓

C. शाफ्ट के साइज़ को बदलते समय होल का साइज़ स्थिर रखा जाता है।

D. ऊपरी और निचले दोनों विचलन शून्य हैं।

Q51 Part B

Gaskets, seals and spacers are made using:

A. centre punch

B. hollow punch ✓

C. pin punch

D. prick punch

Q52 Part B

Which of the following tools is NOT under the requirement to complete the Step Turning Process?

A. Snipping tool

B. Parting Tool

C. Vernier Caliper ✓

D. Turning tool

Q53 Part B

Which of the following parts of a file is the part fitted to the tang for holding the file?

A. Tip or Point

B. Handle ✓

C. Edge

D. Tang

Q54 Part B

For what purpose are pins and clips used in engineering drawings?

A. To transfer dimensions and dividing lines into a number of equal parts

B. To draw horizontal lines, parallel lines and to guide/hold the set squares

C. To fasten the drawing sheet on to the drawing board firmly so that it does not shake ✓

D. To support the drawing paper/tracing paper for making drawings

Q55 Part B

Which of the following files is used for filing narrow grooves and angles above 10°?

A. Knife-edge file ✓

B. Half round file

C. Square file

D. Triangular file

Q56 Part B HINDI

कैरिज (carriage) में हैंड-व्हील का क्या कार्य होता है?

A. टेलस्टॉक (tailstock) को उसकी जगह पर लॉक करना

B. कैरिज को लेथ बेड (lathe bed) के साथ हस्तचालित रूप से चलाना ✓

C. स्पिंडल (spindle) की गति को समायोजित करना

D. वर्कपीस को घुमाना

Q57 Part B

What type of surfaces can a telescopic gauge measure?

A. Only deep holes

B. Both circular and irregular bores ✓

C. Only circular bores

D. Only external cylindrical surfaces

Q58 Part B

In a lead-acid battery, what is the chemical composition of the material used for the positive plate during discharge?

A. Sulphuric acid (H_2SO_4)

B. Lead (Pb)

C. Lead dioxide (PbO_2) ✓

D. Lead sulfate ($PbSO_4$)

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Q59 Part B

Which of the following is a key characteristic of a low-pressure blowpipe/torch in welding?

- A. It requires an external pump to supply acetylene gas.
- B. It directly mixes acetylene and oxygen in equal proportions.
- C. It operates only with high-pressure acetylene cylinders.
- D. It uses high-pressure oxygen to create a vacuum for acetylene suction. ✓

Q60 Part B HINDI

काउंटरसिंक (Countersink) का उपयोग _____ के लिए किया जाता है।

- A. छिद्र में आंतरिक चूड़ी बनाने
- B. कीलक डालने के लिए छिद्र को बड़ा करने
- C. एक गहरा बेलनाकार छिद्र ड्रिल करने
- D. फ्लैट-हेड स्क्रू (flat-head screw) के लिए शंक्वाकार गर्त बनाने ✓

Q61 Part B

The key difference between a marking gauge and a mortise gauge is:

- A. method of adjustment
- B. material of construction
- C. number of scribing pins ✓
- D. size of the tool

Q62 Part B

The terms _____ and _____ refer to the greatest and smallest variance, respectively, specified on a fundamental size or nominal measurement.

- A. jig; fixture
- B. low limit; high limit
- C. limit; fit
- D. high limit; low limit ✓

Q63 Part B

A/An _____ is provided to keep the micrometer fixed so that the reading can be done easily and without any difficulty.

- A. sleeve or barrel
- B. thimble
- C. lock nut ✓
- D. anvil

Q64 Part B

When two pulleys are more than 8 metres apart, then which of the following belt drives is used for power transmission?

- A. Circular belt ✓
- B. Flat belt
- C. V-belt
- D. Light drive

Q65 Part B

What is single-riveted lap joint?

- A. Joint made with two row of rivets
- B. Joint made with three row of rivets
- C. Joint made with only one row of rivets ✓
- D. Joint made with four row of rivets

Q66 Part B

Match the following terminologies in riveted joint with their corresponding meanings.

Column I Column II
Pitch (A) distance between centres of adjoining rivets in the same row (P)
Margin (B) distance between an edge of the plate and the nearest rivet-hole (Q)
Lap joint (C) plates to be connected overlap each other (R)
Row pitch (D) distance between the rows of rivets (S)

- A. A-S, B-R, C-Q, D-P
- B. A-P, B-R, C-Q, D-S
- C. A-S, B-Q, C-R, D-P ✓
- D. A-S, B-P, C-Q, D-R

Q67 Part B

Which hardness test uses a diamond pyramid-shaped indenter?

- A. Brinell
- B. Vickers ✓
- C. Shore
- D. Rockwell

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Q68 Part B

An electronic digital caliper displays the measurement on a ____.

- A. liquid crystal display screen ✓
- B. dial gauge
- C. Vernier scale
- D. mechanical counter

Q69 Part B

The term _____ refers to the limit of variation allowed on either side of the correct dimension to provide the job property of interchangeability (in mass production of part).

- A. tolerance ✓
- B. low limit
- C. fit
- D. high limit

Q70 Part B

In a forward Vernier scale, the size of one Vernier scale division is:

- A. equal to 1 main scale division
- B. 1 mm
- C. larger than 1 main scale division
- D. smaller than 1 main scale division ✓

Q71 Part B

In a velocity-time graph, the negative slope represents ____.

- A. retardation ✓
- B. displacement
- C. acceleration
- D. distance

Q72 Part B

$\cos\theta$

- A. $\frac{3}{5}$
- B. $\frac{4}{5}$ ✓
- C. $\frac{5}{4}$
- D. $\frac{3}{4}$

Q73 Part B

$(\frac{3}{8}) + (\frac{5}{12})$

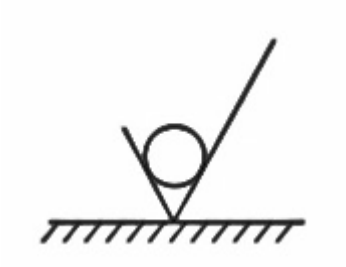
- A. $\frac{17}{24}$
- B. $\frac{19}{24}$ ✓
- C. $\frac{8}{20}$
- D. $\frac{7}{12}$

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Q74 Part B

What does the given surface finish symbol represent?



A. Machining must be performed to remove material.

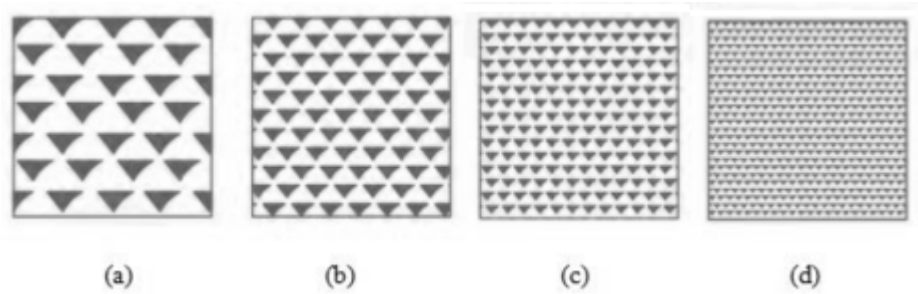
B. Special machining characteristics must be specified.

C. Material removal is not allowed on this surface. ✓

D. The surface should be finished using grinding only.

Q75 Part B

Identify the rough file grade from the figures given below.



A. (b)

B. (d)

C. (c)

D. (a) ✓

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Q1 Part B HINDI

यदि लेथ केंद्र कुसंरेखित (misaligned) हैं, तो कौन सा मशीनिंग दोष होने की सबसे अधिक संभावना है?

A. घूर्णन (rotation) के दौरान वर्कपीस का मुड़ना
B. कर्तन औजार का अधिक घिसाव (wear)
C. बेलनाकार कट (cylindrical cut) के बजाय शुंडाकार कट (Tapered cut) ✓
D. स्पिंडल रनआउट में वृद्धि

Q2 Part B

Which of the following punch marks is used for the correct location and seating of the divider point?

A. Centre punch marks of 30°
B. Centre punch marks of 60°
C. Prick punch marks of 120°
D. Prick punch marks of 30° ✓

Q3 Part B

Which of the following statements correctly describes the placement and purpose of orientation marks on a drawing sheet?

1. Orientation marks are placed at two opposite corners of the drawing sheet to indicate the correct orientation on the drawing board.
2. Orientation marks consist of arrow heads placed across the frame, with one at the shorter side and one at the longer side, coinciding with the centering marks.
3. One of the orientation marks always points towards the draughtsman, indicating the direction in which the drawing sheet should be placed.
4. Orientation marks are used to mark the midpoint of each side of the drawing sheet for accurate centering.

A. 1, 2, and 3 only
B. 1 and 4 only
C. 2 and 3 only ✓
D. 1, 2, and 4 only

Q4 Part B

What is the coating factor range for medium-coated electrodes?

A. 1.25 to 1.3
B. 1.4 to 1.5 ✓
C. 1.1 to 1.2
D. 1.6 to 2.2

Q5 Part B

Which of the following is a fundamental unit?

A. newton
B. metre ✓
C. pascal
D. watt

Q6 Part B

Which of the following is a key advantage of using Thyristors in power control applications?

A. High frequency switching ✓
B. High efficiency and low power loss
C. Small size and low cost
D. Low voltage handling capabilities

Q7 Part B

The digital interface of an electronic digital caliper improves the reliability of measurement records by:

A. eliminating the need for manual data entry
B. allowing direct connection to a statistical control system ✓
C. providing secured storage for a series of readings
D. enabling the instrument to be used as a limit gauge

Q8 Part B

When the size of the hole or female part of a job is more than shaft or male part, the difference between the two will be known as _____.

A. neither positive nor negative allowance
B. either positive or negative allowance
C. positive allowance ✓
D. negative allowance

Q9 Part B

Why is it important to follow proper disposal procedures for industrial waste?

A. To allow waste to decompose anywhere
B. To reduce the number of trash bins needed
C. To save time and effort in sorting waste
D. To comply with environmental regulations and reduce pollution ✓

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Q10 Part B

Key way on a shaft is made with a _____ chisel.

A. side cut

B. cross cut

C. flat ✓

D. round nose

Q11 Part B

Which of the following statements is/are correct?
Statement I - The annealing process uses heat to reduce the hardness and increase the ductility and toughness of various steels, cast iron, and alloys.
Statement II - Quenching is a rapid cooling process that alters specific properties of materials by manipulating the cooling rate.

A. Statement (I) is correct but Statement (II) is incorrect.

B. Statement (I) and (II) both are correct. ✓

C. Statement (I) is incorrect but Statement (II) is correct.

D. Statement (I) and (II) both are incorrect.

Q12 Part B

How are the axes in a CNC machine conventionally assigned?

A. Randomly assigned by the operator

B. Using the left-hand rule

C. Based on tool shape

D. Using the right-hand thumb rule and spindle orientation ✓

Q13 Part B

In the ISO tool holder designation, what does the character code following the shank height and width represent?

A. Insert tolerance

B. Tool holder's length ✓

C. Tool's cutting speed

D. Cutting edge material

Q14 Part B

The property of _____ is important, while repairing a machine, if a broken part is to be replaced, we need a new part. Only if the new part is made of accurately similar measurement, it can be fitted, otherwise not.

A. allowance

B. interchangeability ✓

C. interference

D. tolerance

Q15 Part B

Which of the following is NOT a correct practice when using a telescopic gauge?

A. Using a micrometer to measure the gauge's expanded size

B. Locking the gauge before removing it from the bore

C. Measuring at multiple points for accuracy

D. Measuring a rough or dirty bore without cleaning it ✓

Q16 Part B

In engineering drawing, what is defined as the path of a moving point with no thickness?

A. Angle

B. Curve

C. Point

D. Line ✓

Q17 Part B

The included angle of the tip of a standard lathe centre is ____.

A. 60° ✓

B. 30°

C. 90°

D. 45°

Q18 Part B

_____ is a metal removal process that employs an abrasive grinding wheel (GW) whose cutting elements are grains of abrasive materials of high hardness and high refractoriness.

A. Taper turning

B. Step turning

C. Boring

D. Grinding ✓

Q19 Part B

What is the primary advantage of rutile electrodes in welding?

A. They provide good weld shape and easy slag removal. ✓

B. They are suitable for welding high-carbon steels.

C. They produce deep penetration for high-strength welding.

D. They generate minimal heat during the welding process.

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Q20 Part B

Which tool can be used along with a radius gauge to check curvature of a workpiece for better accuracy?

A. Bevel protractor

B. Feeler gauge ✓

C. Surface plate

D. Micrometer

Q21 Part B

What is waste?

A. Natural resources for living organisms

B. Valuable substances for agriculture

C. Useful materials for industries

D. Unwanted or unusable materials ✓

Q22 Part B

If the coefficient of linear expansion of a material is 2×10^{-5} °C^{-1}, what does it mean?

A. The material expands by 2×10^{-5} times its original area per degree Celsius

B. The material expands by 2×10^{-5} times its original volume per degree Celsius

C. The material expands by 2×10^{-5} times its original length per degree Celsius ✓

D. The material always increases by 2×10^{-5} kg when temperature is increased by 1°C

Q23 Part B

In screw gauge, the term 'lead of a screw' is defined by the:

A. material the screw is made of

B. diameter of the screw

C. number of threads on the screw

D. distance the screw moves axially with one complete turn ✓

Q24 Part B HINDI

स्व-केंद्रित चक (self-centering chuck) की मुख्य विशेषता क्या है?

A. सभी जॉ (jaws) एक ही समय पर, एक साथ संचलित होते हैं। ✓

B. यह केवल वर्गाकार वर्कपीस (square workpieces) को ही होल्ड कर सकता है।

C. इसमें प्रत्येक वर्कपीस के लिए हस्तचालित जॉ समायोजन (manual jaw adjustment) की आवश्यकता होती है।

D. सभी जॉ (jaws) स्वतंत्र रूप से संचलित होते हैं।

Q25 Part B

Which of the following types of wooden mallets are used for general purpose work such as flattening and bending?

A. Bossing mallets

B. Side-faked mallets

C. Standard wooden mallets ✓

D. End-faked mallets

Q26 Part B

When did India implement the Hazardous Wastes (Management and Handling) Rules to regulate the disposal and handling of hazardous waste?

A. 1987

B. 2000

C. 1989 ✓

D. 1982

Q27 Part B

_____ are used to hold previously drilled or bored holes for outer surface machining.

A. Lathe carriers

B. Carriages

C. Rests

D. Lathe mandrels ✓

Q28 Part B HINDI

टेपर टर्निंग (taper turning) में बेवल प्रोट्रैक्टर (bevel protractor) का क्या कार्य है?

A. आंतरिक और बाह्य कोणों को मापना ✓

B. पदार्थ की कठोरता (hardness) निर्धारित करना

C. वर्कपीस की समतलता (flatness) की जांच करना

D. वर्कपीस की लंबाई मापना

Q29 Part B

A device operates at 240 V and consumes 480 W of power. What is the current flowing through the device?

A. 2 A ✓

B. 1 A

C. 1.5 A

D. 2.5 A

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Q30 Part B

What is the chemical effect that occurs in a battery during the charging process of a Lead Acid battery?

- A. Lead reacts with sulphur to form lead sulphate
- B. Water dissociation into hydrogen and oxygen
- C. Lead sulphate decomposes into lead and sulphuric acid ✓
- D. Sulphuric acid dissociates into hydrogen and sulphate ions

Q31 Part B

Which of the following is NOT a type of scraper?

- A. Flat scraper
- B. Twist drill scraper ✓
- C. Half-round scraper
- D. Triangular scraper

Q32 Part B HINDI

बेंच ग्राइंडर (bench grinder) पर दो अलग-अलग ग्राइंडिंग व्हील होने का क्या उद्देश्य है?

- A. मोटर की चाल कम करने के लिए
- B. रूक्ष और महीन ग्राइंडिंग दोनों कार्यों को करने के लिए ✓
- C. ग्राइंडर की आयु बढ़ाने के लिए
- D. ग्राइंडर को संतुलित करने के लिए

Q33 Part B

When drawing a curved line of a specific length in an engineering drawing, which tool is most appropriate for ensuring accuracy?

- A. Protractor
- B. Straightedge
- C. French Curve ✓
- D. Compass

Q34 Part B

Which of the following belts is acid proof and water proof and is NOT affected by animal oils or alkalies?

- A. Cotton or fabric belts
- B. Rubber belts
- C. Balata belts ✓
- D. Leather belts

Q35 Part B

In engineering drawing (lettering and numbering), a single stroke means that the _____.

- A. thickness of the line of the letter or number is obtained in one stroke of the pencil ✓
- B. thickness of the line of the letter or number is obtained in three strokes of the pencil
- C. thickness of the line of the letter or number is obtained in no strokes of the pencil
- D. thickness of the line of the letter or number is obtained in two strokes of the pencil

Q36 Part B HINDI

निम्न में से कौन-सा पदार्थ (material), कम तन्यता वाले पदार्थों (low tensile materials) को घिसने (grinding) के लिए सबसे उपयुक्त है?

- A. क्यूबिक बोरॉन नाइट्राइड (Cubic boron nitride)
- B. सिलिकॉन कार्बाइड (Silicon carbide) ✓
- C. डायमंड (Diamond)
- D. ऐलुमिनियम ऑक्साइड (Aluminium oxide)

Q37 Part B

Which of the following is an advantage of chain drives over belt drives?

- A. The production cost of chains is relatively high.
- B. The chain drive needs accurate mounting and careful maintenance, particularly lubrication and slack adjustment.
- C. The chain drive has velocity fluctuations especially when unduly stretched.
- D. It gives a high transmission efficiency. ✓

Q38 Part B

Which of the following types of wooden mallets are used for hollowing panel beatings?

- A. Standard wooden mallets
- B. End-faked mallets
- C. Side-faked mallets
- D. Bossing mallets ✓

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Q39 Part B

In the limit system, the distinction between allowance and deviation is:

- A. allowance is used for single parts, while deviation is used for assemblies
- B. allowance is the difference between the maximum material limits of the mating parts, while deviation is the difference between a size and the corresponding basic size ✓
- C. allowance is always positive, while deviation can be positive or negative
- D. allowance is the difference between a size and the corresponding basic size, while deviation is the difference between the maximum material limits of the mating parts

Q40 Part B

Identify the correct combination of a rivet parts.

- A. Hardie hole, chipping block, pritchel hole
- B. Head, cylindrical body of shank, a slightly tapered tail ✓
- C. Anvil, stock, top fuller
- D. Bottom fuller, shank, horn

Q41 Part B

If a machine has an efficiency of 80%, it means:

- A. the machine produces more output than input
- B. the machine has a velocity ratio and mechanical advantage both equal to 80
- C. the machine does not have any loss in input energy
- D. the machine loses 20% of the input ✓

Q42 Part B

What is the blade length of the T1 'T' square, as per IS:1360-1989?

- A. 500 mm
- B. 1500 mm
- C. 700 mm
- D. 1000 mm ✓

Q43 Part B HINDI

_____ को विशेष रूप से कंपन के कारण नट या बोल्ट को ढीला होने से रोकने के लिए डिजाइन किया गया है।

- A. फेंडर वाशर (Fender washer)
- B. स्प्रिंग वाशर (Spring washer) ✓
- C. प्लेन वाशर (Plain washer)
- D. सीलिंग वाशर (Sealing washer)

Q44 Part B HINDI

होल बेसिस प्रणाली (hole basis system) में, होल्स (holes) के लिए कौन-सा मौलिक विचलन प्रतीक उपयोग किया जाता है?

- A. g
- B. H ✓
- C. G
- D. h

Q45 Part B

What is the main reason copper turns green over time?

- A. Hydrogen embrittlement
- B. Formation of an oxide layer ✓
- C. Absorption of nitrogen from the air
- D. Reaction with UV light

Q46 Part B HINDI

सामान्य CNC कार्य के लिए, स्लैंट बेड लेथ डिज़ाइन (slant bed lathe design) को प्राथमिकता क्यों दी जाती है?

- A. यह कटिंग चिप्स (cutting chips) को दूर गिराता है और सुरक्षा में सुधार करता है। ✓
- B. यह प्रचालन (operation) के दौरान ऊर्जा की खपत को कम करता है।
- C. यह मशीनन (machining) में शीतलक (coolant) की आवश्यकता को समाप्त करता है।
- D. यह शीघ्र मशीनन (machining) के लिए स्पिंडल की गति को बढ़ाता है।

Q47 Part B

What does an optical pyrometer measure?

- A. The relative density of liquids
- B. The temperature of the surface ✓
- C. The volume of liquids
- D. The pressure of gases

Q48 Part B HINDI

स्लिप गेज में निष्पीडन (wringing) का क्या उद्देश्य होता है?

- A. तापीय प्रसार के कारण माप त्रुटियों को कम करना
- B. स्लिप गेजों की पृष्ठ रूक्षता को सुधारना
- C. स्लिप गेजों को बाह्य बल के बिना कसकर जोड़ना ✓
- D. मापन से पहले धूल और तेल को हटाना

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Q49 Part B

Which of the following non-metals is naturally black?

A. Alumina

B. Graphite ✓

C. Silicon

D. Quartz

Q50 Part B

In multiple start threads, the relation between lead and pitch is given by which of the following?

A. There is no relation between them.

B. Lead is equal to the pitch.

C. Lead is always greater than the pitch. ✓

D. Lead is always less than the pitch.

Q51 Part B

Tapping is the operation of _____.

A. cutting internal threads in a hole ✓

B. machining flat surfaces on work pieces

C. providing tapered entrance to the hole

D. sizing and improving the geometry and finish of a previously drilled hole

Q52 Part B

Which of the following is an example of a p-type semiconductor?

A. Silicon doped with phosphorus

B. Silicon doped with arsenic

C. Silicon doped with boron ✓

D. Germanium doped with phosphorus

Q53 Part B

The principle behind the vernier scale in a vernier caliper is:

A. subtracting the vernier scale reading from the main scale reading

B. dividing a known length into a certain number of equal divisions

C. adding the main scale and auxiliary scale readings ✓

D. multiplying the main scale reading

Q54 Part B

Which of the following shafts is an example of a machine shaft?

A. Line shaft

B. Overhead shaft

C. Crank shaft ✓

D. Counter shaft

Q55 Part B

Which of the following punches is used to make deeper witness marks on scribed lines and make it easier for the drill to start correctly?

A. Solid punch

B. Centre punch ✓

C. Pin punch

D. Prick punch

Q56 Part B

Pencils are rated in engineering drawings based on the _____.

A. hardness or softness of the lead ✓

B. colour of the lead

C. durability of the lead

D. shape of the lead

Q57 Part B

Why should the blade of a bevel gauge be wiped clean after use?

A. To make it look new in appearance

B. To ensure it remains flexible to use

C. To prevent rust and maintain accuracy ✓

D. To make it a multipurpose tool/gauge

Q58 Part B

When the size of a shaft is less and the size of the hole is more, the difference between the two is called _____.

A. deviation

B. clearance ✓

C. tolerance

D. interference

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Q59 Part B

Which of the following is the Outer operation of the lathe?

A. Boring
B. Tapping
C. Drilling
D. Facing ✓

Q60 Part B

A _____ chisel is used for making an oil groove in a bearing and for cutting slits at corners.

A. side cut
B. flat
C. round nose ✓
D. cross cut

Q61 Part B

What force (effort) will be required to push a load, initially at rest, of mass 500 g, so that at a distance of 20 m, its final velocity is 20 m/sec [Assume that there is no friction and 'g' = 10 m/s^2].

A. 5 J
B. 10 N
C. 5 N ✓
D. 10 J

Q62 Part B

Which of the following is the key difference between a fuse and a circuit breaker?

A. A fuse can be reset after tripping, while a circuit breaker must be replaced.
B. A fuse is used for high-voltage circuits, while a circuit breaker is used for low-voltage circuits.
C. A fuse is a mechanical device, while a circuit breaker is an electronic device.
D. A fuse is a one-time-use device, while a circuit breaker can be reset and reused. ✓

Q63 Part B

A triple-riveted butt joint with two cover-straps is used for the _____.

A. radial joint
B. circumferential joint
C. longitudinal joint ✓
D. angle joint

Q64 Part B

Match the correct length and breadth of the Trimmed sizes of sheets.

Designation	Trimmed size
A. A0	P. 297 × 420
B. A1	Q. 420× 594
C. A2	R. 594 × 841
D. A3	S. 841 × 1189

A. A - R, B - S, C - Q, D - P
B. A - P, B - R, C - Q, D - S
C. A - S, B - R, C - P, D - Q
D. A - S, B - R, C - Q, D - P ✓

Q65 Part B HINDI

निम्नलिखित में से कौन-सा अपघर्षक (abrasive), कठोरीकृत स्टील जैसे कठोर पदार्थों के मशीनन हेतु घिसने वाले पहियों (grinding wheels) में सबसे अधिक उपयोग किया जाता है?

A. क्यूबिक बोरॉन नाइट्राइड (Cubic boron nitride)
B. सिलिकॉन कार्बाइड (Silicon carbide)
C. डायमंड (Diamond)
D. ऐलुमिनियम ऑक्साइड (Aluminium oxide) ✓

Q66 Part B HINDI

CAM सॉफ्टवेयर में सिमुलेशन (simulation) फ़ंक्शन का उपयोग करने का प्राथमिक लाभ क्या है?

A. मशीनिंग से पहले पार्ट गाउज (part gouges) या संघट्टों की जाँच करना ✓
B. पदार्थ के गुणधर्मों में सुधार करना
C. आवश्यक टूल की संख्या को कम करना
D. मशीन की चाल को बढ़ाना

Q67 Part B

Which of the following parts of a hammer-head is used for shaping and forming work like riveting and bending?

A. Face
B. Eyehole
C. Pein ✓
D. Cheek

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Q68 Part B

What is the primary principle behind the generation of electrical energy in a piezoelectric device?

- A. Conversion of thermal energy into electrical energy
- B. Conversion of chemical energy into electrical energy
- C. Conversion of light energy into electrical energy
- D. Conversion of mechanical stress into electrical energy ✓

Q69 Part B

The 'merit number' in toughness measurement is used for:

- A. determining a material's density
- B. finding the modulus of rigidity
- C. comparing different materials ✓
- D. measuring a material's elasticity

Q70 Part B

Which of the following statements is correct about a protractor?

Statements:
1. A protractor can be used to measure angles from both sides.
2. A protractor is typically made of a rigid metal material.

- A. Neither statement is true
- B. Only statement 2 is true
- C. Only statement 1 is true ✓
- D. Both statements are true

Q71 Part B

What is the purpose of placing a soft paper disc on each side of the grinding wheel?

- A. To balance the grinding wheel
- B. To protect the wheel from damage due to flange pressure ✓
- C. To prevent the wheel from rotating too fast
- D. To increase the wheel's hardness

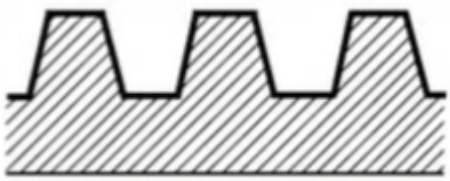
Q72 Part B

Which of the following uses of wire gauge is INCORRECT?

- A. It measures the diameter of a wire.
- B. It does not help determine how much current a wire can carry. ✓
- C. Using the wrong wire gauge can damage appliances and electronic devices.
- D. It is used in electrical installations, welding and other applications.

Q73 Part B

Identify the type of thread given below.



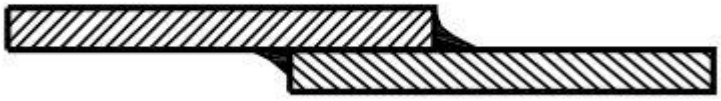
- A. Acme thread ✓
- B. Knuckle thread
- C. V-thread
- D. Square thread

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Q74 Part B

Identify the type of brazed joint shown below.



A. Joggle Lap

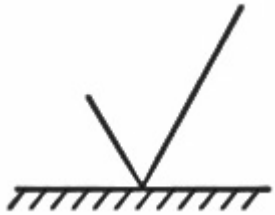
B. Simple Lap ✓

C. Strapped Lap

D. Butted Flange

Q75 Part B

What does the surface finish symbol shown in the given figure represent?



A. The surface requires a specific finishing process

B. A general machining indication without roughness details ✓

C. Material removal is strictly prohibited

D. The surface must be left without machining

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Part B

75 Questions • Answer Key

Q1 Part B

_____ is the line of zero deviation and represents the basic size.

A. Zero line
B. Actual size
C. Nominal size ✓
D. Tolerable size

Q2 Part B HINDI

CNC टर्निंग (CNC turning) में MDI मोड की महत्वपूर्ण विशेषता निम्नलिखित में से कौन-सी है?

A. यह ऑपरेटर को मैन्युअल रूप से कोड दर्ज करने की सुविधा देता है। ✓
B. यह त्रुटि पहचान के लिए उन्नत सिमुलेशन का उपयोग करता है।
C. यह स्वचालित रूप से संपूर्ण प्रोग्राम निष्पादित करता है।
D. यह ऑपरेटर की भागीदारी की आवश्यकता को कम करता है।

Q3 Part B

Which of the following screwdrivers has cross-shaped tips that are unlikely to slip from the cruciform slots in Philips recessed head screws?

A. Stumpy screwdriver
B. Offset screwdriver
C. Cross-recess screwdriver ✓
D. Ratchet screwdriver

Q4 Part B

In riveted joint, diameter (d) for a given thickness of the plates is given by _____, where t = thickness of plates in mm.

A. $d = 6\ (t)^{1/2}$ ✓
B. $d = 3.5\ (t)^{1/2}$
C. $d = 15\ (t)^{1/2}$
D. $d = 12\ (t)^{1/2}$

Q5 Part B

When one side of a job with parallel diameter is cut turned completely or partially to reduce its diameter by the lathe machine, it is called _____.

A. knurling
B. chamfering
C. taper turning
D. turning ✓

Q6 Part B HINDI

खराद में स्वतंत्र चक का उपयोग करने का मुख्य लाभ क्या है?

A. इसका उपयोग केवल उच्च गति वाली मशीनिंग के लिए किया जाता है
B. प्रत्येक जबड़े को अनियमित कार्यवस्तुओं के लिए स्वतंत्र रूप से समायोजित किया जा सकता है ✓
C. यह कार्यवस्तु को स्वचालित रूप से केंद्र में रखता है
D. सभी जबड़े एक साथ चलते हैं

Q7 Part B

Why do cars have treaded tyres?

A. To increase friction and grip on the road ✓
B. To reduce weight
C. To decrease friction
D. To increase speed

Q8 Part B

Malleability is most important for which type of industrial application?

A. Bearing production
B. Cutting tool manufacturing
C. Wire manufacturing
D. Sheet metal fabrication ✓

Q9 Part B

Identify the roughness grade number for a roughness value of 0.025 µm.

A. N1 ✓
B. N4
C. N3
D. N2

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Q10 Part B

What type of surfaces can be checked using a radius gauge?

- A. Both internal and external curved surfaces ✓
- B. Only flat surfaces
- C. Only internal curved surfaces
- D. Only external curved surfaces

Q11 Part B HINDI

कठोरीकृत स्टील के मृदुकरण (tempering) के लिए प्रयुक्त अधिकतम तापमान सामान्यतः कितना है?

- A. 400°C
- B. 600°C ✓
- C. 300°C
- D. 200°C

Q12 Part B HINDI

दस्ती परिवेधक (hand reamer) का प्राथमिक कार्य _____ है।

- A. वर्कपीस में नए छिद्र ड्रिल करना
- B. विद्यमान छिद्र को सटीक आकार में बड़ा एवं परिसज्जित करना ✓
- C. शैफ्ट में की-वे (keyways) बनाना
- D. वर्कपीस पर बाह्य चूड़ी काटना

Q13 Part B

How is the height of a planer gauge adjusted?

- A. By rotating a vernier scale
- B. By tightening a micrometer screw
- C. By using slip gauges ✓
- D. By applying pressure manually

Q14 Part B

Which of the following is a key electrical safety tip in a workshop?

- A. Operate machines with wet hands
- B. Ignore frayed wires if the device is still working
- C. Use water to clean electrical panels
- D. Ensure electrical equipment is properly grounded ✓

Q15 Part B

Why is acetylene gas not stored in its gaseous form under pressure above 1 kg/cm^2 in cylinders?

- A. Because it loses its flammability and becomes ineffective
- B. Because it reacts with the cylinder's material and causes corrosion
- C. Because it becomes unstable and may explode under high pressure ✓
- D. Because it condenses into a liquid and reduces efficiency

Q16 Part B

What does the grade of a grinding wheel indicate?

- A. The type of abrasive used
- B. The bond strength that holds the abrasive grains in place ✓
- C. The wheel's rotational speed
- D. The wheel's overall diameter

Q17 Part B

An angle greater than 180 degrees is referred to as _____.

- A. a right angle
- B. an acute angle
- C. an obtuse angle
- D. a reflex angle ✓

Q18 Part B HINDI

निम्नलिखित में से कौन-सा, CNC मशीनों में प्रयुक्त फीड ड्राइव (feed drive) का एक प्रकार **नहीं** है?

- A. ब्रश रहित DC सर्वो मोटर (Brushless DC servo motor)
- B. AC सर्वो मोटर (AC servo motor)
- C. प्रेरण जनित्र (Induction generator) ✓
- D. DC सर्वो मोटर (DC servo motor)

Q19 Part B

Which of the following is a major risk associated with fuel spillage?

- A. Fire hazards and environmental contamination ✓
- B. Better lubrication for workshop floors
- C. Increased productivity
- D. Reduced need for ventilation

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Q20 Part B HINDI

CNC प्रोग्रामिंग में अक्षर 'G' के बाद दो अंकों की संख्या क्या निरूपित करती है?

A. चाल नियंत्रण फ़ंक्शन (A speed control function)

B. शीतलक नियंत्रण फ़ंक्शन (A coolant control function)

C. कटर गति आरंभ करने के लिए एक प्रारंभिक फ़ंक्शन (A preparatory function to initiate cutter motion) ✓

D. मशीन टूल परिवर्तन फ़ंक्शन (A machine tool change function)

Q21 Part B

Which of the following actions is a part of the emergency response team's responsibilities during an active emergency?

A. Preparing reports on emergency incidents

B. Rescuing persons in immediate danger ✓

C. Conducting routine safety checks

D. Scheduling regular evacuation drills

Q22 Part B

A shaft with a basic size of 40 mm has an allowance of 0.06 mm for clearance. The design size of the shaft is ____.

A. 39.94 mm ✓

B. 40.00 mm

C. 40.06 mm

D. 39.04 mm

Q23 Part B

Which of the following materials is most malleable?

A. Glass

B. Copper

C. Gold ✓

D. Cast iron

Q24 Part B

Which of the following conversions are correct?

A. 1 L = 1000 dm^3 and 1 mL = 1000 cm^3

B. 1000 L = 1 dm^3 and 1000 mL = 1 cm^3

C. 1 L = 1 dm^3 and 1 mL = 1 cm^3 ✓

D. 1000 L = 1 dm^3 and 1 mL = 1000 cm^3

Q25 Part B

The SI unit of 'ultimate stress' is _____.

A. pascal (Pa) ✓

B. newton (N)

C. newton per meter (N/m)

D. joule per square meter (J/m^2)

Q26 Part B

Which method is commonly used to check the dimensions of tapered components?

A. Using a micrometer directly on the taper

B. Checking by visual inspection

C. Using precision rollers or balls along with slip gauges ✓

D. Measuring with a steel scale and calipers

Q27 Part B

Which hardness test uses a hardened steel ball as an indenter?

A. Knoop Hardness Test

B. Vickers Hardness Test

C. Brinell Hardness Test ✓

D. Rockwell Hardness Test

Q28 Part B

Match the following designations of sheets with their respective trimmed sizes in length and breadth.

Designation Trimmed Size
A) A0 P) 297 × 420
B) A1 Q) 420 × 594
C) A2 R) 594 × 841
D) A3 S) 841 × 1189

A. A-S ; B-R ; C-Q ; D-P ✓

B. A-Q ; B-R ; C-S ; D-P

C. A-S ; B-P ; C-Q ; D-R

D. A-P ; B-R ; C-Q ; D-S

Q29 Part B

What is the term used to describe programs that distinguish between uppercase and lowercase letters, treating "yes" and "YES" as different inputs?

A. Case-insensitive

B. Numerical

C. Case-sensitive ✓

D. Alphabetical

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Q30 Part B

Which of the following is NOT a component of twist drill?

A. Flutes
B. Shank
C. Body
D. Neck ✓

Q31 Part B

Which of the following instruments is commonly used along with a planer gauge for precise height measurement?

A. Vernier caliper
B. Depth gauge
C. Micrometer
D. Dial indicator ✓

Q32 Part B

For which of the following calipers, a screw and nut are provided for opening and closing the caliper legs?

A. Spring joint calipers ✓
B. Firm joint calipers
C. Simple calipers
D. Leg and point calipers

Q33 Part B HINDI

खराद मशीन में टेलस्टॉक (tailstock) के कार्य क्या हैं?

A. काटने वाले उपकरण को पकड़ना और हिलाना
B. लंबे कायवस्तु के मुक्त सिरे को सहारा देना और ड्रिलिंग जैसे कार्यों के लिए ड्रिल बिट (drill bit) को पकड़ना ✓
C. कायवस्तु को घुमाना
D. स्पिंडल की गति को नियंत्रित करना

Q34 Part B

What is the primary purpose of preventive maintenance?

A. To increase the workload of employees
B. To reduce unexpected equipment failures ✓
C. To delay repairs until breakdowns occur
D. To eliminate the need for regular inspections

Q35 Part B

_____ is a measuring device that uses the difference between two separate measuring instrument scales to determine a job's measurement.

A. Either the principle of Vernier caliper or micrometer
B. The principle of the micrometer
C. Neither the principle of Vernier caliper nor micrometer
D. The principle of Vernier caliper ✓

Q36 Part B HINDI

स्लिप गेज (slip gauge) और प्रकाशिक समतल पट्टिका (optical flat) जैसे सटीक मापन उपकरणों के लैपन (lapping) का प्राथमिक कारण क्या है?

A. सामग्री को तेजी से रिमूव (remove) करने के लिए
B. अत्यंत चिकनी और सटीक पृष्ठ प्राप्त करने के लिए ✓
C. संक्षारण प्रतिरोध में सुधार करने के लिए
D. घटक का वजन बढ़ाने के लिए

Q37 Part B

_____ maintenance tools is essential for checking shaft alignment during overhaul.

A. Dial indicator ✓
B. Vernier caliper
C. Torque wrench
D. Feeler gauge

Q38 Part B

Which of the following is a primary difference between a primary and a secondary electrochemical cell?

A. A secondary cell produces more energy than a primary cell.
B. A primary cell can be recharged, while a secondary cell cannot be recharged.
C. A primary cell cannot be recharged, while a secondary cell can be recharged. ✓
D. There is no difference between primary and secondary cells.

Q39 Part B

Which of the following is an INCORRECT statement for belt-pulley system?

A. Arc of contact on the smaller pulley may be as small as possible. ✓
B. A long belt tends to swing from side to side, causing the belt to run out of the pulleys.
C. The pulleys should not be too far apart.
D. The pulleys should not be too close together.

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Q40 Part B

On a digital vernier caliper, the purpose of pressing the zero button is to:

A. change the units of measurement
B. lock the jaws in a fixed position
C. set the reading to zero ✓
D. turn the LCD display on or off

Q41 Part B

_____ recommend(s) 20 mm wide margins for sheet sizes AO and A1 in engineering drawings.

A. Borders and frames: SP: 46 (2003) ✓
B. Geographic coordinate systems
C. Custom grids
D. Grid reference system

Q42 Part B

Natural rubber is soft at high temperatures and brittle at low temperatures; hence raw rubber is heated with sulphur and other additives at a temperature range between 373 – 415 K to make it strong. This process is called _____ of rubber.

A. vulcanisation ✓
B. molding
C. latex
D. extrusion

Q43 Part B

Which of the following statements is/are true about Non-Functional Dimensions (NF) in engineering drawing?

Statement 1: Non-functional Dimensions are shown without limits, as they do not affect the functionality of the component or space.
Statement 2: Non-Functional Dimensions are typically used for reference purposes only, and do not impact the assembly or performance of the component or space.

A. Only statement 2 is true ✓
B. Only statement 1 is true
C. Both statements are true
D. Neither statement is true

Q44 Part B

Sine bars are used when a high degree of accuracy less than _____ is needed for measuring angles.

A. 1 degree
B. 30 degrees
C. 1 minute ✓
D. 30 minutes

Q45 Part B

What is the primary purpose of shielding in electrical cables?

A. To increase the voltage capacity of the cable
B. To increase the current-carrying capacity of the cable
C. To protect the cable from external electromagnetic interference ✓
D. To prevent heat loss from the cable

Q46 Part B

Which option shows the correct answer when 27°C is converted to the kelvin scale?

A. – 300 K
B. 246 K
C. 300 K ✓
D. – 246 K

Q47 Part B

Which of the following is INCORRECT about line standard?

A. More accurate due to line thickness ✓
B. Subject to parallax error
C. Quick measurements over a wide range
D. Used to measure the distance between two engraved lines

Q48 Part B HINDI

मशीनिंग के दौरान उत्पन्न ऊष्मा से मुख्यतः क्या होता है?

A. उपकरण के जीवनकाल में वृद्धि
B. उपकरण के जीवनकाल में कमी ✓
C. काटने की गति में वृद्धि
D. उपकरण के प्रदर्शन पर कोई प्रभाव नहीं

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Q49 Part B

Match the following columns.

Column I Column II

Hinge (A) Reinforcing the downward projecting sand mass (P)

Welding (B) Finishing flat surfaces and joints (Q)

Trowels (C) Permanent joint (R)

Gaggers (D) Movable joint (S)

A. A-R, B-S, C-Q, D-P

B. A-S, B-R, C-P, D-Q

C. A-S, B-R, C-Q, D-P ✓

D. A-S, B-P, C-Q, D-R

Q50 Part B

What is the primary reason for conducting a vehicle road test?

A. To test how fast the vehicle can go

B. To avoid the need for inspections

C. To increase fuel efficiency

D. To ensure the vehicle is functioning safely and correctly ✓

Q51 Part B

A 100-mm centre-punch could have a 10-mm diameter body and a 6-mm diameter point ground to an angle of _____.

A. 120°

B. 90° ✓

C. 60°

D. 30°

Q52 Part B

What is the primary goal of the 5S concept?

A. To replace traditional safety measures

B. To increase the number of safety regulations

C. To improve workplace organisation and efficiency ✓

D. To eliminate the need for maintenance

Q53 Part B

_____ work best for cutting soft materials like wood and plastic.

A. Bi-metal blades

B. Coarse-toothed blades ✓

C. Fine-toothed blades

D. High-carbon steel blades

Q54 Part B

A rectangular floor measuring 10 m × 8 m is to be tiled. If each tile covers 0.25 m^2, how many tiles are needed?

A. 200

B. 300

C. 320 ✓

D. 250

Q55 Part B

Which of the following statements best describes the application of oxy-other fuel gas welding?

A. It is used for welding metals requiring high heat input.

B. It is mainly used for welding thick steel plates.

C. It produces a higher flame temperature than oxy-acetylene welding.

D. It is preferred for welding metals with lower heat requirements. ✓

Q56 Part B

A statement and conclusion for pictorial drawing are given below. Determine the logical relationship between them.

Statement: Pictorial drawings are three-dimensional and provide a visual representation of an object.

Conclusion: Therefore, pictorial drawings are useful for describing the shape of a piece part or component.

A. The conclusion does not logically follow from the statement.

B. The conclusion is partially supported by the statement.

C. The conclusion is unrelated to the statement.

D. The conclusion logically follows from the statement. ✓

Q57 Part B

Force fit will give _____ type of allowance.

A. positive

B. negative ✓

C. neither positive nor negative

D. either positive or negative

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Q58 Part B HINDI

खराद हेडस्टॉक (Lathe Headstock) के सही प्रचालन की जांच करने के लिए आमतौर पर किस उपकरण का उपयोग किया जाता है?

A. संस्पर्श प्रमापी (Feeler gauge)

B. सूक्ष्ममापी (Micrometer)

C. वर्नियर कैलिपर (Vernier caliper)

D. परख छड़ युक्त डायल प्रमापी (Dial indicator with a test bar) ✓

Q59 Part B

Which of the following is NOT a component of the Vernier caliper?

A. Locking screw

B. Vernier scale

C. Anvil ✓

D. Main scale

Q60 Part B

The accuracy of measurement by a try square is about:

A. 0.02 mm per 10 mm length

B. 0.001 mm per 10 mm length

C. 0.004 mm per 10 mm length

D. 0.002 mm per 10 mm length ✓

Q61 Part B

What does the 'grade' of a grinding wheel indicate?

A. The hardness of the wheel ✓

B. The size of the abrasive grains

C. The speed at which the wheel operates

D. The type of abrasive material

Q62 Part B

Which of the following flat belt drives is provided to obtain high velocity ratio and when the required belt tension cannot be obtained by other means?

A. Crossed or twist belt drive

B. Belt drive with idler pulleys ✓

C. Quarter turn belt drive

D. Open belt drive

Q63 Part B

Which of the following care and maintenance of a marking table is INCORRECT?

A. The marking table should be protected from damage.

B. The marking table should be protected from rust.

C. After use, the marking table should be cleaned with a soft cloth.

D. The surface of the marking table should not be given a thin layer of oil. ✓

Q64 Part B

In a logic circuit, three SPST (Single Pole Single Throw) switches are used to implement a logic gate. The switches are connected in series. What is the output of the circuit if all switches are closed?

A. Undefined

B. 1 ✓

C. The output will depend on the type of gate used

D. 0

Q65 Part B

The main drawback of using a 4-jaw chuck compared to a 3-jaw chuck is:

A. it provides a less secure grip

B. it cannot grip work on the inside surface

C. it requires more setting time ✓

D. it can only hold regular shaped jobs

Q66 Part B

In a lathe machine with a 3-jaw chuck, the jaws are moved:

A. by pneumatic pressure

B. by magnetic force

C. simultaneously in a radial direction by rotating a pinion ✓

D. independently using individual levers

Q67 Part B

Which of the following instruments is used to draw mutually perpendicular lines over a plane surface?

A. Bevel square

B. Try Square ✓

C. Straight edge

D. Folding rule

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Q68 Part B

What is the primary reason for the heating effect in a conductor when an electric current passes through it?

- A. The electric field in the conductor causes heat generation.
- B. The movement of electrons causes heat generation. ✓
- C. The conductor absorbs heat from the surrounding environment.
- D. The movement of protons causes heat generation.

Q69 Part B

In the shaft basis system, what remains constant?

- A. The interference between mating parts
- B. The hole size
- C. The clearance between mating parts
- D. The shaft size ✓

Q70 Part B

Heavy belt drives are used to transmit large powers at belt speeds _____.

- A. between 15 m/s and 22 m/s
- B. above 22 m/s ✓
- C. up to about 10 m/s
- D. between 10 m/s and 15 m/s

Q71 Part B

As per the BS standards, the Environment Management code is:

- A. BS ISO 45001
- B. BS EN ISO 14001 ✓
- C. BS EN ISO/IEC 27001
- D. BS EN ISO 9001

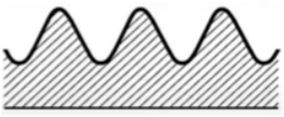
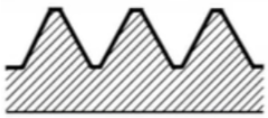
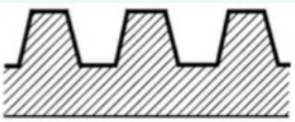
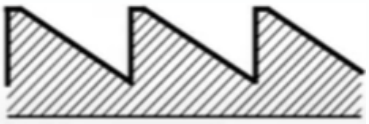
Q72 Part B

In a circuit with a NTC type thermistor and a fixed resistor connected in series connected to a DC power supply, what will happen to the output voltage if there is a rise in temperature?

- A. The output voltage will increase. ✓
- B. The output voltage will remain constant.
- C. The output voltage will fluctuate depending on the resistor value.
- D. The output voltage will decrease.

Q73 Part B

Identify the ACME thread.

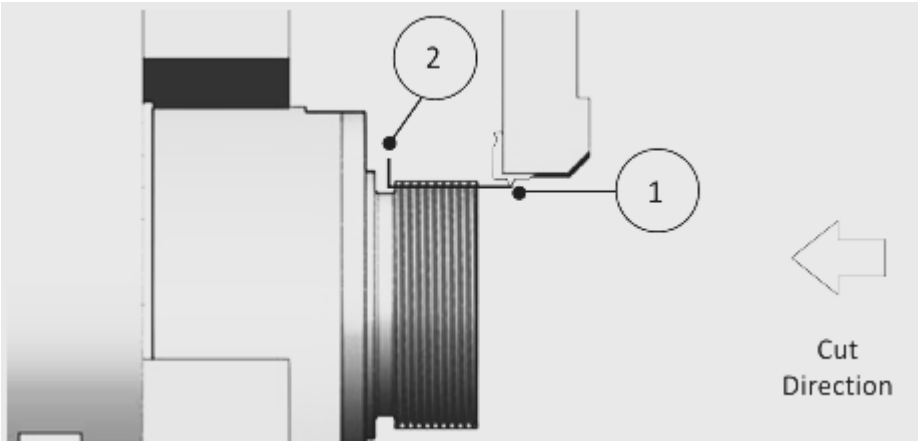
- A. 
- B. 
- C.  ✓
- D. 

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Q74 Part B

In a thread cutting operation, symbols 1 and 2 indicate _____ and _____.



A. Pull Off; Start Cut

B. Start Cut; Start Cut

C. Start Cut; Pull Off ✓

D. Pull Off; Pull Off

Q75 Part B

From the following relation, select relation for taper angle (θ) in taper turning, where l = Length of taper, D = Large diameter and d = small diameter.

A. $\tan\theta = \frac{(D-d)}{21}$ ✓

B. $\tan\theta = \frac{(D+d)}{21}$

C. $\frac{1}{2\tan\theta} = \frac{(D+d)}{21}$

D. $\frac{1}{2\tan\theta} = \frac{(D-d)}{21}$

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Q1 Part B

A test bar is primarily used to check:

A. the cutting efficiency of a tool

B. the accuracy and alignment of the spindle ✓

C. the surface roughness of a machined part

D. the spindle speed of a lathe

Q2 Part B

Which of the following types of chisels is used for separating metals after chain drilling?

A. Cross-cut chisel

B. Flat chisel

C. Web chisel ✓

D. Diamond point chisel

Q3 Part B

On what basis is a joint said to be double-riveted lap joint or triple riveted lap joint?

A. Based on number of rows of rivets in joint ✓

B. Based on strength of joint

C. Based on type of joint

D. Based on number of columns of rivets in joint

Q4 Part B

Why should the material used for making laps be softer than the workpiece?

A. To ensure that the workpiece gets charged with abrasives instead

B. To prevent the lap from wearing out quickly

C. To increase the hardness of the workpiece

D. To allow the lap to get charged with abrasives and cut the workpiece ✓

Q5 Part B

If the length of a resistor is doubled, what happens to its resistance, assuming all other factors remain constant?

A. The resistance is doubled. ✓

B. The resistance remains the same.

C. The resistance is halved.

D. The resistance quadruples.

Q6 Part B

Which of the following calipers are used for marking lines, parallel to inside and outside edges and for locating the centre of round bars?

A. Spring joint calipers

B. Leg and point calipers ✓

C. Simple calipers

D. Firm joint calipers

Q7 Part B

Fine-toothed blades are better suited for:

A. infrequent use

B. cutting metals ✓

C. experts due to their durability and flexibility

D. cutting wood and plastic

Q8 Part B

Which of the following correctly differentiates a cutting blowpipe/torch from a welding blowpipe/torch?

A. A cutting blowpipe has 3 control valves, while a welding blowpipe has 1.

B. A cutting blowpipe has 2 control valves and 1 lever, while a welding blowpipe has 2 control valves. ✓

C. A cutting blowpipe has 2 levers, while a welding blowpipe has 1 lever.

D. A cutting blowpipe has 1 control valve, while a welding blowpipe has 2 control valves.

Q9 Part B

For your safety at work, which of the following should be ensured?
1. All the required protective clothing and equipment are used.
2. Training and instruction necessary for performing tasks safely have been received.

A. Only statement 1

B. Neither statement 1 nor 2

C. Only statement 2

D. Both statements 1 and 2 ✓

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Q10 Part B

In a logic circuit, two inputs A and B are applied to an AND gate, and the output of the AND gate is connected to the input of a NOT gate. If the inputs A and B are both at logic 0, what will be the output of the entire circuit?

- A. Undefined
- B. 0
- C. 1 ✓
- D. 2

Q11 Part B

A 100-mm prick punch with a 7-mm diameter body could have a 2.5-mm diameter point ground to an angle of _____.

- A. 90°
- B. 30° ✓
- C. 120°
- D. 45°

Q12 Part B

What is the unit of measurement used for thread pitch in the metric system?

- A. Newtons
- B. Degrees
- C. Threads per inch (TPI)
- D. Millimetres (mm) ✓

Q13 Part B

Which of the following information is necessary to construct a rectangle?

- A. Length of two adjacent sides ✓
- B. Length of one side and the area of the rectangle
- C. Only the length of one side
- D. Only the length of the diagonal

Q14 Part B

_____ must be ascribed for the sake of convenience and is the size of a part in relation to which all limits of variation are determined.

- A. Actual size
- B. Nominal size ✓
- C. Basic size or zero size
- D. Basic size alone

Q15 Part B

During the turning operation on lathe, if D is the initial diameter and d is the final diameter of the work piece, the depth of cut, t, is calculated by _____.

- A. t = D – d
- B. t = (D – d) / 2 ✓
- C. t = (D + d) / 2
- D. t = D / d

Q16 Part B

In an ISO system of Limits and Fits (ISO:286-1:1998), the tolerance size is designated as:

- A. basic value followed by a letter
- B. basic value followed by a number
- C. basic value alone
- D. basic value followed by symbol composed of a letter and number ✓

Q17 Part B

In a series circuit, three resistors of 10 ohms, 20 ohms, and R ohms are connected in series with a 12 V battery. What is the value of resistance R if current flowing in the circuit is 0.2 A?

- A. 10 ohms
- B. 20 ohms
- C. 30 ohms ✓
- D. 40 ohms

Q18 Part B

During a lathe operation, the influence of machining allowance on the total depth of cut taken is that:

- A. it directly determines the feed rate corresponding to the speed
- B. it has no influence on the depth of cut
- C. it directly determines the depth of cut in each pass
- D. it sets the total material to be removed, which is then divided into multiple cuts ✓

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Q19 Part B

Wrong setting of machine, wrong use of a tool, defect in measuring tools, defective metal, and carelessness of the mechanic have no effect in the utility of the part. This is an advantage of _____.

A. deviation
B. tolerance
C. limit
D. interchangeability ✓

Q20 Part B

Which of the following best describes the application of Atomic Hydrogen Welding (AHW)?

A. It generates a lower temperature arc than other arc welding processes.
B. It is commonly used over modern welding methods due to its efficiency.
C. It is used for all ferrous and non-ferrous metals with a high-temperature arc. ✓
D. It is mainly preferred for low-temperature welding of soft metals.

Q21 Part B

_____ is a type of turning where a workpiece is turned into a sequence of steps with varying diameters.

A. Knurling
B. Step turning ✓
C. Chamfering
D. Facing

Q22 Part B

Why is a Vernier height gauge preferred over a simple steel rule for height measurement?

A. It does not require a surface plate.
B. It provides more precise measurements. ✓
C. It is comparatively more portable.
D. It is cheaper than steel rule.

Q23 Part B HINDI

हेडस्टॉक (headstock) के अंदर कौन-सा घटक स्पिंडल (spindle) की गति को नियंत्रित करता है?

A. टूल पोस्ट
B. लीड स्क्रू
C. टेलस्टॉक स्पिंडल
D. गियरबॉक्स ✓

Q24 Part B

Which of the following is NOT a part of the micrometer?

A. Spindle
B. Anvil
C. Jam ✓
D. Frame

Q25 Part B

Which of the following colours is commonly used for caution signs?

A. Blue
B. Yellow ✓
C. Red
D. Green

Q26 Part B

Which of the following statements is NOT correct for using scribers?

A. Scriber points are very sharp, so they are to be handled very carefully.
B. While scribing lines, the scriber is used like a pencil.
C. Do not put the scriber in your pocket.
D. Place a cork on the point when in use to prevent accidents. ✓

Q27 Part B

What is the minimum age for employment in factories or mines or other hazardous employment, according to Article 24 of the Indian Constitution?

A. 14 years ✓
B. 12 years
C. 16 years
D. 18 years

Q28 Part B

Which of the following terms in the 5S concept refers to making a habit of maintaining the established procedures?

A. Shine
B. Set
C. Sort
D. Sustain ✓

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Q29 Part B

The SI unit of temperature is/are ____.

A. both kelvin and celsius

B. celsius

C. kelvin ✓

D. fahrenheit

Q30 Part B

As we know from the graduation of micrometer, if we give one full round to thimble, its spindle moves ½ mm forward or backward. Therefore, one part of the thimble is its _____.

A. Pitch

B. Least count ✓

C. MSR

D. Lead

Q31 Part B

When used for fits between shaft and hole, ____ is specified or both shaft and hole.

A. the shaft size is more than the hole size

B. the same basic size ✓

C. the hole size is more than the shaft size

D. different size

Q32 Part B

What is the SI unit of 'volume'?

A. Litres

B. Cubic centimetre

C. Cubic metre ✓

D. Millilitres

Q33 Part B

Which of the following statements about title block is/are true?

Statement 1: The title block is situated in the bottom right-hand corner of the drawing sheet.
Statement 2: The contents of the title block are standardised and cannot be modified to suit individual company needs.

A. Both statements are false

B. Statement 1 is false, but statement 2 is true

C. Statement 1 is true, but statement 2 is false ✓

D. Both statements are true

Q34 Part B

Find the lateral surface area of a cube with side length 5 cm.

A. 125 cm^2

B. 150 cm^2

C. 200 cm^2

D. 100 cm^2 ✓

Q35 Part B

Which of the following is the correct way to remove a machine reamer from a hole after reaming?

A. Leave it in place for cooling

B. Rotate it in the opposite direction

C. Apply force and pull it out quickly

D. Stop rotation and pull it out ✓

Q36 Part B

Select the correct representation as Tolerance size for a hole from the given options.

A. 50H8- c7

B. 50 H8/g7

C. 50H8 ✓

D. 50g7

Q37 Part B

Who is authorised to conduct road tests on workshop vehicles?

A. Only trained and certified personnel ✓

B. Visitors to the workshop

C. Any employee

D. The company accountant

Q38 Part B

A material with high toughness must have:

A. low strength and low ductility

B. high strength and high ductility ✓

C. high strength and low ductility

D. high ductility and low strength

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Q39 Part B

Which of the following statements about slip gauges is true?

A. Slip gauges do not require calibration.

B. Slip gauges are used only for rough measurements.

C. Slip gauges are flexible and can bend easily.

D. Slip gauges are used for setting measuring instruments. ✓

Q40 Part B HINDI

खराद चक (lathe chuck) में अनियमित आकार के कायवस्तु को पकड़ने के लिए आमतौर पर किस प्रकार के फिक्सचर (fixture) का उपयोग किया जाता है?

A. ड्रिल जिग (Drill Jig)

B. फेसप्लेट फिक्सचर (Faceplate Fixture) ✓

C. V-ब्लॉक फिक्सचर (V-Block Fixture)

D. बॉक्स जिग (Box Jig)

Q41 Part B HINDI

निम्नलिखित में से कौन-सा, दृश्य निरीक्षण और विस्तृत सर्वेक्षण के बीच एक मुख्य अंतर है?

A. विस्तृत सर्वेक्षण केवल तभी किया जाता है जब कोई खराबी आती है

B. विस्तृत सर्वेक्षण में मापन उपकरणों का उपयोग किया जाता है, जबकि दृश्य निरीक्षण अवलोकन पर निर्भर करता है ✓

C. विस्तृत सर्वेक्षण की तुलना में दृश्य निरीक्षण अधिक सटीक होता है

D. दृश्य निरीक्षण केवल मशीन डाउनटाइम के दौरान किया जाता है

Q42 Part B

The type of feed primarily used for grooving operations on a lathe is _____ feed.

A. cross ✓

B. angular

C. rotary

D. longitudinal

Q43 Part B

Which of the following 'V' blocks will have one 'V' groove and two grooves (slots) on either side for clamping in two positions?

A. Double level single groove 'V' block

B. Matched pair 'V' block

C. Single level double groove 'V' block ✓

D. Single level single groove 'V' block

Q44 Part B

A file that is flat on one side and curved on the other side is known as a _____ file.

A. half-round ✓

B. triangular

C. rectangular

D. square

Q45 Part B

Which type of line is used to represent hidden edges or surfaces in a technical drawing, as per BIS SP 46-2003?

A. Continuous thin line

B. Continuous thick line

C. Dashed thin line ✓

D. Chain thin line

Q46 Part B

When passing stationary vehicles, keep a watch on _____ who may come out suddenly from the front of the stationary vehicle. While overtaking, it should be done on the _____ side. Always keep a good _____ between your vehicle and others.

A. cyclists; left; interval

B. vehicles; right; gap

C. drivers; left; space

D. pedestrians; right; distance ✓

Q47 Part B

Convert 8.5% into a decimal.

A. 0.85

B. 8.5

C. 0.085 ✓

D. 85

Q48 Part B

What is the typical temperature range of a mercury-based clinical thermometer?

A. 0°C to 100°C

B. 35°C to 42°C ✓

C. 0°C to 50°C

D. −10°C to 110°C

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Q49 Part B

____ are the greatest option for experts due to their durability and flexibility.

A. Coarse-toothed blades
B. Bi-metal blades ✓
C. Fine-toothed blades
D. High-carbon steel blades

Q50 Part B

What does the MCU (Machine Control Unit) do with feedback signals?

A. Only records them for future analysis
B. Sends them to the coolant system
C. Generates control signals to correct position and speed errors ✓
D. Ignores them and relies on operator input

Q51 Part B

Which of the following statements is INCORRECT about end standard?

A. It measures the distance between two parallel flat surfaces.
B. Faces are subject to wear.
C. It is slower but more accurate.
D. It is used to measure the distance between two engraved lines. ✓

Q52 Part B

What is the main purpose of using sub-programmes in the main CNC programme?

A. To manually change tools during machining
B. Tool path changes are easier ✓
C. To increase the spindle speed
D. To reduce tool wear

Q53 Part B

When creating 10 mm single-stroke capital letters in vertical style, what does the 10 mm distance between horizontal parallel lines represent?

A. Letter width
B. Letter height ✓
C. Stroke thickness
D. Interline spacing

Q54 Part B HINDI

मशीनिंग के दौरान कर्तन तरल (cutting fluid) का उपयोग करने का प्राथमिक उद्देश्य क्या है?

A. ऊष्मा कम करना और उपकरण का जीवनकाल बढ़ाना ✓
B. चिप्स को सख्त बनाना
C. ऊष्मा उत्पादन बढ़ाना
D. घर्षण बढ़ाना

Q55 Part B

The wave set of hacksaw teeth set has a pitch of _____.

A. 2.0 mm
B. 0.5 mm
C. 0.8 mm ✓
D. 1.0 mm

Q56 Part B

A voltmeter with a resistance of 10,000 ohms is connected across a circuit that has a voltage of 50 V. What is the current flowing through the voltmeter?

A. 2 mA
B. 1 mA
C. 5 mA ✓
D. 4 mA

Q57 Part B HINDI

तापानुशीतन के दौरान, हाइपोयूटेक्टॉयड स्टील (hypoeutectoid steels) को ऊपरी क्रांतिक तापमान से कितना अधिक तप्त किया जाता है?

A. 70°C-100°C
B. 30°C-50°C ✓
C. 10°C-20°C
D. 50°C-70°C

Q58 Part B

Tapering of a small part of a job at its edge or corner is known as _____.

A. knurling
B. chamfering ✓
C. step turning
D. facing

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Q59 Part B

If the basic size of the diameter of a shaft is 80 mm and the variation limit of ±0.07 mm is given, then its high limit and low limit are _____ and _____.

A. 79.93, 80.07
B. 80.07, 79.93 ✓
C. 80.00, 79.93
D. 79.00, 80.07

Q60 Part B

Which of the following metals has the lowest melting point?

A. Mercury ✓
B. Iron
C. Lead
D. Gold

Q61 Part B

As we know from the graduation of micrometer, if we give one full round to thimble, its spindle moves ½ mm forward or backward. A buck part can be divided into 0 to 50 parts. The least count of the micrometer is ____ mm.

A. 0.05
B. 0.10
C. 0.01 ✓
D. 0.50

Q62 Part B

Which property is the most important for materials used in automobile crash zones?

A. High hardness
B. High stiffness
C. High brittleness
D. High toughness ✓

Q63 Part B HINDI

किस प्रकार के CNC मशीनिंग प्रचालन में G76 कोड का सामान्यतः उपयोग किया जाता है?

A. बोरिंग प्रचालन (Boring operation)
B. फलकन प्रचालन (Facing operation)
C. बाह्य चूड़ी कर्तन (External threading) ✓
D. ड्रिलिंग प्रचालन (Drilling operation)

Q64 Part B HINDI

निम्नलिखित में से किस प्रकार के बॉन्ड का उपयोग आमतौर पर परिशुद्धता ग्राइंडिंग (precision grinding) अनुप्रयोगों में किया जाता है?

A. शेलैक बॉन्ड (Shellac bond)
B. रबर बॉन्ड (Rubber bond)
C. विट्रिफाइड बॉन्ड (Vitrified bond) ✓
D. रेसिनोइड बॉन्ड (Resinoid bond)

Q65 Part B

Match the following types of lines with their correct descriptions according to their orientation and characteristics.

Description	Type of Line
A. A line that is neither parallel to a horizontal plane nor perpendicular to it.	1. Horizontal line
B. A line that is perpendicular to horizontal lines.	2. Vertical line
C. A line that changes its direction continuously.	3. Inclined line
D. A line that is parallel to a horizontal plane.	4. Curved line

A. A - 1, B - 2, C - 3, D - 4
B. A - 2, B - 3, C - 4, D - 1
C. A - 3, B - 2, C - 4, D - 1 ✓
D. A - 2, B - 1, C - 4, D - 3

Q66 Part B

Which of the following is the primary reason why copper is widely used as a conductor in electrical wiring?

A. Copper has low resistance and high conductivity. ✓
B. Copper has a low melting point.
C. Copper is abundant and inexpensive.
D. Copper has high resistance to electricity.

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Q67 Part B

Which of the following is NOT a proper practice for bolt tightening in assembly?

A. Following a crisscross pattern for tightening flanges

B. Tightening all bolts sequentially from one side to the other ✓

C. Applying lubrication to threads when specified

D. Using a torque wrench to achieve specified torque

Q68 Part B HINDI

किसी खराद में असमान सामग्रियों की फिटिंग में अंतर्विनिमेयता क्यों महत्वपूर्ण है?

A. यह सुनिश्चित करने के लिए कि पार्ट्स (parts) हमेशा टाइट फिट हो

B. यथार्थमापी मशीनिंग की आवश्यकता को कम करने के लिए

C. अतिरिक्त संशोधनों के बिना पार्ट्स (parts) के आसान प्रतिस्थापन की सुविधा देने के लिए ✓

D. सीमाओं और फिट के उपयोग को समाप्त करने के लिए

Q69 Part B

What is the primary purpose of slip gauges in machining?

A. Aligning the machine spindle with the workpiece

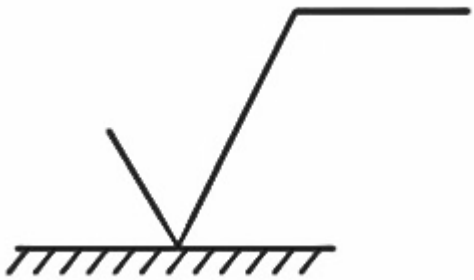
B. Providing precise reference dimensions for measurement and inspection ✓

C. Holding workpieces during machining

D. Measuring the diameter of holes

Q70 Part B

What does the surface finish symbol shown in the given figure represent?



A. A specific surface texture requirement is indicated. ✓

B. The surface must be left in its cast or forged state.

C. The surface should be coated without material removal.

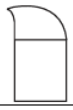
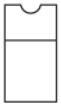
D. No machining is required on this surface.

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Q71 Part B

Match the following.

(A)	Threading tool	(P)	
(B)	Profile tool	(Q)	
(C)	Facing tool	(R)	
(D)	Knurling tool	(S)	

A. A - S, B - R, C - Q, D - P ✓

B. A - P, B - R, C - Q, D - S

C. A - S, B - Q, C - R, D - P

D. A - S, B - R, C - P, D - Q

Q72 Part B

In a Full Lap joint, diagonal pitch is given by ____, where p_d - diagonal pitch, p - pitch, d - diameter of rivets

A. $p_d = \frac{(2p+d)}{3}$ ✓

B. $p_d = \frac{(2p+6d)}{4}$

C. $p_d = \frac{(2p \times d)}{3}$

D. $p_d = \frac{(2p-d)}{3}$

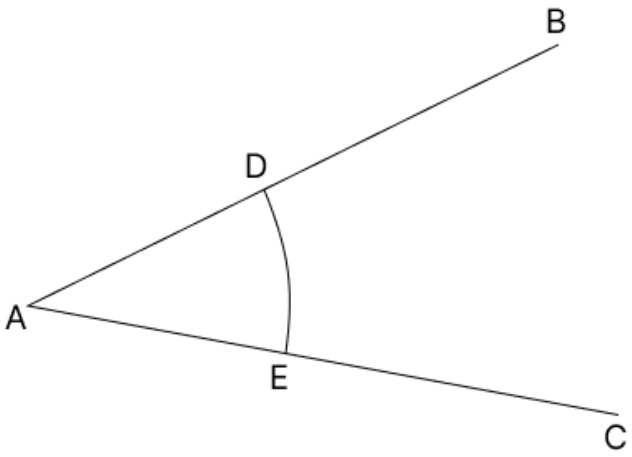
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Q73 Part B

In the process of bisecting angle BAC in the given figure, why do we draw arcs from points D and E?



A. To find midpoint AB

B. To mark equal lengths

C. To intersect line AC

D. To intersect above A ✓

Q74 Part B

Observe the given roughness grade symbol and identify the corresponding roughness grade number whose corresponding roughness value is 0.2 µm.



A. N1

B. N3

C. N4 ✓

D. N2

Q75 Part B

Identify the below tool used on the Lathe.



A. Threading tool ✓

B. Knurling tool

C. Parting tool

D. Boring tool

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Q1 Part B

Arrange the following steps in the correct order to draw an equilateral triangle with each side of 35 mm.

1. Join CA and CB.
2. Draw a line and mark AB 35 mm as the side of the triangle.
3. With radius AB and center A and B, draw arcs cutting at C.
4. ABC is the required triangle.

- A. 2, 3, 1, 4 ✓
- B. 1, 2, 4, 3
- C. 2, 1, 3, 4
- D. 3, 2, 1, 4

Q2 Part B

Non-functional dimensions are _____.

- A. not essential for the function of the space or component ✓
- B. essential for the function of the space or component
- C. derived from the values of the related features of a drawing
- D. directly derived from the values given on a drawing

Q3 Part B

Which of the following is an important safety measure during a power failure?

- A. Using candles for lighting
- B. Continuing to use equipment without verifying power status
- C. Ensuring all machines and electrical equipment are turned off ✓
- D. Ignoring alarm systems

Q4 Part B

Gaskets, seals and spacers are made using:

- A. centre punch
- B. hollow punch ✓
- C. pin punch
- D. prick punch

Q5 Part B

Which of the following elements is used in lubrication oil as an anti-wear additive?

- A. Copper (Cu) ✓
- B. Barium (Ba)
- C. Boron (B)
- D. Calcium (Ca)

Q6 Part B

A circuit consists of three resistors; 15 ohms, 10 ohms, and 20 ohms. The 15-ohm resistor is in series with the parallel combination of the 10-ohm and 20-ohm resistors. If a 24 V battery is applied across the circuit, what is the total current flowing through the circuit?

- A. 3.1 A
- B. 0.1 A
- C. 1.1 A ✓
- D. 2.1 A

Q7 Part B

Which of the following types of pliers is used to shape loops in wires and to form curves in light metal strips?

- A. Flat nose pliers
- B. Round nose pliers ✓
- C. Slip-joint pliers
- D. End cutting pliers

Q8 Part B

A type of internal spring force expands a piston ring based on the design and properties of the material used. It is determined by _____.

- A. forced piston ring gap
- B. compressed spring ring gap
- C. compressed ring gap
- D. free piston ring gap ✓

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Q9 Part B

Which of the following instruments works on the principle of the magnification of the small movement of the plunger or stylus that is converted into a rotary motion of the pointer on a circular scale?

- A. Pressure gauge
- B. Micrometer
- C. Vernier caliper
- D. Dial test indicator ✓

Q10 Part B

For what purpose are pins and clips used in engineering drawings?

- A. To transfer dimensions and dividing lines into a number of equal parts
- B. To draw horizontal lines, parallel lines and to guide/hold the set squares
- C. To fasten the drawing sheet on to the drawing board firmly so that it does not shake ✓
- D. To support the drawing paper/tracing paper for making drawings

Q11 Part B

What is the purpose of an emergency evacuation plan?

- A. To ensure safe and orderly evacuation during emergencies ✓
- B. To avoid safety drills
- C. To increase productivity
- D. To allow workers to leave early

Q12 Part B

What is the advantage of giving heat treatment to a material?

- A. To decrease the melting point of the material
- B. To increase the weight of the material
- C. To change it from one element to another element
- D. To make surgical knives of sharp edges ✓

Q13 Part B

What is the name of the tool used for force amplification?

- A. Wheel
- B. Allen key
- C. Screw driver
- D. Lever ✓

Q14 Part B

Which of the following parts of a file is the part fitted to the tang for holding the file?

- A. Tip or Point
- B. Handle ✓
- C. Edge
- D. Tang

Q15 Part B

Which of the following metals is NOT used for manufacturing of piston bearing?

- A. Copper
- B. Lead
- C. Cast iron ✓
- D. Silicon

Q16 Part B

When using a multimeter to measure current, which of the following is correct?

- A. The multimeter is connected directly to the power source.
- B. The multimeter is connected in series with the load. ✓
- C. The multimeter is connected only across resistive components.
- D. The multimeter is connected in parallel with the load.

Q17 Part B

What is the correct name of the top portion of the valve that interacts with the camshaft during operation of the engine?

- A. Tip ✓
- B. Puppet
- C. Mushroom
- D. Butterfly

Q18 Part B

Which of the following vices consists of a handle and a small collet chuck at one end?

- A. Hand vice
- B. Pin vice ✓
- C. Pipe vice
- D. Toolmaker's vice

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Q19 Part B

Which of the following systems is used to transmit engine torque to the driving wheels to drive a vehicle on the road?

- A. Transmission system ✓
- B. Steering system
- C. Differential gear mechanism
- D. Four bar chain mechanism

Q20 Part B

Why is it important for every person to follow safety procedures in the workplace?

- A. To increase overall production efficiency
- B. To minimise risks and avoid accidents ✓
- C. To reduce operational costs significantly
- D. To limit the need for frequent supervision

Q21 Part B

What is the main function of a master cylinder in a braking system?

- A. To build up hydraulic pressure to operate the brakes ✓
- B. To measure the brake fluid level
- C. To control the engine speed
- D. To absorb vibrations from the road

Q22 Part B

A vital component of a car's clutch system positioned on the clutch housing, which slides along a hollow shaft and moves through the clutch fork aided by hydraulic or cable pressure, is known as:

- A. cushion spring
- B. clutch release bearing ✓
- C. lever
- D. fork arm

Q23 Part B

A circular hole of radius 3 cm is cut from a rectangular sheet of dimensions 12 cm × 10 cm. Find the remaining area.

(Take π = 3.14)

- A. 100 cm^2
- B. 91.74 cm^2 ✓
- C. 95.86 cm^2
- D. 75.74 cm^2

Q24 Part B

What is the primary reason for electrical injuries when a person comes in contact with electrical equipment?

- A. Electrical equipment is not properly grounded.
- B. Current flows through the body causing harm. ✓
- C. Devices are used for too long.
- D. Electrical devices are too powerful.

Q25 Part B

Which of the following statements is correct about engine valves?

- A. The camshaft and its associated parts control the flame of sparks during ignition of the enigne.
- B. The valve's head is perfectly positioned at a 30-45 degree angle that ideally fits with the valve seat, creating a firm seal. ✓
- C. Valves with their conical shapes control the flow of the entry of gasses into an engine.
- D. Poppet or mushroom valves are commonly found in two stroke engines for their remarkable features.

Q26 Part B

The temperature of the air after compression stroke in a CI engine is:

- A. less than ambient temperature
- B. ambient temperature only
- C. high but not enough to ignite the fuel as spark plug is used to ignite the fuel
- D. high enough to auto-ignite the fuel without any external ignition source ✓

Q27 Part B

Which type of gear applies in a car when the engine is running and the clutch is engaged, and the clutch shaft gear drives the drive gear of the lay shaft and thus lay shaft also rotates and the main shaft remains stationary as no gears in main shaft are engaged with lay shaft gears?

- A. Top gear
- B. First gear
- C. Neutral gear ✓
- D. Reverse gear

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Q28 Part B

Which of the following organisations is responsible for enforcing workplace safety regulations in India?

- A. World Health Organization (WHO)
- B. Food and Drug Administration (FDA)
- C. Directorate General of Factory Advice Service and Labour Institutes (DGFASLI) ✓
- D. Environmental Protection Agency (EPA)

Q29 Part B

A drawing instrument box is used to carry all _____ instruments.

- A. drawing ✓
- B. screening
- C. drilling
- D. casting

Q30 Part B

Which of the following type of lubricants are used as solid particles?

- A. Solid wax
- B. Grease
- C. Graphite ✓
- D. Silica

Q31 Part B

When selecting a sheet size for an original drawing, what should be the primary consideration?

- A. The standard size of the drawing office.
- B. The clarity and resolution required. ✓
- C. The orientation of the drawing (horizontal or vertical).
- D. The size of the reproduction.

Q32 Part B

The unit for specific gravity is ____.

- A. m/s^2
- B. g/cm^3
- C. kg/m^3
- D. no unit (dimensionless) ✓

Q33 Part B

A tube-like structure lies between a piston and cylinder wall that regulates the flow of air and fuel inside the cylinder. This valve has a small hole in the side that promptly lines up with the hole of a cylinder. This valve is known as:

- A. butterfly valve
- B. sleeve valve ✓
- C. valve in form of port
- D. poppet valve

Q34 Part B

If the current flowing through a conductor is 5 A and the resistance of the conductor is 10 ohms, what will be the voltage across the conductor, according to Ohm's Law?

- A. 15 V
- B. 50 V ✓
- C. 5 V
- D. 10 V

Q35 Part B

In an F-shaped combustion chamber, which of the following parts is generally NOT located on the extended side of the combustion chamber in a petrol engine?

- A. Inlet valve
- B. Spark plug
- C. Outlet valve
- D. Camshaft ✓

Q36 Part B

What should you do to ensure your personal safety at work?

- A. Wear personal protective equipment. ✓
- B. Work in a hurry without checking equipment.
- C. Ignore warning signs and instructions.
- D. Take risks to finish tasks quickly.

Q37 Part B

Which of the following steps is INCORRECT for micrometer adjustment?

- A. Insert the large end of wrench in the hole on the external cylinder.
- B. Use the wrench to rotate the cylinder until zero is aligned.
- C. Find set screw and loosen it.
- D. Open the micrometer using friction stop. ✓

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Q38 Part B

Which of the following instruments is used for the measurement of piston ring end gap in the cylinder?

- A. Micrometer
- B. Vernier caliper
- C. Dial gauge
- D. Feeler gauge ✓

Q39 Part B

Which of the following types of lube oils are used in airline industries?

- A. Grease and bee wax lubricants
- B. Natural petroleum lubricants
- C. Synthetic lubricants ✓
- D. Biodiesel lubricants

Q40 Part B

Which of the following options is correct when the pressure plate position is such that the cushion spring of clutch is NOT compressed?

- A. It is in the engagement phase.
- B. It is in the partial engagement phase.
- C. The clutch is closed.
- D. The clutch is open. ✓

Q41 Part B

Which of the following hand-operated drilling machines is used for drilling small diameter holes up to 6 mm?

- A. Electric hand drill
- B. Ratchet drilling machine
- C. Breast drilling machine
- D. Bevel gear type drilling machine ✓

Q42 Part B

In a diesel engine, heat is supplied at which of the following thermodynamic processes?

- A. At constant pressure process ✓
- B. At constant volume process
- C. At constant temperature process
- D. At adiabatic compression process

Q43 Part B

What is a key advantage of using MOSFETs in electronic circuits compared to other types of transistors?

- A. High frequency response
- B. High input impedance and low power consumption ✓
- C. Ability to handle higher voltages and currents than BJTs
- D. Ability to amplify both AC and DC signals

Q44 Part B

What is the limiting value of compression ratio on which usually a petrol engine works?

- A. Compression ratio = 6
- B. Compression ratio = 8 ✓
- C. Compression ratio = 22
- D. Compression ratio = 14

Q45 Part B

In a velocity-time graph, the negative slope represents ____.

- A. retardation ✓
- B. displacement
- C. acceleration
- D. distance

Q46 Part B

Which of the following designs have the advantage of effectively preventing contact slippage and axial misplacement of the connecting rod cover and connecting rod body?

- A. Straight cut design
- B. Oval cut design
- C. Obliquely cut design ✓
- D. Curvilinear cut design

Q47 Part B

Which of the following files is used for filing narrow grooves and angles above 10°?

- A. Knife-edge file ✓
- B. Half round file
- C. Square file
- D. Triangular file

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Q48 Part B

The percentage of energy loss per unit deformation from friction happening inside the rubber, which creates heat build-up in the rubber, and is measured as in terms of the temperature, is known as ____.

A. creep
B. resilience
C. stress-strain test
D. hysteresis ✓

Q49 Part B

A mechanism that can split the power of a propeller shaft to the rear axle and produce variation in the speed of rear wheels when the vehicle takes a turn is called a/an:

A. integral unit
B. automatic clutch unit
C. torque convertor
D. differential unit ✓

Q50 Part B

In which part of the IC engine are the cylinder liners fitted?

A. Piston
B. Cylinder head
C. Cylinder block ✓
D. Crankcase

Q51 Part B

Which of the following methods helps the easier assembly and disassembly by providing a more efficient way to fit the connecting rod around the crankshaft journal, particularly in tight engine compartment, in an internal combustion engine?

A. Small end trimming linearly on a connecting rod
B. Big end split orthogonally on a connecting rod
C. Big end split obliquely on a connecting rod ✓
D. Small end union linearly on a connecting rod

Q52 Part B

In a lead-acid battery, what is the chemical composition of the material used for the positive plate during discharge?

A. Sulphuric acid (H_2SO_4)
B. Lead (Pb)
C. Lead dioxide (PbO_2) ✓
D. Lead sulfate ($PbSO_4$)

Q53 Part B

According to BIS SP 46-2003, which of the following applications is correctly represented by a chain-thin line in engineering drawings?

A. Center lines ✓
B. Hidden edges
C. Dimension lines
D. Visible edges

Q54 Part B

When measuring the resistance of a resistor using an ohmmeter, what does a reading of zero resistance indicate?

A. The resistor is functioning normally.
B. The resistor is open-circuited.
C. The resistor is short-circuited. ✓
D. The ohmmeter is malfunctioning.

Q55 Part B

Which of the following statements is INCORRECT about the four-stroke diesel engine?

A. Cycles in both petrol and diesel engines consist of suction, compression, ignition, expansion and exhaust.
B. In C.I. engines, air-fuel mixture is sucked during the stroke and the fuel is injected in the cylinder near the end of the compression stroke. ✓
C. In C.I. engines, only air is sucked during the stroke and the fuel is injected in the cylinder near the end of the compression stroke.
D. The operation of C.I. engines (or diesel engines) is practically the same as those of S.I. engines.

Q56 Part B

Which of the following is NOT the correct characteristic of an I-head combustion chamber used in a petrol engine?

A. I-head has higher surface to volume ratio and therefore there is a high amount of heat loss. ✓
B. I-head is superior to an L-head engine at high compression ratios.
C. I-head has a higher volumetric efficiency from larger valves or valve lifts.
D. I-head has less flame travel length and hence there is a greater freedom from knock.

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Q57 Part B

When does a vacuum booster create a vacuum?

A. When the engine is off, and brake is applied

B. When the engine is running, and the brake is not applied ✓

C. When the fuel level is low

D. When the brake is applied

Q58 Part B

$\cos\theta$

A. $\frac{3}{5}$

B. $\frac{4}{5}$ ✓

C. $\frac{5}{4}$

D. $\frac{3}{4}$

Q59 Part B

$(\frac{3}{8}) + (\frac{5}{12})$

A. $\frac{17}{24}$

B. $\frac{19}{24}$ ✓

C. $\frac{8}{20}$

D. $\frac{7}{12}$

Q60 Part B

Which of the following is the correct expression for power developed at the crankshaft in terms of mechanical efficiency?

Consider BP - brake power, IP - Indicated power

A. $\text{BP} = \text{IP} \times \text{Mechanial efficiency}$ ✓

B. $\text{IP} = \text{Mechanical efficiency} \times \text{PB}$

C. $\text{BP} = \frac{(\text{Mechanical efficiency} + \text{IP})}{100}$

D. $\text{BP} = \frac{\text{Mechanical Efficiency}}{\text{IP}}$

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Part B — 60 Questions • Answer Key

Q1 Part B

Which of the following statements is INCORRECT about end standard?

A. It measures the distance between two parallel flat surfaces.

B. Faces are subject to wear.

C. It is slower but more accurate.

D. It is used to measure the distance between two engraved lines. ✓

Q2 Part B

A type of piston which provides an even distribution of the air-fuel mixture, consistent flame front during combustion and it has the smallest surface area on top is known as:

A. semi-spherical piston

B. dish piston

C. flat piston ✓

D. dome piston

Q3 Part B

When creating 10 mm single-stroke capital letters in vertical style, what does the 10 mm distance between horizontal parallel lines represent?

A. Letter width

B. Letter height ✓

C. Stroke thickness

D. Interline spacing

Q4 Part B

Which of the following types of additives are blended with the lubricant to reduce the surface tension of the oil?

A. Tackiness agents

B. Demulsifiers

C. Mist suppressors

D. Emulsifiers ✓

Q5 Part B

A crucial engine component that ensures proper sealing of the intake and exhaust valves is known as:

A. valve barrier

B. valve gasket

C. valve seat ✓

D. valve ring

Q6 Part B

Which of the following is NOT the purpose of lubrication oil in an engine?

A. Separation of lighter boiling materials such as gasoline, jet fuel, diesel, etc.

B. Finishing to improve oxidation and heat stability

C. Mixing of impurities uniformly that include aromatics and polar compounds ✓

D. Dewaxing to improve low-temperature fluidity

Q7 Part B

What is the SI unit of 'volume'?

A. Litres

B. Cubic centimetre

C. Cubic metre ✓

D. Millilitres

Q8 Part B

Which of the following symptom or indicator does NOT show the failure of an oil pump?

A. When the engine oil flow slows or stops, the components continue to be lubricated by hot oil that is not permitted to flow

B. When the engine runs at a normal temperature and oil flow is steady. ✓

C. If a hydraulic lifter in a vehicle creates noise

D. Able to push oil through the system adequately and with low pressure in oil lines

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Q9 Part B

A voltmeter with a resistance of 10,000 ohms is connected across a circuit that has a voltage of 50 V. What is the current flowing through the voltmeter?

A. 2 mA

B. 1 mA

C. 5 mA ✓

D. 4 mA

Q10 Part B

Which of the following calipers are used for marking lines, parallel to inside and outside edges and for locating the centre of round bars?

A. Spring joint calipers

B. Leg and point calipers ✓

C. Simple calipers

D. Firm joint calipers

Q11 Part B

In a logic circuit, two inputs A and B are applied to an AND gate, and the output of the AND gate is connected to the input of a NOT gate. If the inputs A and B are both at logic 0, what will be the output of the entire circuit?

A. Undefined

B. 0

C. 1 ✓

D. 2

Q12 Part B

Find the lateral surface area of a cube with side length 5 cm.

A. 125 cm^2

B. 150 cm^2

C. 200 cm^2

D. 100 cm^2 ✓

Q13 Part B

Which of the following statements about title block is/are true?

Statement 1: The title block is situated in the bottom right-hand corner of the drawing sheet.
Statement 2: The contents of the title block are standardised and cannot be modified to suit individual company needs.

A. Both statements are false

B. Statement 1 is false, but statement 2 is true

C. Statement 1 is true, but statement 2 is false ✓

D. Both statements are true

Q14 Part B

If the length of a resistor is doubled, what happens to its resistance, assuming all other factors remain constant?

A. The resistance is doubled. ✓

B. The resistance remains the same.

C. The resistance is halved.

D. The resistance quadruples.

Q15 Part B

In a hydraulic brake booster system, where is the hydraulic pressure stored before it is used to assist braking?

A. Power steering pump

B. Master cylinder

C. Accumulator ✓

D. Brake caliper

Q16 Part B

What is the reason that cam lobe causes the engine to make a ticking or tapping noise, especially when idling, and is often rhythmic and varies in loudness?

A. When the cam lobe is subjected to higher load.

B. When the cam lobe wears out. ✓

C. When the cam lobe is hot.

D. When cam lobe is has insufficient lubrication.

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Q17 Part B

The process in which an oil pump housing is first filled with oil, especially for oil pumps that are driven by the crankshaft, is known as:

- A. alignment of a pump
- B. ferrography of a pump
- C. priming of a new oil pump ✓
- D. cavitation of a pump

Q18 Part B

A single plate friction clutch consists of a clutch disk between the:

- A. differential gear and transmission gear box
- B. pressure plate and driving shaft
- C. driving shaft and differential gear
- D. flywheel and a pressure plate ✓

Q19 Part B

The SI unit of temperature is/are _____.

- A. both kelvin and celsius
- B. celsius
- C. kelvin ✓
- D. fahrenheit

Q20 Part B

Which of the following colours is commonly used for caution signs?

- A. Blue
- B. Yellow ✓
- C. Red
- D. Green

Q21 Part B

Which of the following devices is used to insert a micrometer in the hole of an external cylinder for zero aligning?

- A. Spanner
- B. Allen key
- C. Screw driver
- D. Wrench ✓

Q22 Part B

What is the accuracy level of metric micrometer reading?

- A. 0.5 mm
- B. 1.0 mm
- C. 0.1 mm
- D. 0.01 mm ✓

Q23 Part B

Which of the following parts is NOT associated with camshaft responsible for the opening and closing of engine valves?

- A. Tappets
- B. Connecting rod ✓
- C. Rocker arms
- D. Push rods

Q24 Part B

In a series circuit, three resistors of 10 ohms, 20 ohms, and R ohms are connected in series with a 12 V battery. What is the value of resistance R if current flowing in the circuit is 0.2 A?

- A. 10 ohms
- B. 20 ohms
- C. 30 ohms ✓
- D. 40 ohms

Q25 Part B

Which of the following types of chisels is used for separating metals after chain drilling?

- A. Cross-cut chisel
- B. Flat chisel
- C. Web chisel ✓
- D. Diamond point chisel

Q26 Part B

The wave set of hacksaw teeth set has a pitch of _____.

- A. 2.0 mm
- B. 0.5 mm
- C. 0.8 mm ✓
- D. 1.0 mm

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Q27 Part B

Which type of line is used to represent hidden edges or surfaces in a technical drawing, as per BIS SP 46-2003?

A. Continuous thin line

B. Continuous thick line

C. Dashed thin line ✓

D. Chain thin line

Q28 Part B

Which of the following types of valve seats are commonly used in cast iron head of the engine?

A. Integral valve seats ✓

B. Insert valve seats

C. Elliptical valve seats

D. Two piece valve seats

Q29 Part B

The camshaft is driven by the crankshaft through which of the following types of power transmission techniques?

A. Flat belt transmission drive

B. Timing gears drive ✓

C. Chain drive

D. Epicyclic gear train drive

Q30 Part B

The emergency brake locks the wheels by bypassing which system?

A. Electric brake system

B. Air pressure system

C. Hydraulic brake system ✓

D. Fuel injection system

Q31 Part B

Which of the following is the primary reason why copper is widely used as a conductor in electrical wiring?

A. Copper has low resistance and high conductivity. ✓

B. Copper has a low melting point.

C. Copper is abundant and inexpensive.

D. Copper has high resistance to electricity.

Q32 Part B

When passing stationary vehicles, keep a watch on _____ who may come out suddenly from the front of the stationary vehicle. While overtaking, it should be done on the _____ side. Always keep a good _____ between your vehicle and others.

A. cyclists; left; interval

B. vehicles; right; gap

C. drivers; left; space

D. pedestrians; right; distance ✓

Q33 Part B

Which of the following 'V' blocks will have one 'V' groove and two grooves (slots) on either side for clamping in two positions?

A. Double level single groove 'V' block

B. Matched pair 'V' block

C. Single level double groove 'V' block ✓

D. Single level single groove 'V' block

Q34 Part B

What is the typical temperature range of a mercury-based clinical thermometer?

A. 0°C to 100°C

B. 35°C to 42°C ✓

C. 0°C to 50°C

D. −10°C to 110°C

Q35 Part B

A carburetor used in a petrol engine is designed so as to fit in which of the following parts of the engine?

A. Piston

B. Casing

C. Cylinder head ✓

D. Connecting rod

Q36 Part B

Which of the following types of engine classifications is based on cylinder arrangement?

A. Diesel cycle enigne

B. Dual cycle engine

C. V-engine ✓

D. Otto cycle engine

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Q37 Part B

Which of the following parts of the engine is used to compress the charge during compression stroke and to transmit the gas force to the connecting rod and then to the crankshaft during power stroke?

A. Crankcase
B. Cylinder head
C. Cylinder block
D. Piston ✓

Q38 Part B

Which of the following provisions is provided in the cylinder head during design for increasing the air cooling effect?

A. Fins or extended surfaces are provided on the cylinder walls and cylinder blocks. ✓
B. Cylinder head is provided with water jackets.
C. Cylinder block is provided with high speed cooling air flow.
D. Dimple like shapes on surfaces are provided on the cylinder walls.

Q39 Part B

Which of the following statements is NOT correct for using scribers?

A. Scriber points are very sharp, so they are to be handled very carefully.
B. While scribing lines, the scriber is used like a pencil.
C. Do not put the scriber in your pocket.
D. Place a cork on the point when in use to prevent accidents. ✓

Q40 Part B

For the given tire size, as per specification as 205/55R16, what is the width of the tire?

A. 205/55 mm
B. 550 mm
C. 205 mm ✓
D. 880 mm

Q41 Part B

For your safety at work, which of the following should be ensured?
1. All the required protective clothing and equipment are used.
2. Training and instruction necessary for performing tasks safely have been received.

A. Only statement 1
B. Neither statement 1 nor 2
C. Only statement 2
D. Both statements 1 and 2 ✓

Q42 Part B

Who is authorised to conduct road tests on workshop vehicles?

A. Only trained and certified personnel ✓
B. Visitors to the workshop
C. Any employee
D. The company accountant

Q43 Part B

Which of the following metals has the lowest melting point?

A. Mercury ✓
B. Iron
C. Lead
D. Gold

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Q44 Part B

Match the following types of lines with their correct descriptions according to their orientation and characteristics.

Description	Type of Line
A. A line that is neither parallel to a horizontal plane nor perpendicular to it.	1. Horizontal line
B. A line that is perpendicular to horizontal lines.	2. Vertical line
C. A line that changes its direction continuously.	3. Inclined line
D. A line that is parallel to a horizontal plane.	4. Curved line

A. A - 1, B - 2, C - 3, D - 4

B. A - 2, B - 3, C - 4, D - 1

C. A - 3, B - 2, C - 4, D - 1 ✓

D. A - 2, B - 1, C - 4, D - 3

Q45 Part B

Which of the following information is necessary to construct a rectangle?

A. Length of two adjacent sides ✓

B. Length of one side and the area of the rectangle

C. Only the length of one side

D. Only the length of the diagonal

Q46 Part B

In two-stroke engines, one power cycle is completed in how many revolutions of the crankshaft?

A. Two revolutions

B. Four revolutions

C. Three revolutions

D. One revolution ✓

Q47 Part B

What happens if air is NOT removed from a hydraulic brake system?

A. The fuel efficiency improves.

B. The engine runs smoother.

C. The tires wear out faster.

D. The brakes feel spongy and less effective. ✓

Q48 Part B

Which of the following is NOT the correct function of the front axle?

A. It transmits the torque of a vehicle through springs to the front wheels. ✓

B. It absorbs torque applied on it due to braking of vehicle.

C. An axle is a central shaft for a rotating wheel or gear.

D. It supports the weight of the front part of the vehicle.

Q49 Part B

Which of the following is NOT a part of the gear changing mechanism in an automatic transmission system?

A. Universal coupling ✓

B. Epicyclic gear arrangement

C. Fluid coupling

D. Torque converter

Q50 Part B

Convert 8.5% into a decimal.

A. 0.85

B. 8.5

C. 0.085 ✓

D. 85

Q51 Part B

How much clearance is to be provided for compression ring fitted into the piston of an IC engine?

A. Approximately 0.035 – 0.080 mm for compression rings

B. Approximately 0.095 – 1.80 mm for compression rings

C. 0.002 D to 0.004 D where D is the cylinder bore ✓

D. Approximately 0.9 – 1.80 mm for compression rings

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Q52 Part B

Where is a typical clutch actuated by a number of coil springs?

- A. On a pitch circle near the central axis of the shaft
- B. On a base circle near the centre of the circle
- C. On an addendum circle near the centre of the radius
- D. On a pitch circle near the periphery ✓

Q53 Part B

What is the minimum age for employment in factories or mines or other hazardous employment, according to Article 24 of the Indian Constitution?

- A. 14 years ✓
- B. 12 years
- C. 16 years
- D. 18 years

Q54 Part B

What is the best method of manufacturing of connecting rod used in an engine?

- A. Drop forging ✓
- B. Investment casting
- C. Sand casting
- D. Machining operation

Q55 Part B

Which of the following terms in the 5S concept refers to making a habit of maintaining the established procedures?

- A. Shine
- B. Set
- C. Sort
- D. Sustain ✓

Q56 Part B

Which of the following statements is correct about the clutch used in vehicles?

- A. It allows the driver to couple or decouple the power transmission at will without stopping the engine. ✓
- B. It allows the driver to lift and unload the bulk material from engine and transmission.
- C. It allows the driver to change the drive of engine in any direction.
- D. It allows the driver to change the speed of engine.

Q57 Part B

Which of the following types of engine classifications is based on the thermodynamic cycle?

- A. In-line cylinder engine
- B. V-engine
- C. Radial engine
- D. Otto cycle engine ✓

Q58 Part B

A 100-mm prick punch with a 7-mm diameter body could have a 2.5-mm diameter point ground to an angle of _____.

- A. 90°
- B. 30° ✓
- C. 120°
- D. 45°

Q59 Part B

For the given tire size, as per specification as 205/55R16, what is the width of the tire?

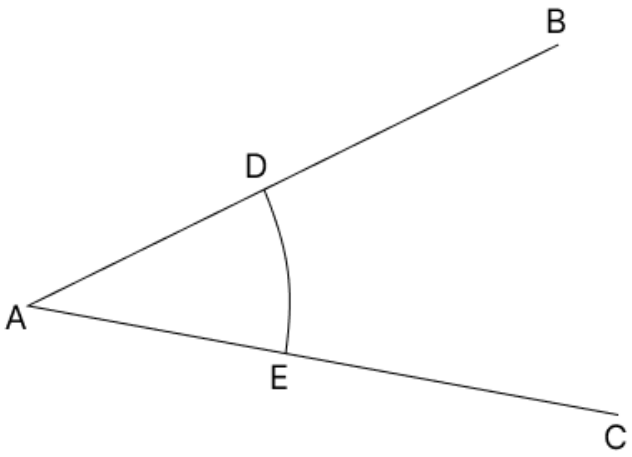
- A. $880\ \text{mm}$
- B. $550\ \text{mm}$
- C. $\frac{205}{55}\ \text{mm}$
- D. $205\ \text{mm}$ ✓

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Q60 Part B

In the process of bisecting angle BAC in the given figure, why do we draw arcs from points D and E?



A. To find midpoint AB

B. To mark equal lengths

C. To intersect line AC

D. To intersect above A ✓

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Part B 75 Questions • Answer Key

Q1 Part B

A 220 V shunt generator has a field resistance of 110 Ω. What is the field current?

- A. 10 A
- B. 20 A
- C. 5 A
- D. 2 A ✓

Q2 Part B

Which of the following best describes the construction of a mica capacitor?

- A. A thin polymer film rolled into a cylinder
- B. A ceramic disc with metal coatings
- C. Alternating layers of metal foil and mica sheets ✓
- D. A liquid electrolyte between two aluminium plates

Q3 Part B

At what overload percentage does the solenoid attract the armature fully, causing instantaneous tripping in a MCB?

- A. 700% ✓
- B. 130%
- C. 300%
- D. 1000%

Q4 Part B

When measuring the resistance of a resistor using an ohmmeter, what does a reading of zero resistance indicate?

- A. The resistor is functioning normally.
- B. The resistor is open-circuited.
- C. The resistor is short-circuited. ✓
- D. The ohmmeter is malfunctioning.

Q5 Part B

A circuit consists of three resistors; 15 ohms, 10 ohms, and 20 ohms. The 15-ohm resistor is in series with the parallel combination of the 10-ohm and 20-ohm resistors. If a 24 V battery is applied across the circuit, what is the total current flowing through the circuit?

- A. 3.1 A
- B. 0.1 A
- C. 1.1 A ✓
- D. 2.1 A

Q6 Part B

Read the given statements carefully and select the correct option.

Statement 1: Plate earthing ensures a low-resistance path for fault current to safely flow into the earth.
Statement 2: The resistance of the earthing system is not affected by the soil type or moisture content.

- A. Both Statement 1 and Statement 2 are correct.
- B. Statement 1 is incorrect, but Statement 2 is correct.
- C. Statement 1 is correct, but Statement 2 is incorrect. ✓
- D. Both Statement 1 and Statement 2 are incorrect.

Q7 Part B HINDI

केबलों में तांबे की तुलना में ऐलुमिनियम चालकों का उपयोग करने का नुकसान निम्नलिखित में से कौन-सा है?

- A. तांबे की तुलना में ऐलुमिनियम में उच्चतर प्रतिरोध होता है, जिससे अधिक विद्युत हानि होती है। ✓
- B. तांबे की तुलना में ऐलुमिनियम अधिक महंगा होता है।
- C. तांबे की तुलना में ऐलुमिनियम कम चिरस्थायी होती है।
- D. तांबे की केबल की तुलना में ऐलुमिनियम केबल अधिक नम्य होती हैं।

Q8 Part B HINDI

किस प्रकार का केबल चैनल उन क्षेत्रों के लिए सबसे उपयुक्त होता है, जहां बार-बार अनुरक्षण या वायरिंग प्रणाली में परिवर्तन की आवश्यकता होती है?

- A. धातु नलिका चैनल (Metal conduit channel)
- B. नम्य केबल चैनल (Flexible cable channel)
- C. दृढ़ केबल चैनल (Rigid cable channel)
- D. खांचित केबल चैनल (Slotted cable channel) ✓

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Q9 Part B

What is the effect of increasing the field current in a DC shunt motor?

A. The motor speed increases.

B. The torque decreases.

C. The motor stops immediately.

D. The motor speed decreases. ✓

Q10 Part B

What is the basic working principle of a DC generator?

A. Electrostatic induction

B. Mutual induction

C. Faraday's law of electromagnetic induction ✓

D. Lenz's law

Q11 Part B

A drawing instrument box is used to carry all _____ instruments.

A. drawing ✓

B. screening

C. drilling

D. casting

Q12 Part B

What is the primary material used in the resistance wire of wire-wound resistors?

A. Aluminium

B. Silver

C. Nichrome ✓

D. Copper

Q13 Part B

What should you do to ensure your personal safety at work?

A. Wear personal protective equipment. ✓

B. Work in a hurry without checking equipment.

C. Ignore warning signs and instructions.

D. Take risks to finish tasks quickly.

Q14 Part B

Calculate the voltage regulation (in percentage) of the transformer if the no load secondary voltage is 250 V and full load secondary voltage is 200 V?

A. 20%

B. 100%

C. 50%

D. 25% ✓

Q15 Part B

Non-functional dimensions are _____.

A. not essential for the function of the space or component ✓

B. essential for the function of the space or component

C. derived from the values of the related features of a drawing

D. directly derived from the values given on a drawing

Q16 Part B

Which of the following hand-operated drilling machines is used for drilling small diameter holes up to 6 mm?

A. Electric hand drill

B. Ratchet drilling machine

C. Breast drilling machine

D. Bevel gear type drilling machine ✓

Q17 Part B

Which of the following instruments is used to test the earth resistance of an earthing system?

A. Multimeter

B. Megger ✓

C. Clamp meter

D. Oscilloscope

Q18 Part B

Permeability of ideal transformer core is equal to:

A. low value

B. zero

C. unity

D. infinite ✓

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Q19 Part B HINDI

जब सामान्यतः खुले (NO) संपर्क को ऊर्जित किया जाता है, तो क्या होता है?

- A. संपर्क, परिपथ से वियोजित हो जाता है।
- B. परिपथ खुला रहता है।
- C. संपर्क अपनी स्थिति में लॉक हो जाता है।
- D. परिपथ बंद हो जाता है। ✓

Q20 Part B

In a lead-acid battery, what is the chemical composition of the material used for the positive plate during discharge?

- A. Sulphuric acid (H_2SO_4)
- B. Lead (Pb)
- C. Lead dioxide (PbO_2) ✓
- D. Lead sulfate ($PbSO_4$)

Q21 Part B

Air-cored inductors are most commonly used in circuits operating at/in:

- A. high frequencies from 1 MHz to several hundred MHz ✓
- B. DC power supply circuits
- C. low frequencies below 50 Hz
- D. audio frequency range (20 Hz – 20 kHz)

Q22 Part B

According to BIS SP 46-2003, which of the following applications is correctly represented by a chain-thin line in engineering drawings?

- A. Center lines ✓
- B. Hidden edges
- C. Dimension lines
- D. Visible edges

Q23 Part B

What is the advantage of giving heat treatment to a material?

- A. To decrease the melting point of the material
- B. To increase the weight of the material
- C. To change it from one element to another element
- D. To make surgical knives of sharp edges ✓

Q24 Part B

What does the 'Make and Break after delay' function primarily protect against in electrical systems?

- A. Voltage spikes and electromagnetic interference
- B. Sudden mechanical movements of motors
- C. High inrush currents and voltage surges ✓
- D. Overheating of the circuit

Q25 Part B

A transformer's open circuit test is used to determine:

- A. core losses and no load current ✓
- B. stray loss
- C. windage loss
- D. copper loss

Q26 Part B

Where are ceramic capacitors commonly used?

- A. Mobile Phones
- B. High-power motors
- C. TV circuits ✓
- D. Transformers

Q27 Part B HINDI

केसिंग और कैपिंग तार स्थापन प्रणाली कहाँ उपयोग के लिए सबसे उपयुक्त है?

- A. सुंदर दिखने और विस्तार के लिए भीतरी पृष्ठीय तार-स्थापन ✓
- B. बाह्य उच्च-वोल्टेता पारेषण लाइन
- C. भूमिगत केबल अधिष्ठापन
- D. जलगत विद्युत अधिष्ठापन

Q28 Part B

When selecting a sheet size for an original drawing, what should be the primary consideration?

- A. The standard size of the drawing office.
- B. The clarity and resolution required. ✓
- C. The orientation of the drawing (horizontal or vertical).
- D. The size of the reproduction.

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Q29 Part B

A DC generator is running at constant speed. If the load current increases, what happens to the terminal voltage?

- A. Decreases ✓
- B. Increases
- C. Remains constant
- D. Fluctuates randomly

Q30 Part B

Which of the following statements is NOT true if any electrical system is not properly earthed?

- A. It provides voltage constant voltage supply regardless of perturbation in load side. ✓
- B. It may lead to damage of electrical equipment.
- C. It can increase the risk of electric shock.
- D. It may cause the electric current to flow in an uncontrolled manner.

Q31 Part B

In the context of earthing in an electrical system, _____ has the greatest impact on earth resistance.

- A. the length of the earthing conductor
- B. the voltage applied to the ground
- C. the material of the grounding rod
- D. soil resistivity ✓

Q32 Part B

What type of components are used for tapping in the ring main system?

- A. Directly from the main supply
- B. Using transformers
- C. Through capacitors
- D. Through fuses and controlling switches ✓

Q33 Part B

Which of the following is an important safety measure during a power failure?

- A. Using candles for lighting
- B. Continuing to use equipment without verifying power status
- C. Ensuring all machines and electrical equipment are turned off ✓
- D. Ignoring alarm systems

Q34 Part B HINDI

तारों को बदलते समय इंसुलेटेड कनेक्टर का उपयोग करने का मुख्य कारण क्या है?

- A. आकस्मिक शॉर्ट सर्किट या विद्युत प्रघात को रोकना ✓
- B. धारावाही क्षमता को बढ़ाना
- C. तार को अधिक नम्य बनाना
- D. संस्थापन की लागत को कम करना

Q35 Part B HINDI

यदि कुल लोड 800 वाट से कम हो, तो कितने लाइटिंग परिपथों (lighting circuits) की आवश्यकता होती है?

- A. दो
- B. चार
- C. एक ✓
- D. तीन

Q36 Part B

Which of the following factors DOES NOT affect the rating of a fuse?

- A. The ambient temperature
- B. The colour of the fuse holder ✓
- C. The type of electrical load
- D. The cross-sectional area of the conductor

Q37 Part B

What is a key advantage of using MOSFETs in electronic circuits compared to other types of transistors?

- A. High frequency response
- B. High input impedance and low power consumption ✓
- C. Ability to handle higher voltages and currents than BJTs
- D. Ability to amplify both AC and DC signals

Q38 Part B

Which component in a magnetic hydraulic MCB holds the ferrous plunger?

- A. A non-ferrous tube ✓
- B. A bimetallic strip
- C. A thermal coil
- D. A fuse element

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Q39 Part B

What is the main purpose of continuity testing in a DC generator?

- A. To detect open or broken windings ✓
- B. To test insulation resistance
- C. To measure current flow
- D. To check voltage regulation

Q40 Part B

Arrange the following steps in the correct order to draw an equilateral triangle with each side of 35 mm.

1. Join CA and CB.
2. Draw a line and mark AB 35 mm as the side of the triangle.
3. With radius AB and center A and B, draw arcs cutting at C.
4. ABC is the required triangle.

- A. 2, 3, 1, 4 ✓
- B. 1, 2, 4, 3
- C. 2, 1, 3, 4
- D. 3, 2, 1, 4

Q41 Part B

In a velocity-time graph, the negative slope represents _____.

- A. retardation ✓
- B. displacement
- C. acceleration
- D. distance

Q42 Part B

What is the purpose of an emergency evacuation plan?

- A. To ensure safe and orderly evacuation during emergencies ✓
- B. To avoid safety drills
- C. To increase productivity
- D. To allow workers to leave early

Q43 Part B HINDI

दोषपूर्ण तार को बदलते समय सबसे महत्वपूर्ण सुरक्षा कदम क्या है?

- A. खुले धातु भागों वाले टूल का उपयोग करें
- B. प्रभावित क्षेत्र में बिजली की आपूर्ति बंद करें ✓
- C. आर्द्र परिस्थितियों में काम करें
- D. कनेक्शन के लिए उचित इन्सुलेशन का उपयोग करें

Q44 Part B

For what purpose are pins and clips used in engineering drawings?

- A. To transfer dimensions and dividing lines into a number of equal parts
- B. To draw horizontal lines, parallel lines and to guide/hold the set squares
- C. To fasten the drawing sheet on to the drawing board firmly so that it does not shake ✓
- D. To support the drawing paper/tracing paper for making drawings

Q45 Part B HINDI

जंक्शन बॉक्स में तारों के सुरक्षित कनेक्शन के लिए निम्नलिखित में से किस वायरिंग उपकरण (accessories) मुख्य रूप से उपयोग किया जाता है?

- A. स्विच (Switch)
- B. टर्मिनल ब्लॉक (Terminal Block) ✓
- C. सॉकेट (Socket))
- D. फ्यूज़ (Fuse)

Q46 Part B

Which of the following vices consists of a handle and a small collet chuck at one end?

- A. Hand vice
- B. Pin vice ✓
- C. Pipe vice
- D. Toolmaker's vice

Q47 Part B

Which of the following is a key safety measure to follow when installing an earthing system?

- A. Use thin copper wires for earthing to reduce costs.
- B. Use flexible conductors for earthing connections.
- C. Ensure the earthing system is properly inspected and tested for safety compliance. ✓
- D. Ensure the earthing system is designed for maximum efficiency.

Q48 Part B

In the open circuit test of a transformer, the supply frequency should be:

- A. higher than the rated frequency
- B. equal to the rated frequency ✓
- C. independent of the rated frequency
- D. lower than the rated frequency

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Q49 Part B

When a strong magnet is placed near a weak magnet, what will likely happen?

A. The weak magnet will disappear.

B. The strong magnet will induce magnetism in the weak magnet. ✓

C. The strong magnet will lose its magnetism.

D. The weak magnet will repel the strong magnet.

Q50 Part B

Which of the following parts of a file is the part fitted to the tang for holding the file?

A. Tip or Point

B. Handle ✓

C. Edge

D. Tang

Q51 Part B

What is the primary reason for electrical injuries when a person comes in contact with electrical equipment?

A. Electrical equipment is not properly grounded.

B. Current flows through the body causing harm. ✓

C. Devices are used for too long.

D. Electrical devices are too powerful.

Q52 Part B HINDI

प्राथमिक और द्वितीयक अंतः क्षेपण परीक्षण (injection testing) का उद्देश्य क्या है?

A. शक्ति गुणक का परीक्षण करना

B. ब्रेकर और रिले प्रचालन की जाँच करना ✓

C. विद्युत रोधन प्रतिरोध की जांच करना

D. संपर्क प्रतिरोध को मापना

Q53 Part B

A 20 kVA, 2500/250 V, 50 Hz, single phase transformer gave the open circuit test result (on low voltage side) as 250 V and 100 W; then core loss current is:

A. 0.4 A ✓

B. 0.1 A

C. 0.3 A

D. 0.2 A

Q54 Part B HINDI

विद्युत प्रणाली के संदर्भ में 'अधिकतम मांग' का क्या अर्थ है?

A. प्रचालन के लिए आवश्यक न्यूनतम लोड

B. किसी महीने में खपत की गई कुल ऊर्जा

C. किसी अवधि में औसत लोड

D. किसी विशिष्ट अवधि में रिकॉर्ड किया गया उच्चतम लोड ✓

Q55 Part B

How long does a fuse element take to melt when carrying twice its rated current?

A. 1 minute

B. 5 minutes

C. 30 seconds

D. 2 minutes ✓

Q56 Part B

Which of the following files is used for filing narrow grooves and angles above 10°?

A. Knife-edge file ✓

B. Half round file

C. Square file

D. Triangular file

Q57 Part B

A circular hole of radius 3 cm is cut from a rectangular sheet of dimensions 12 cm × 10 cm. Find the remaining area.

(Take π = 3.14)

A. 100 cm^2

B. 91.74 cm^2 ✓

C. 95.86 cm^2

D. 75.74 cm^2

Q58 Part B

When using a multimeter to measure current, which of the following is correct?

A. The multimeter is connected directly to the power source.

B. The multimeter is connected in series with the load. ✓

C. The multimeter is connected only across resistive components.

D. The multimeter is connected in parallel with the load.

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Q59 Part B

Where are Kit-Kat type fuses commonly used?

A. Electronic circuits

B. High-voltage transmission systems

C. Domestic and small industrial electrical circuits ✓

D. Power generation plants

Q60 Part B

Gaskets, seals and spacers are made using:

A. centre punch

B. hollow punch ✓

C. pin punch

D. prick punch

Q61 Part B HINDI

विद्युत वायरिंग में फेरूल (ferrule) का प्राथमिक कार्य क्या है?

A. तार के स्ट्रैंड को टूटने से बचाकर सुरक्षित और विश्वसनीय कनेक्शन सुनिश्चित करना ✓

B. तार को यांत्रिक क्षति से बचाना

C. तार को इन्सुलेशन प्रदान करना

D. तार की वोल्टता रेटिंग को बढ़ाना

Q62 Part B

Why is it important for every person to follow safety procedures in the workplace?

A. To increase overall production efficiency

B. To minimise risks and avoid accidents ✓

C. To reduce operational costs significantly

D. To limit the need for frequent supervision

Q63 Part B

Which of the following types of pliers is used to shape loops in wires and to form curves in light metal strips?

A. Flat nose pliers

B. Round nose pliers ✓

C. Slip-joint pliers

D. End cutting pliers

Q64 Part B

The unit for specific gravity is _____.

A. m/s^2

B. g/cm^3

C. kg/m^3

D. no unit (dimensionless) ✓

Q65 Part B

If the current flowing through a conductor is 5 A and the resistance of the conductor is 10 ohms, what will be the voltage across the conductor, according to Ohm's Law?

A. 15 V

B. 50 V ✓

C. 5 V

D. 10 V

Q66 Part B HINDI

किसी पैनल में दोषपूर्ण तार को बदलते समय, तार की रूटिंग के संबंध में क्या सावधानी बरतनी चाहिए?

A. भविष्य में मरम्मत को आसान बनाने के लिए तार में अतिरिक्त ढीलापन छोड़ दें।

B. सुविधा के लिए तार को अन्य परिपथों में रूट करें।

C. सुनिश्चित करें कि तार ताप स्रोतों और गतिशील भागों से दूर रूट हो। ✓

D. पैनल के अंदर किसी भी उपलब्ध स्थान पर तार को रूट करें।

Q67 Part B

IEEE 80 provides recommendations for _____.

A. standards for electrical insulation materials

B. voltage regulation in power systems

C. measurement of electrical power consumption

D. proper installation of grounding and bonding systems in electrical installations ✓

Q68 Part B

Which of the following organisations is responsible for enforcing workplace safety regulations in India?

A. World Health Organization (WHO)

B. Food and Drug Administration (FDA)

C. Directorate General of Factory Advice Service and Labour Institutes (DGFASLI) ✓

D. Environmental Protection Agency (EPA)

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Q69 Part B HINDI

घरेलू तार-स्थापन प्रणाली में, निम्नलिखित में से कौन-सा उपकरण सामान्य तौर पर प्रतिरोधी लोड को प्रदर्शित करता है?

A. प्रशीतक (Refrigerator)

B. वैद्युत तापक (Electric heater) ✓

C. प्रतिदीप्ति लैम्प (Fluorescent lamp)

D. छत पंखा (Ceiling fan)

Q70 Part B

A 20 kVA, 2500/250 V, 50 Hz, single phase transformer gave the open circuit test result (on low voltage side) as 250 V, 1.6 A and 100 W; then no load power factor is:

A. 0.15

B. 0.2

C. 0.25 ✓

D. 0.1

Q71 Part B HINDI

भार गुणक (Load Factor) के संबंध में निम्नलिखित में से कौन-सा कथन सत्य है?

A. भार गुणक घरेलू तार-स्थापन के लिए अप्रासंगिक है।

B. भार गुणक की गणना केवल उच्चतम मांग का उपयोग करके की जाती है।

C. अधिक भार गुणक के परिणामस्वरूप विद्युत अवसंरचना का बेहतर उपयोग होता है। ✓

D. भार गुणक सैदव 1 से अधिक होता है।

Q72 Part B

Why is armature resistance control NOT suitable for speed control in high-power DC motors?

A. It results in poor efficiency due to high power loss. ✓

B. It causes high torque fluctuations.

C. It cannot reduce the motor speed.

D. It increases field current.

Q73 Part B

$(\frac{3}{8}) + (\frac{5}{12})$

A. $\frac{17}{24}$

B. $\frac{19}{24}$ ✓

C. $\frac{8}{20}$

D. $\frac{7}{12}$

Q74 Part B

If two inductors are connected in series with mutual inductance M (aiding), what is the equivalent inductance?

A. $L_{eq} = L_1 + L_2 - 2M$

B. $L_{eq} = \frac{L_1 + L_2}{2}$

C. $L_{eq} = L_1 + L_2 + 2M$ ✓

D. $L_{eq} = \frac{L_1 + L_2}{L_1 * L_2}$

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Q75 Part B

$\cos\theta$

A. $\frac{3}{5}$

B. $\frac{4}{5}$ ✓

C. $\frac{5}{4}$

D. $\frac{3}{4}$

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Part B 75 Questions • Answer Key

Q1 Part B

The SI unit of 'ultimate stress' is _____.

- A. pascal (Pa) ✓
- B. newton (N)
- C. newton per meter (N/m)
- D. joule per square meter (J/m^2)

Q2 Part B

Which of the following is a primary difference between a primary and a secondary electrochemical cell?

- A. A secondary cell produces more energy than a primary cell.
- B. A primary cell can be recharged, while a secondary cell cannot be recharged.
- C. A primary cell cannot be recharged, while a secondary cell can be recharged. ✓
- D. There is no difference between primary and secondary cells.

Q3 Part B HINDI

निम्नलिखित में से कौन-सा, वायरिंग संस्थापनों में कंड्यूट का सही अनुप्रयोग **नहीं** है?

- A. सर्किट की वोल्टता को कम करना ✓
- B. दोष की स्थिति में आग को फैलने से रोकना
- C. वायरिंग को यांत्रिक क्षति से बचाना
- D. तारों को व्यवस्थित करना और विद्युत रव को कम करना

Q4 Part B

Two coils, A and B, have self-inductances of 120 µH and 300 µH, respectively. When a current of 1 A flows through coil A, it induces a flux linkage of 100 µWb turns in coil B. What is the mutual inductance between the coils?

- A. 50 µH
- B. 100 µH ✓
- C. 120 µH
- D. 300 µH

Q5 Part B

Which of the following is INCORRECT about line standard?

- A. More accurate due to line thickness ✓
- B. Subject to parallax error
- C. Quick measurements over a wide range
- D. Used to measure the distance between two engraved lines

Q6 Part B

While performing short circuit test on a transformer to determine its parameter, instruments are placed on the:

- A. low voltage side, while the high voltage side is short circuit
- B. high voltage side, while the low voltage side is short circuit ✓
- C. high voltage side, while the low voltage side is open circuit
- D. low voltage side, while the high voltage side is open circuit

Q7 Part B

Match the following designations of sheets with their respective trimmed sizes in length and breadth.

Designation Trimmed Size
A) A0 P) 297 × 420
B) A1 Q) 420 × 594
C) A2 R) 594 × 841
D) A3 S) 841 × 1189

- A. A-S ; B-R ; C-Q ; D-P ✓
- B. A-Q ; B-R ; C-S ; D-P
- C. A-S ; B-P ; C-Q ; D-R
- D. A-P ; B-R ; C-Q ; D-S

Q8 Part B

Which of the following types of resistors is preferred for high-current applications?

- A. Film resistor
- B. Wire-wound resistor ✓
- C. Variable resistor
- D. Carbon composition resistor

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Q9 Part B

Which of the following care and maintenance of a marking table is INCORRECT?

A. The marking table should be protected from damage.

B. The marking table should be protected from rust.

C. After use, the marking table should be cleaned with a soft cloth.

D. The surface of the marking table should not be given a thin layer of oil. ✓

Q10 Part B

What is the primary goal of the 5S concept?

A. To replace traditional safety measures

B. To increase the number of safety regulations

C. To improve workplace organisation and efficiency ✓

D. To eliminate the need for maintenance

Q11 Part B

In the context of earthing system measurement, what does 'Earth resistance' refer to?

A. The resistance between any two points of the ground with a distance of 1 metre

B. The resistance between the live wire and the earth

C. The ability of the ground to resist current flow ✓

D. The voltage required to activate the earthing system

Q12 Part B HINDI

कंट्रोल पैनल वायरिंग में DIN रेल का उपयोग करने का प्राथमिक उद्देश्य क्या है?

A. विद्युत धारा के लिए एक पथ प्रदान करना

B. विद्युत घटकों को सुरक्षित रूप से व्यवस्थित और आरोपित करना ✓

C. विद्युत घटकों की बिजली खपत को कम करना

D. घटकों की वोल्टता रेटिंग को बढ़ाना

Q13 Part B

Which of the following is a key electrical safety tip in a workshop?

A. Operate machines with wet hands

B. Ignore frayed wires if the device is still working

C. Use water to clean electrical panels

D. Ensure electrical equipment is properly grounded ✓

Q14 Part B HINDI

संयोजक ब्लॉकों के निर्माण के लिए निम्नलिखित में से किस सामग्री का उपयोग किया जाता है?

A. ऐलुमिनियम

B. तांबा

C. पीतल

D. पॉलीकार्बोनेट ✓

Q15 Part B HINDI

नियंत्रण पैनल सर्किट में, रिले पर NO (Normally Open - सामान्य रूप से खुला) संपर्क क्या दर्शाता है?

A. रिले के ऊर्जाविहीन होने पर संपर्क बंद हो जाते हैं। ✓

B. रिले के ऊर्जाविहीन (de-energised) होने पर संपर्क बंद होते हैं।

C. संपर्क ऊर्जान्वित (energised) और ऊर्जाविहीन दोनों अवस्थाओं में खुले होते हैं।

D. रिले के ऊर्जाविहीन होने पर संपर्क खुले होते हैं।

Q16 Part B HINDI

नियंत्रण पैनल में PVC चैनल का क्या कार्य होता है?

A. विद्युत परिपथों के लिए भू-संपर्कन चालक के रूप में कार्य करना

B. सुरक्षा के लिए उच्च-वोल्टेज ट्रांसफॉर्मर को परिबद्ध करना

C. वेंटिलेशन स्लॉट के साथ विद्युत वायरिंग के लिए मार्ग प्रदान करना ✓

D. कठोर परिवेश में आउटडोर केबल संस्थापनों को सपोर्ट करना

Q17 Part B

Sine bars are used when a high degree of accuracy less than _____ is needed for measuring angles.

A. 1 degree

B. 30 degrees

C. 1 minute ✓

D. 30 minutes

Q18 Part B

What is the importance of following the manufacturer's guidelines for DC motor maintenance?

A. Ensures safe and efficient operation ✓

B. Modifies the motor's design

C. Increases the motor's power output

D. Saves time and resources

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Q19 Part B

What is the objective of testing an earthing system?

A. To test the current capacity of the earthing system

B. To check the voltage levels

C. To measure the insulation resistance of cables

D. To ensure the system has a low resistance path to the earth ✓

Q20 Part B

What is the term used to describe programs that distinguish between uppercase and lowercase letters, treating "yes" and "YES" as different inputs?

A. Case-insensitive

B. Numerical

C. Case-sensitive ✓

D. Alphabetical

Q21 Part B HINDI

घरेलू अधिष्ठापन में, 1.5 का विविधता गुणक क्या दर्शाता है?

A. अधिकतम मांग, कुल संयोजित भार से 1.5 गुना कम है। ✓

B. अधिकतम मांग, संयोजित भार से 1.5 गुना है।

C. भार सभी परिपथों में समान रूप से वितरित किया जाता है।

D. युक्तियों का सदैव एक साथ उपयोग किया जाएगा।

Q22 Part B

According to Ohm's Law, how is current related to voltage and resistance?

A. It is directly proportional to voltage and inversely proportional to resistance. ✓

B. It has no relation with voltage or resistance.

C. It is directly proportional to voltage and resistance.

D. It is inversely proportional to voltage and resistance.

Q23 Part B

Connection of voltage transformer and current transformer across line are _____, respectively.

A. series and parallel ✓

B. series and series

C. parallel and series

D. parallel and parallel

Q24 Part B

What is the primary reason for conducting a vehicle road test?

A. To test how fast the vehicle can go

B. To avoid the need for inspections

C. To increase fuel efficiency

D. To ensure the vehicle is functioning safely and correctly ✓

Q25 Part B

A statement and conclusion for pictorial drawing are given below. Determine the logical relationship between them.

Statement: Pictorial drawings are three-dimensional and provide a visual representation of an object.

Conclusion: Therefore, pictorial drawings are useful for describing the shape of a piece part or component.

A. The conclusion does not logically follow from the statement.

B. The conclusion is partially supported by the statement.

C. The conclusion is unrelated to the statement.

D. The conclusion logically follows from the statement. ✓

Q26 Part B

In a logic circuit, three SPST (Single Pole Single Throw) switches are used to implement a logic gate. The switches are connected in series. What is the output of the circuit if all switches are closed?

A. Undefined

B. 1 ✓

C. The output will depend on the type of gate used

D. 0

Q27 Part B

Which of the following statements is/are true about Non-Functional Dimensions (NF) in engineering drawing?

Statement 1: Non-functional Dimensions are shown without limits, as they do not affect the functionality of the component or space.
Statement 2: Non-Functional Dimensions are typically used for reference purposes only, and do not impact the assembly or performance of the component or space.

A. Only statement 2 is true ✓

B. Only statement 1 is true

C. Both statements are true

D. Neither statement is true

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Q28 Part B

In a transformer, insulation resistance test is carried out to measure:

A. frequency
B. magnetic flux
C. the resistance of the insulation between windings and core ✓
D. the inductance between different parts of the transformer

Q29 Part B

Why do cars have treaded tyres?

A. To increase friction and grip on the road ✓
B. To reduce weight
C. To decrease friction
D. To increase speed

Q30 Part B HINDI

उच्चतर विविधता गुणक का घरेलू तार-स्थापन प्रणाली पर क्या प्रभाव पड़ता है?

A. यह सुनिश्चित करता है कि उपकरणों का उपयोग एक साथ किया जाए।
B. यह प्रणाली के कुल लोड में वृद्धि करता है।
C. यह तार-स्थापन के आवश्यक आकार और परिपथ सुरक्षा को कम करता है। ✓
D. यह समग्र विद्युत खपत को कम करने में सहायता करता है।

Q31 Part B

An angle greater than 180 degrees is referred to as _____.

A. a right angle
B. an acute angle
C. an obtuse angle
D. a reflex angle ✓

Q32 Part B

_____ recommend(s) 20 mm wide margins for sheet sizes AO and A1 in engineering drawings.

A. Borders and frames: SP: 46 (2003) ✓
B. Geographic coordinate systems
C. Custom grids
D. Grid reference system

Q33 Part B HINDI

दो स्थानों से लाइट को नियंत्रित करने के लिए निम्नलिखित में से कौन-सी स्विचिंग व्यवस्था अनुशंसित की जाती है?

A. सिंगल-पोल स्विच (Single-pole switch)
B. पुश-बटन स्विच (Push-button switch)
C. डिमर स्विच (Dimmer switch)
D. द्वि-पथी स्विच (Two-way switch) ✓

Q34 Part B

Which device is used to protect against electric shocks and fires caused by earth leakage currents?

A. ELCB ✓
B. MCCB
C. MCB
D. ECB

Q35 Part B HINDI

घरेलू संस्थापनों में शाखा परिपथों के लिए लोड आवश्यकताओं के प्राक्कलन में, जब वास्तविक लोड मान ज्ञात नहीं होते हैं, तो विशिष्ट रूप से किस पर विचार किया जाता है?

A. प्रकाश व्यवस्था और उपकरणों के लिए मानक लोड अभिधारणाओं ✓
B. केवल हैवी-ड्यूटी उपकरणों की वाट क्षमता
C. मुख्य परिपथ वियोजक की अधिकतम क्षमता
D. विविधता के बिना सभी उपकरणों की कुल धारा

Q36 Part B

A 100-mm centre-punch could have a 10-mm diameter body and a 6-mm diameter point ground to an angle of _____.

A. 120°
B. 90° ✓
C. 60°
D. 30°

Q37 Part B

Which type of electrolytic capacitor is generally more stable and has better performance in small sizes?

A. Tantalum capacitor
B. Mica capacitor
C. Aluminium capacitor ✓
D. Ceramic capacitor

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Q38 Part B

Transformer oil should have _____ dielectric strength and _____ viscosity.

A. high; high

B. low; high

C. high; low ✓

D. low; low

Q39 Part B HINDI

रिले और संपर्कित्र (contactor) के बीच निर्माण संबंधी प्राथमिक अंतर क्या होता है?

A. संपर्कित्र आमतौर पर प्लास्टिक से बने होते हैं, जबकि रिले धातु से बने होते हैं।

B. रिले सदैव परिबद्ध रहते हैं, जबकि संपर्कित्र परिबद्ध नहीं रहते।

C. रिले में संपर्कित्र की तुलना में छोटे संपर्क (contacts) होते हैं। ✓

D. इनके निर्माण में कोई अंतर नहीं होता है।

Q40 Part B

The Insulation Resistance value for a transformer is measured in:

A. megaohms ✓

B. ohms

C. KVA

D. kiloohms

Q41 Part B

Why is a DC compound generator preferred for industrial loads?

A. It has no losses.

B. It is easier to manufacture.

C. It provides better efficiency.

D. It has constant voltage characteristics. ✓

Q42 Part B

What is the purpose of measuring the electrode resistance during the installation of an earthing system?

A. To measure the insulation resistance of the system

B. To determine the electrical load capacity of the system

C. To ensure the earthing system has low impedance for fault current dissipation ✓

D. To ensure proper grounding of electrical equipment

Q43 Part B

What is the primary purpose of preventive maintenance?

A. To increase the workload of employees

B. To reduce unexpected equipment failures ✓

C. To delay repairs until breakdowns occur

D. To eliminate the need for regular inspections

Q44 Part B

What should be the position of the 'OFF' marking on a fireman's switch?

A. At the top ✓

B. In the centre

C. At the bottom

D. On the side

Q45 Part B HINDI

उच्च लोड आकलन, वायरिंग घटकों के चयन को कैसे प्रभावित करता है?

A. परिपथ-वियोजक की आवश्यकता को कम करता है

B. वितरण-बोर्ड की आवश्यकता को समाप्त करता है

C. उच्च रेटिंग वाले मुख्य स्विच और सुरक्षात्मक उपकरणों की आवश्यकता होती है ✓

D. पतली केबल के उपयोग की अनुमति देता है

Q46 Part B

In pipe earthing, what is used to connect the earthing conductor to the pipe?

A. ✓

B.

C.

D.

Q47 Part B

Which of the following conversions are correct?

A. 1 L = 1000 dm^3 and 1 mL = 1000 cm^3

B. 1000 L = 1 dm^3 and 1000 mL = 1 cm^3

C. 1 L = 1 dm^3 and 1 mL = 1 cm^3 ✓

D. 1000 L = 1 dm^3 and 1 mL = 1000 cm^3

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Q48 Part B

Which option shows the correct answer when 27°C is converted to the kelvin scale?

A. – 300 K

B. 246 K

C. 300 K ✓

D. – 246 K

Q49 Part B HINDI

औद्योगिक परिवेश में नियंत्रण वायरिंग (control wiring) के लिए निम्नलिखित में से किस प्रकार के केबल को इसकी नम्यता और परिस्थिति गुणकों के प्रति प्रतिरोध के कारण प्राथमिकता दी जाती है?

A. PVC रोधित केबल (PVC insulated cables)

B. कवचित केबल (Armoured cables) ✓

C. हाई-टेंशन केबल (High-tension cables)

D. निम्न-वोल्टता केबल (Low-voltage cables)

Q50 Part B

Which of the following screwdrivers has cross-shaped tips that are unlikely to slip from the cruciform slots in Philips recessed head screws?

A. Stumpy screwdriver

B. Offset screwdriver

C. Cross-recess screwdriver ✓

D. Ratchet screwdriver

Q51 Part B HINDI

NBC के अनुसार आवासीय कमरों में सामान्य प्रकाश व्यवस्था के लिए अनुशंसित प्रदीप्ति स्तर कितना है?

A. 200 लक्स

B. 500 लक्स

C. 50 लक्स

D. 100 लक्स ✓

Q52 Part B

A rectangular floor measuring 10 m × 8 m is to be tiled. If each tile covers 0.25 m², how many tiles are needed?

A. 200

B. 300

C. 320 ✓

D. 250

Q53 Part B

For which of the following calipers, a screw and nut are provided for opening and closing the caliper legs?

A. Spring joint calipers ✓

B. Firm joint calipers

C. Simple calipers

D. Leg and point calipers

Q54 Part B

What is the primary cause of sudden insulation resistance failure in a DC generator?

A. Moisture ingress or contamination ✓

B. High ambient temperature

C. Increase in rotational speed

D. Excessive armature current

Q55 Part B

In a circuit with a NTC type thermistor and a fixed resistor connected in series connected to a DC power supply, what will happen to the output voltage if there is a rise in temperature?

A. The output voltage will increase. ✓

B. The output voltage will remain constant.

C. The output voltage will fluctuate depending on the resistor value.

D. The output voltage will decrease.

Q56 Part B

What is the primary purpose of shielding in electrical cables?

A. To increase the voltage capacity of the cable

B. To increase the current-carrying capacity of the cable

C. To protect the cable from external electromagnetic interference ✓

D. To prevent heat loss from the cable

Q57 Part B

Which DC motor type provides the best speed regulation under varying loads?

A. DC Series Motor

B. Cumulative Motor

C. DC Shunt Motor ✓

D. Permanent Magnet DC Motor

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Q58 Part B

Which component in an MCB is responsible for detecting a short circuit?

A. Bimetallic strip

B. Solenoid ✓

C. Arc chute

D. Handle

Q59 Part B HINDI

घटकों के बीच विद्युत कनेक्शन प्रदान करने के लिए DIN रेल के साथ सामान्यतः किस प्रकार के कनेक्टर का उपयोग किया जाता है?

A. सोल्डर कनेक्टर (Solder connectors)

B. वायर नट (Wire nuts)

C. टर्मिनल ब्लॉक (Terminal blocks) ✓

D. प्लग-इन कनेक्टर (Plug-in connectors)

Q60 Part B

Which of the following types of DC motor is commonly used in electric traction applications such as trains and trams?

A. Permanent Magnet DC Motor

B. DC Compound Motor

C. DC Series Motor ✓

D. DC Shunt Motor

Q61 Part B

What is the unit of measurement for earth fault loop impedance?

A. Amperes (A)

B. Ohms (Ω) ✓

C. Volts (V)

D. Farads (F)

Q62 Part B

Which electrical component is used to perform a polarity test to check whether or not the switches are connected in phase/live cable?

A. Megger

B. Ammeter

C. Multimeter

D. Test lamp ✓

Q63 Part B

Which of the following is a major risk associated with fuel spillage?

A. Fire hazards and environmental contamination ✓

B. Better lubrication for workshop floors

C. Increased productivity

D. Reduced need for ventilation

Q64 Part B

In crane and hoist applications, why is a DC series motor preferred over a DC shunt motor?

A. It requires minimal maintenance compared to other motors.

B. It maintains constant speed regardless of load variations.

C. It provides a high starting torque, which is required for lifting loads. ✓

D. It consumes less power at no load.

Q65 Part B

What are the two types of mica capacitors?

A. Ceramic and film capacitors

B. Electrolytic and paper capacitors

C. Variable and fixed capacitors

D. Stacked foil and silvered mica capacitors ✓

Q66 Part B

Natural rubber is soft at high temperatures and brittle at low temperatures; hence raw rubber is heated with sulphur and other additives at a temperature range between 373 – 415 K to make it strong. This process is called _____ of rubber.

A. vulcanisation ✓

B. molding

C. latex

D. extrusion

Q67 Part B

What is the maximum total current allowed in a ring circuit as per IEE regulations?

A.

B.

C. ✓

D.

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Q68 Part B

Read the Assertion (A) and Reason (R) carefully, and select the correct option.

Assertion (A): The earth resistance must be kept as low as possible to ensure that the earthing system is effective during fault conditions.
Reason (R): A low resistance allows fault current to flow easily into the ground, ensuring safety by preventing electrical hazards.

- A. Both Assertion (A) and Reason (R) are correct, and the reason correctly explains the assertion. ✓
- B. Assertion (A) is incorrect, but Reason (R) is correct.
- C. Both Assertion (A) and Reason (R) are correct, but the reason does not correctly explain the assertion.
- D. Assertion (A) is correct, but Reason (R) is incorrect.

Q69 Part B

Which of the following actions is a part of the emergency response team's responsibilities during an active emergency?

- A. Preparing reports on emergency incidents
- B. Rescuing persons in immediate danger ✓
- C. Conducting routine safety checks
- D. Scheduling regular evacuation drills

Q70 Part B

The accuracy of measurement by a try square is about:

- A. 0.02 mm per 10 mm length
- B. 0.001 mm per 10 mm length
- C. 0.004 mm per 10 mm length
- D. 0.002 mm per 10 mm length ✓

Q71 Part B HINDI

टेपित वायरिंग प्रणाली (taped wiring system) का निम्नलिखित में से कौन-सा एक विशिष्ट लक्षण है?

- A. यह भौतिक क्षति के विरुद्ध यांत्रिक सुरक्षा प्रदान करता है।
- B. इसका उपयोग सामान्यतः सीलिंग (ceilings) जैसे खुले क्षेत्रों में किया जाता है।
- C. इसका उपयोग उच्च-वोल्टता उपकरणों में किया जाता है।
- D. यह नम्य होता है और इसे रुद्ध स्थानों (tight spaces) पर संस्थापित किया जा सकता है। ✓

Q72 Part B

How should the electrode resistance be measured if multiple earthing electrodes are used in parallel?

- A. Measure electrode resistance individually and then add it
- B. Use a clamp meter to measure the resistance of parallel electrodes
- C. Measure electrode resistance individually and then average the values
- D. Measure the total resistance of the combined electrodes in parallel ✓

Q73 Part B

What is the primary reason for the heating effect in a conductor when an electric current passes through it?

- A. The electric field in the conductor causes heat generation.
- B. The movement of electrons causes heat generation. ✓
- C. The conductor absorbs heat from the surrounding environment.
- D. The movement of protons causes heat generation.

Q74 Part B

The voltage regulation in percentage for transformer is given by:

- A. $\text{Voltage regulation} = \frac{V_{noload} - V_{load}}{V_{noload}} \times 100$
- B. $\text{Voltage regulation} = \frac{V_{noload} - V_{load}}{V_{load}} \times 100$ ✓
- C. $\text{Voltage regulation} = \frac{V_{noload} - V_{noload}}{V_{load}} \times 100$
- D. $\text{Voltage regulation} = \frac{V_{load} - V_{noload}}{V_{load}} \times 100$

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Q75 Part B

The energy stored (W) in an inductor is given by the formula _____, where C = Capacitance, V= Voltage, I = Current, and L= inductance.

A. $W = \frac{1}{2}VI$

B. $W = \frac{1}{2}LI^2$ ✓

C. $W = LI$

D. $W = \frac{1}{2}CV^2$

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Part B — 75 Questions • Answer Key

Q1 Part B

Which type of circuit is used to amplify low-level signals, such as those from sensors or microphones, to a level that is sufficient to drive a load?

A. Power amplifier
B. Voltage amplifier ✓
C. Operations-based Schmitt trigger
D. Current amplifier

Q2 Part B

If a 1 : 4 demux has an input of logic 1 and the select lines (S1, S0) are set to 01, what will be the output?

A. Output 1 will be 1. ✓
B. Output 2 will be 1.
C. Output 3 will be 1.
D. Output 0 will be 1.

Q3 Part B

Which of the following parts of a file is the part fitted to the tang for holding the file?

A. Tip or Point
B. Handle ✓
C. Edge
D. Tang

Q4 Part B HINDI

यदि कोई ट्रांसफार्मर प्रचालन के दौरान अधितापन के संकेत प्रदर्शित कर रहा हो तो क्या किया जाना चाहिए?

A. ट्रांसफॉर्मर को ठंडा होने दें, फिर लघु पथन की जांच करें
B. ट्रांसफॉर्मर को तत्काल वियोजित करें और विद्युत-रोधन प्रतिरोध की जांच करें ✓
C. ट्रांसफॉर्मर की वाइंडिंग सामग्री को अधिक उत्तम सामग्री से बदलें
D. शीतलन बढ़ाने के लिए प्रचालन वोल्टता बढ़ाएं

Q5 Part B

Plasma TV utilises the additive colour method, in which a colour is created by combining coloured light sources in three primary colours, _____.

A. red, green and violet
B. red, green and blue ✓
C. pink, green and blue
D. red, yellow and blue

Q6 Part B

Gaskets, seals and spacers are made using:

A. centre punch
B. hollow punch ✓
C. pin punch
D. prick punch

Q7 Part B

Which of the following is an important safety measure during a power failure?

A. Using candles for lighting
B. Continuing to use equipment without verifying power status
C. Ensuring all machines and electrical equipment are turned off ✓
D. Ignoring alarm systems

Q8 Part B

Which of the following Boolean expressions represents the behaviour of a 3-input OR gate?

A. A + B + C ✓
B. (A + B) * C
C. A * B * C
D. (A * B) + C

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Q9 Part B

The pointer of the dynamo meter type power factor meter moved to the left of the centre. Which of the following does it indicate?

A. Capacitive load and power factor lagging

B. Inductive load and power factor lagging ✓

C. Capacitive load and power factor leading

D. Inductive load and power factor leading

Q10 Part B

Identify whether the given statements related to BJT transistor testing is/are correct.

Statement I: A digital multimeter can work as a transistor tester.
Statement II: Normally, the transistor tester is used to identify the terminals of the transistor (NPN or PNP) .

A. Both statements I and II are incorrect

B. Only statement I is correct

C. Both statements I and II are correct ✓

D. Only statement II is correct

Q11 Part B

Why is it important for every person to follow safety procedures in the workplace?

A. To increase overall production efficiency

B. To minimise risks and avoid accidents ✓

C. To reduce operational costs significantly

D. To limit the need for frequent supervision

Q12 Part B

For what purpose are pins and clips used in engineering drawings?

A. To transfer dimensions and dividing lines into a number of equal parts

B. To draw horizontal lines, parallel lines and to guide/hold the set squares

C. To fasten the drawing sheet on to the drawing board firmly so that it does not shake ✓

D. To support the drawing paper/tracing paper for making drawings

Q13 Part B

A circular hole of radius 3 cm is cut from a rectangular sheet of dimensions 12 cm × 10 cm. Find the remaining area.

(Take π = 3.14)

A. 100 cm^2

B. 91.74 cm^2 ✓

C. 95.86 cm^2

D. 75.74 cm^2

Q14 Part B

What is the purpose of an emergency evacuation plan?

A. To ensure safe and orderly evacuation during emergencies ✓

B. To avoid safety drills

C. To increase productivity

D. To allow workers to leave early

Q15 Part B

The unit for specific gravity is _____.

A. m/s^2

B. g/cm^3

C. kg/m^3

D. no unit (dimensionless) ✓

Q16 Part B

Which of the following files is used for filing narrow grooves and angles above 10°?

A. Knife-edge file ✓

B. Half round file

C. Square file

D. Triangular file

Q17 Part B

Which type of transformer is used in a full wave rectifier circuit with two diodes?

A. Auto-transformer

B. Center-tapped transformer ✓

C. Step-up transformer

D. Current transformer

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Q18 Part B

The ESR meter used to test electrolytic capacitors measures the _____ of the capacitor.

- A. shunt conductance
- B. series resistance ✓
- C. electric field
- D. permittivity

Q19 Part B

A drawing instrument box is used to carry all _____ instruments.

- A. drawing ✓
- B. screening
- C. drilling
- D. casting

Q20 Part B

Identify the element that is NOT a key constituent of the DTH system.

- A. Dish
- B. GPS ✓
- C. Set top box
- D. Coaxial cable

Q21 Part B

Which of the following configurations, commonly used in audio amplifiers, has a high current gain and a good voltage gain?

- A. Common Emitter (CE) ✓
- B. Common Base (CB)
- C. Common Drain (CD)
- D. Common Collector (CC)

Q22 Part B

The purpose of copper shading rings in an induction type single phase energy meter is:

- A. to produce phase difference between flux and voltage in a pressure coil ✓
- B. to produce magnetic force
- C. to produce controlling force
- D. to produce eddy current damping

Q23 Part B

A circuit consists of three resistors; 15 ohms, 10 ohms, and 20 ohms. The 15-ohm resistor is in series with the parallel combination of the 10-ohm and 20-ohm resistors. If a 24 V battery is applied across the circuit, what is the total current flowing through the circuit?

- A. 3.1 A
- B. 0.1 A
- C. 1.1 A ✓
- D. 2.1 A

Q24 Part B

If the current flowing through a conductor is 5 A and the resistance of the conductor is 10 ohms, what will be the voltage across the conductor, according to Ohm's Law?

- A. 15 V
- B. 50 V ✓
- C. 5 V
- D. 10 V

Q25 Part B

Identify whether the given statements related to megger are correct.

Statement I: Megger testing is a common part of regular maintenance procedures in industries like power generation, manufacturing, construction, and utilities.
Statement II: Meggers are used to diagnose faults in electrical systems.

- A. Both statements I and II are incorrect
- B. Only statement II is correct
- C. Only statement I is correct
- D. Both statements I and II are correct ✓

Q26 Part B

According to BIS SP 46-2003, which of the following applications is correctly represented by a chain-thin line in engineering drawings?

- A. Center lines ✓
- B. Hidden edges
- C. Dimension lines
- D. Visible edges

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Q27 Part B

Which of the following factors should be prioritised when replacing an IC socket in circuits designed for low power consumption, such as mobile devices?

- A. The socket's cost and availability
- B. The electrical contact resistance and current handling capacity ✓
- C. The size and pin count of the socket
- D. The physical durability and mechanical strength of the socket

Q28 Part B

Identify whether the given statements related to DTH system are correct.

Statements:
I. Distortion in sound or picture can be due to a problem in the DTH signal or a problem in the antenna itself.
II. The coaxial cable is an integral part of both DTH and traditional cable TV systems.

- A. Both statements I and II are correct ✓
- B. Only statement II is correct
- C. Both statements I and II are incorrect
- D. Only statement I is correct

Q29 Part B

Which of the following is a good practice when replacing an IC socket in a high-speed digital circuit?

- A. Use an IC socket with a higher current rating than the original
- B. Use a socket with larger pins for better conductivity
- C. Ensure the socket material has low inductance to avoid signal distortion ✓
- D. Choose a socket with a lower resistance rating

Q30 Part B

Which of the following factors can be the cause of the largest errors in the accuracy of GPS positioning?

- A. Satellite position accuracy
- B. Atmospheric ionospheric delay ✓
- C. Multipath interference
- D. Receiver clock bias

Q31 Part B

What is the primary function of the pseudorandom noise (PRN) code in GPS signals?

- A. To allow the receiver to distinguish between signals from different satellites ✓
- B. To encrypt the signal for security
- C. To correct signal errors caused by atmospheric interference
- D. To modulate the carrier frequency for signal transmission

Q32 Part B

Which of the following hand-operated drilling machines is used for drilling small diameter holes up to 6 mm?

- A. Electric hand drill
- B. Ratchet drilling machine
- C. Breast drilling machine
- D. Bevel gear type drilling machine ✓

Q33 Part B

What should be the current rating of an induction type watt meter, in general, if a current transformer is used for measurement of power?

- A. 2 A
- B. 10 A
- C. 30 A
- D. 5 A ✓

Q34 Part B

In a JK Flip-Flop, if J = 0, K = 0 and the clock pulse occurs, what will happen to the output Q?

- A. The output will remain unchanged. ✓
- B. The output will be set to 1.
- C. The output will toggle.
- D. The output will be reset to 0.

Q35 Part B

How are flip flops used in digital counters?

- A. Flip-flops store the count value in binary form and change state with each clock pulse. ✓
- B. Flip-flops convert analogue input signals to a digital count.
- C. Flip-flops perform addition operations for the counter.
- D. Flip-flops generate a clock signal for the counter.

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Q36 Part B

What is the effect of a decrease in base area region due to a rise in base width modulation on the collector current in a PNP transistor?

A. The collector current becomes zero.

B. The collector current increases. ✓

C. The collector current remains the same.

D. The collector current decreases.

Q37 Part B

Non-functional dimensions are _____.

A. not essential for the function of the space or component ✓

B. essential for the function of the space or component

C. derived from the values of the related features of a drawing

D. directly derived from the values given on a drawing

Q38 Part B

Manganese is used as a shunt resistor for extension of range in an Ammeter because _____.

A. manganese is a highly resistive material

B. manganese is a superior conductor

C. there won't be any variation in resistance due to temperature ✓

D. there won't be any magnetic loss

Q39 Part B

What is the condition for a transistor to operate in the saturation region?

A. The base-emitter junction is reverse-biased and the collector-emitter junction is forward-biased.

B. The base-emitter junction is forward-biased and the collector-emitter junction is reverse-biased.

C. The base-emitter junction is reverse-biased.

D. The base-emitter junction is forward-biased and the collector-emitter junction is also forward-biased. ✓

Q40 Part B

Which of the following types of pliers is used to shape loops in wires and to form curves in light metal strips?

A. Flat nose pliers

B. Round nose pliers ✓

C. Slip-joint pliers

D. End cutting pliers

Q41 Part B

How can the range of an ammeter be extended?

A. By using a step-up transformer

B. By increasing the applied voltage

C. By connecting a shunt resistor in parallel with the ammeter ✓

D. By connecting a resistor in series with the ammeter

Q42 Part B

What should you do to ensure your personal safety at work?

A. Wear personal protective equipment. ✓

B. Work in a hurry without checking equipment.

C. Ignore warning signs and instructions.

D. Take risks to finish tasks quickly.

Q43 Part B

For a metal based thin film resistor, the measured value of resistance _____ with _____ in temperature.

A. increases; decrease

B. decreases; increase

C. increases; increase ✓

D. remains constant; decrease

Q44 Part B

To implement an OR gate using only NAND gates, how many NAND gates are required?

A. 1

B. 3 ✓

C. 2

D. 4

Q45 Part B

When using a multimeter to measure current, which of the following is correct?

A. The multimeter is connected directly to the power source.

B. The multimeter is connected in series with the load. ✓

C. The multimeter is connected only across resistive components.

D. The multimeter is connected in parallel with the load.

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Q46 Part B

What is a key advantage of using MOSFETs in electronic circuits compared to other types of transistors?

- A. High frequency response
- B. High input impedance and low power consumption ✓
- C. Ability to handle higher voltages and currents than BJTs
- D. Ability to amplify both AC and DC signals

Q47 Part B

Which of the following components is primarily responsible for transmitting signals from the ground station to the satellite in a satellite communication system?

- A. Transponder
- B. Geostationary Satellite
- C. Uplink Antenna ✓
- D. Downlink Antenna

Q48 Part B

Which of the following organisations is responsible for enforcing workplace safety regulations in India?

- A. World Health Organization (WHO)
- B. Food and Drug Administration (FDA)
- C. Directorate General of Factory Advice Service and Labour Institutes (DGFASLI) ✓
- D. Environmental Protection Agency (EPA)

Q49 Part B

Why is a high-impedance input preferred in a frequency meter?

- A. To allow better voltage regulation
- B. To increase the power consumption of the meter
- C. To reduce display brightness fluctuations
- D. To prevent voltage drop across the circuit being measured ✓

Q50 Part B

When selecting a sheet size for an original drawing, what should be the primary consideration?

- A. The standard size of the drawing office.
- B. The clarity and resolution required. ✓
- C. The orientation of the drawing (horizontal or vertical).
- D. The size of the reproduction.

Q51 Part B

In a velocity-time graph, the negative slope represents ____.

- A. retardation ✓
- B. displacement
- C. acceleration
- D. distance

Q52 Part B

How can one avoid a parallax error while taking a reading from a moving iron type voltmeter?

- A. By seeing the needle at an angle of 90°
- B. By seeing the image of the pointer on the mirror
- C. By seeing straight on the needle ✓
- D. By seeing the needle at an angle of 45°

Q53 Part B

What is the advantage of using a transistor as a switch in a power electronic circuit?

- A. High current gain
- B. High power gain
- C. High voltage gain
- D. High switching frequency and low switching losses ✓

Q54 Part B

What is the advantage of giving heat treatment to a material?

- A. To decrease the melting point of the material
- B. To increase the weight of the material
- C. To change it from one element to another element
- D. To make surgical knives of sharp edges ✓

Q55 Part B

What is the sum output of a Full Adder when the inputs A = 1, B = 1, and Cin = 0?

- A. 1
- B. 2
- C. 0 ✓
- D. 3

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Q56 Part B

When measuring the resistance of a resistor using an ohmmeter, what does a reading of zero resistance indicate?

- A. The resistor is functioning normally.
- B. The resistor is open-circuited.
- C. The resistor is short-circuited. ✓
- D. The ohmmeter is malfunctioning.

Q57 Part B

What type of oscillator uses a capacitive voltage divider as the feedback network?

- A. Crystal oscillator
- B. Colpitts oscillator ✓
- C. RC oscillator
- D. Hartley oscillator

Q58 Part B

What is the Boolean expression for the carry-out (Cout) output of a Full Adder?

- A. Cout=(A·B)⊕Cin
- B. Cout=A⊕B⊕Cin
- C. Cout=(A·B)+(B·Cin)+(Cin·A) ✓
- D. Cout=(A·B)·Cin

Q59 Part B HINDI

IC सॉकेट को बदलते समय, PCB में नया सॉकेट डालने से पहले क्या करना चाहिए?

- A. परिपथ में धारा आपूर्ति को बढ़ाएँ
- B. सुसंगतता (compatibility) सुनिश्चित करने के लिए आस-पास के सभी घटकों को बदलें
- C. सुनिश्चित करें कि सॉकेट का रंग मूल (original) से सुमेलित हो
- D. भौतिक संरेखण की जाँच करें और सुनिश्चित करें कि कोई पिन मुड़ा हुआ न हो ✓

Q60 Part B

Which of the following vices consists of a handle and a small collet chuck at one end?

- A. Hand vice
- B. Pin vice ✓
- C. Pipe vice
- D. Toolmaker's vice

Q61 Part B

What is the output waveform of a half-wave rectifier considering input as a sinusoidal AC signal?

- A. Square wave
- B. Pulsating DC wave ✓
- C. Triangular wave
- D. Perfect sine wave

Q62 Part B

Arrange the following steps in the correct order to draw an equilateral triangle with each side of 35 mm.

1. Join CA and CB.
2. Draw a line and mark AB 35 mm as the side of the triangle.
3. With radius AB and center A and B, draw arcs cutting at C.
4. ABC is the required triangle.

- A. 2, 3, 1, 4 ✓
- B. 1, 2, 4, 3
- C. 2, 1, 3, 4
- D. 3, 2, 1, 4

Q63 Part B

In a lead-acid battery, what is the chemical composition of the material used for the positive plate during discharge?

- A. Sulphuric acid (H_2SO_4)
- B. Lead (Pb)
- C. Lead dioxide (PbO_2) ✓
- D. Lead sulfate ($PbSO_4$)

Q64 Part B

What is the primary reason for electrical injuries when a person comes in contact with electrical equipment?

- A. Electrical equipment is not properly grounded.
- B. Current flows through the body causing harm. ✓
- C. Devices are used for too long.
- D. Electrical devices are too powerful.

Q65 Part B

Which of the following is NOT the correct truth table output for an OR gate?

- A. 1 if either input is 1
- B. 1 if both inputs are 1
- C. 0 if both inputs are 0
- D. 0 if either of input is 1 ✓

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Q66 Part B

What is the primary action that occurs in the base region of an NPN transistor when a small positive voltage is applied to the base with respect to the emitter?

- A. The collector current is reduced.
- B. Holes are created in the base region.
- C. Electrons from the emitter are attracted to the base region. ✓
- D. The base-emitter junction is reverse-biased.

Q67 Part B

Minimum gate required to implement XOR gate using NOR gate only are:

- A. 5 ✓
- B. 3
- C. 4
- D. 2

Q68 Part B

What is the significance of beta (β) in a transistor?

- A. Current gain in common base configuration
- B. Power gain in common base configuration
- C. Power gain in common emitter configuration
- D. Current gain in common emitter configuration ✓

Q69 Part B

Which of the following is a switching error in electrical measuring instruments?

- A. Error due to wrong calculation of subdivisions
- B. Wrong connection of the meter ✓
- C. Error due to heat
- D. Error due to vibration

Q70 Part B

The loading effect of a voltmeter is determined by _____.

- A. the input resistance of the voltmeter ✓
- B. the weight of the voltmeter
- C. the frequency of the circuit
- D. the size of the voltmeter display

Q71 Part B

Identify the correct statement related to a radio receiver.

- A. It is desired to have a radio receiver of low quality factor and high noise figure.
- B. It is desired to have a radio receiver of low quality factor and low noise figure.
- C. It is desired to have a radio receiver of high quality factor and high noise figure.
- D. It is desired to have a radio receiver of high quality factor and low noise figure. ✓

Q72 Part B

A/an ____ is connected in series with the voltmeter to increase the range of the voltmeter.

- A. inductor
- B. capacitor
- C. resistor ✓
- D. inductor and capacitor in series

Q73 Part B

How many minimum number of NAND gates will be required to implement the Boolean expression $F = A.\overline{B} + C$ using only NAND gate?

- A. 3
- B. 4 ✓
- C. 5
- D. 6

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Q74 Part B

$\cos\theta$

A. $\frac{3}{5}$

B. $\frac{4}{5}$ ✓

C. $\frac{5}{4}$

D. $\frac{3}{4}$

Q75 Part B

$(\frac{3}{8}) + (\frac{5}{12})$

A. $\frac{17}{24}$

B. $\frac{19}{24}$ ✓

C. $\frac{8}{20}$

D. $\frac{7}{12}$

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Part B — 75 Questions • Answer Key

Q1 Part B HINDI

उच्च आवृत्ति के अनुप्रयोग के लिए RF कुंडली को वाइंडिंग करते समय, कुंडली फेरों के बीच पराश्रयी धारिता (parasitic capacitance) के प्रभाव को न्यूनतम करने के लिए क्या महत्वपूर्ण विचार है?

A. टर्न-टु-टर्न धारिता (turn-to-turn capacitance) को कम करने के लिए कुंडली के व्यास को बढ़ाएं

B. फेरों को अलग करने के लिए विद्युत-रोधी लेपन (insulated coating) युक्त तार का उपयोग करें ✓

C. कुंडली के पृष्ठीय क्षेत्रफल को कम करने के लिए मोटे तार का उपयोग करें

D. कुंडली के निष्पादन को बेहतर बनाने के लिए फेरों की संख्या बढ़ाएं

Q2 Part B HINDI

प्रिसिजन अप्रोच रडार (PAR) प्रणाली में, दिगंश (azimuth) और उन्नयन चैनलों का क्या महत्व है?

A. दिगंश चैनल विमान की पार्श्व स्थिति को मापता है, और उन्नयन चैनल रनवे के सापेक्ष ऊर्ध्वाधर स्थिति को मापता है। ✓

B. दिगंश चैनल विमान की वायुगति के बारे में डेटा प्रदान करता है, तथा उन्नयन चैनल अवरोहण दर को मापता है।

C. दिगंश और उन्नयन चैनलों का उपयोग केवल मौसम का पता लगाने के लिए किया जाता है, न कि विमान नेविगेशन के लिए।

D. दिगंश चैनल विमान की ऊर्ध्वाधर स्थिति को मापता है, और उन्नयन चैनल रनवे के सापेक्ष विमान की क्षैतिज स्थिति को मापता है।

Q3 Part B

Who is authorised to conduct road tests on workshop vehicles?

A. Only trained and certified personnel ✓

B. Visitors to the workshop

C. Any employee

D. The company accountant

Q4 Part B

Why should the highest voltage range be selected first when measuring an unknown voltage?

A. To save the battery power

B. To increase the measurement accuracy

C. To improve the response time of the display

D. To protect the multimeter from damage ✓

Q5 Part B HINDI

GPRS सिस्टम में, निम्नलिखित में से कौन-सा घटक डेटा पैकेट को सही मोबाइल स्टेशन पर रूट करने के लिए उत्तरदायी है?

A. मोबाइल स्टेशन (MS)

B. बेस स्टेशन सबसिस्टम (BSS)

C. गेटवे GPRS सपोर्ट नोड (GGSN)

D. सर्विंग GPRS सपोर्ट नोड (SGSN) ✓

Q6 Part B

What is the correct way to connect a multimeter when measuring current in a circuit?

A. In series with the circuit ✓

B. Across the power supply terminals

C. Across a resistor

D. In parallel with the circuit

Q7 Part B

Which of the following is the main property of the OR gate?

A. It produces a high output only when all inputs are low.

B. It produces a low output only when all inputs are high.

C. It produces a high output when at least one input is high. ✓

D. It produces a low output when at least one input is low.

Q8 Part B

What is the advantage of using a transistor as a switch in a digital circuit?

A. High voltage gain

B. High current gain

C. Low sensitivity

D. High switching speed ✓

Q9 Part B

Which of the following is a common calibration method for electrical measuring instruments?

A. Approximation method

B. Estimation method

C. Null method ✓

D. Guesswork method

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Q10 Part B

What happens when both the J and K inputs of a JK Flip-Flop are HIGH (1)?

- A. The output toggles. ✓
- B. The output is set to 1.
- C. The output is reset to 0.
- D. The output remains the same.

Q11 Part B

Match the following types of lines with their correct descriptions according to their orientation and characteristics.

Description	Type of Line
A. A line that is neither parallel to a horizontal plane nor perpendicular to it.	1. Horizontal line
B. A line that is perpendicular to horizontal lines.	2. Vertical line
C. A line that changes its direction continuously.	3. Inclined line
D. A line that is parallel to a horizontal plane.	4. Curved line

- A. A - 1, B - 2, C - 3, D - 4
- B. A - 2, B - 3, C - 4, D - 1
- C. A - 3, B - 2, C - 4, D - 1 ✓
- D. A - 2, B - 1, C - 4, D - 3

Q12 Part B HINDI

टेलीविज़न रिसीवर के साउंड सिस्टम में उपयोग किए जाने वाले पावर एम्पलीफायरों में _____ और _____ इसके महत्वपूर्ण पैरामीटर हैं।

- A. वोल्टता लब्धि; क्षरण धारा
- B. DC क्लैम्पिंग; DC धारा लब्धि
- C. पावर दक्षता; दक्षतांक ✓
- D. ऊष्मा अंतरण; DC लब्धि

Q13 Part B

Which of the following colours is commonly used for caution signs?

- A. Blue
- B. Yellow ✓
- C. Red
- D. Green

Q14 Part B

Identify the block that is NOT a part of the radio receiver.

- A. Local oscillator
- B. RF amplifier
- C. All-pass filter ✓
- D. AGC

Q15 Part B HINDI

ट्रांजिस्टर प्रवर्धक परिपथ पर आवधिक अनुरक्षण करते समय निम्नलिखित में से कौन-सा एक महत्वपूर्ण कारक विचारणीय है?

- A. अभिनतीकरण नेटवर्क (biasing network) का स्थायित्व ✓
- B. परिपथ पट्ट (circuit board) का भौतिक स्वरूप
- C. ट्रांजिस्टर का शक्ति सीमांक
- D. ट्रांजिस्टर आवरण का रंग

Q16 Part B

The SI unit of temperature is/are _____.

- A. both kelvin and celsius
- B. celsius
- C. kelvin ✓
- D. fahrenheit

Q17 Part B

Which of the following is the correct implementation of the Boolean equation F = (A·B) + (C·D) using only AND and OR gates?

- A. One AND gate and two OR gates
- B. Two OR gates followed by one AND gate
- C. Two AND gates followed by one OR gate ✓
- D. One AND gate followed by one OR gate

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Q18 Part B

What is the purpose of using a transistor in a relay driver circuit?

A. To filter out noise

B. To amplify the input signal

C. To switch on the relay coil ✓

D. To provide high input impedance in ON state

Q19 Part B HINDI

GSM मोबाइल संचार के लिए यूरोप में आमतौर पर किस आवृत्ति बैंड का उपयोग किया जाता है?

A. 900 MHz ✓

B. 800 MHz

C. 3600 MHz

D. 2100 MHz

Q20 Part B

What is the primary disadvantage of using a digital frequency counter in high-frequency measurements?

A. Increased power consumption

B. Inability to measure AC voltages

C. Limited resolution at very high frequencies due to counting limitations ✓

D. High sensitivity to temperature variations

Q21 Part B

In a logic circuit, two inputs A and B are applied to an AND gate, and the output of the AND gate is connected to the input of a NOT gate. If the inputs A and B are both at logic 0, what will be the output of the entire circuit?

A. Undefined

B. 0

C. 1 ✓

D. 2

Q22 Part B

Which of the following types of chisels is used for separating metals after chain drilling?

A. Cross-cut chisel

B. Flat chisel

C. Web chisel ✓

D. Diamond point chisel

Q23 Part B

Find the lateral surface area of a cube with side length 5 cm.

A. 125 cm^2

B. 150 cm^2

C. 200 cm^2

D. 100 cm^2 ✓

Q24 Part B HINDI

रेडार प्रणालियों में, रव व्यतिकरण (noise interference) को कम करके डिटेक्शन रेंज (detection range) में सुधार करने के लिए निम्नलिखित में से कौन-सी विधि मुख्य रूप से उपयोग की जाती है?

A. आयाम मॉडुलन (Amplitude Modulation)

B. आवृत्ति मॉडुलन (Frequency Modulation)

C. काल विभाजन बहुसंकेतन (Time Division Multiplexing)

D. स्पंद संपीडन (Pulse Compression) ✓

Q25 Part B

When passing stationary vehicles, keep a watch on _____ who may come out suddenly from the front of the stationary vehicle. While overtaking, it should be done on the _____ side. Always keep a good _____ between your vehicle and others.

A. cyclists; left; interval

B. vehicles; right; gap

C. drivers; left; space

D. pedestrians; right; distance ✓

Q26 Part B HINDI

किसी विशिष्ट आवृत्ति के लिए RF कॉइल को वाइंडिंग करते समय बहुत अधिक टर्न का उपयोग करने का क्या प्रभाव होता है?

A. Q फैक्टर और बैंडविड्थ में वृद्धि

B. कुंडली और परिपथ के बीच बेहतर मिलान

C. प्रेरकत्व और आवृत्ति अनुक्रिया में कमी

D. प्रेरकत्व में वृद्धि और परिपथ का संभावित विस्वरण ✓

Q27 Part B

What are the two main outputs of a half adder?

A. Sum and Carry ✓

B. Carry and Borrow

C. Sum and Difference

D. Sum and Quotient

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Q28 Part B

Which of the following statements is NOT correct for using scribers?

- A. Scriber points are very sharp, so they are to be handled very carefully.
- B. While scribing lines, the scriber is used like a pencil.
- C. Do not put the scriber in your pocket.
- D. Place a cork on the point when in use to prevent accidents. ✓

Q29 Part B

Which of the following information is necessary to construct a rectangle?

- A. Length of two adjacent sides ✓
- B. Length of one side and the area of the rectangle
- C. Only the length of one side
- D. Only the length of the diagonal

Q30 Part B

Which type of semiconductor has an excess of holes?

- A. p-type semiconductor ✓
- B. n-type semiconductor
- C. Intrinsic semiconductor
- D. Pure conductor

Q31 Part B HINDI

हाइब्रिड टेलीविजन रिसीवर में प्रयुक्त आईसी (IC) _____।

- A. सभी अर्थात ध्वनि आईएफ सीमक-एम्पलीफायर, FM संसूचक और ऑडियो पूर्व-एम्पलीफायर का कार्य करने में सक्षम हैं ✓
- B. केवल FM संसूचक का कार्य करने में सक्षम हैं
- C. केवल ध्वनि आईएफ सीमक-एम्पलीफायर का कार्य करने में सक्षम हैं
- D. केवल ऑडियो पूर्व-एम्पलीफायर का कार्य करने में सक्षम हैं

Q32 Part B

What is the effect of increasing the base current on the collector current in a transistor amplifier?

- A. The collector current increases. ✓
- B. The collector current becomes zero.
- C. The collector current decreases.
- D. The collector current remains constant.

Q33 Part B

What is the advantage of using a differential amplifier in a voltage amplifier circuit?

- A. It decreases the power consumption of the amplifier.
- B. It increases the common-mode rejection ratio (CMRR) of the amplifier. ✓
- C. It increases the gain of the amplifier.
- D. It increases the noise sensitivity of the amplifier.

Q34 Part B HINDI

DTH का उपयोग करने वाले उपभोक्ताओं को सीधे टेलीविजन सेवाओं के लिए लंबी दूरी के प्रसारण हेतु विश्वसनीय और उच्च गुणवत्ता वाले संकेत प्रदान करने के लिए उपयोग की जाने वाली संचार प्रौद्योगिकी की पहचान कीजिए।

- A. उपग्रह संचार ✓
- B. दृष्टि रेखा संचार
- C. रडार संचार
- D. ब्लूटूथ संचार

Q35 Part B

Convert 8.5% into a decimal.

- A. 0.85
- B. 8.5
- C. 0.085 ✓
- D. 85

Q36 Part B

Which of the following statements is INCORRECT about end standard?

- A. It measures the distance between two parallel flat surfaces.
- B. Faces are subject to wear.
- C. It is slower but more accurate.
- D. It is used to measure the distance between two engraved lines. ✓

Q37 Part B HINDI

स्विच, प्लग, सॉकेट और विशेष रूप से हेडफ़ोन के लीड में शॉर्ट और टूटे हुए तारों (shorts and broken wires) को खोजने के लिए _____ बहुत सुविधाजनक है।

- A. सिग्नल अंत: क्षेपित्र (Signal Injector) ✓
- B. समाक्ष केबल (Coaxial cable)
- C. दोलित्र (Oscillator)
- D. CRO

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Q38 Part B HINDI

विद्युत-रोधी परीक्षक सामान्यतः सामग्री की _____ का परीक्षण और मापन करने के लिए _____ वोल्टता का उपयोग करता है।

A. सांद्रता ; अति निम्न

B. प्रतिरोध ; अति उच्च ✓

C. सांद्रता ; अति उच्च

D. प्रतिरोध ; अति निम्न

Q39 Part B

In a series circuit, three resistors of 10 ohms, 20 ohms, and R ohms are connected in series with a 12 V battery. What is the value of resistance R if current flowing in the circuit is 0.2 A?

A. 10 ohms

B. 20 ohms

C. 30 ohms ✓

D. 40 ohms

Q40 Part B

What happens to the conductivity of a semiconductor when it is heated?

A. Conductivity decreases

B. Conductivity becomes zero

C. Conductivity remains constant

D. Conductivity increases ✓

Q41 Part B

Where should the probes be connected when measuring voltage in a circuit?

A. In series with the circuit

B. Across the circuit breaker only

C. In parallel with the circuit ✓

D. Across the fuse only

Q42 Part B

If a potential transformer has a turns ratio of 100 : 1 and the primary voltage is 11 kV, what will be the secondary voltage?

A. 110 V ✓

B. 11 V

C. 1.1 V

D. 1,100 V

Q43 Part B HINDI

निम्नलिखित में से कौन-सा पैरामीटर दोलित्र (oscillator) में क्रिस्टल परीक्षण से संबंधित **नहीं** है?

A. अनुनाद

B. रेनॉल्ड संख्या ✓

C. बैंड चौड़ाई

D. हार्मोनिक आवृत्ति

Q44 Part B

Why is an electrodynamometer-type power factor meter preferred in AC circuits?

A. It can measure both single-phase and three-phase power factors. ✓

B. It does not require voltage connections.

C. It can measure DC power factor accurately.

D. It has a faster response time.

Q45 Part B

What is the primary function of a NOT gate in a digital circuit?

A. To combine multiple input signals

B. To amplify the input signal

C. To invert the input signal ✓

D. To delay the input signal

Q46 Part B

A voltmeter with a resistance of 10,000 ohms is connected across a circuit that has a voltage of 50 V. What is the current flowing through the voltmeter?

A. 2 mA

B. 1 mA

C. 5 mA ✓

D. 4 mA

Q47 Part B

What is the typical temperature range of a mercury-based clinical thermometer?

A. 0°C to 100°C

B. 35°C to 42°C ✓

C. 0°C to 50°C

D. −10°C to 110°C

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Q48 Part B

Which of the following statements about title block is/are true?

Statement 1: The title block is situated in the bottom right-hand corner of the drawing sheet.
Statement 2: The contents of the title block are standardised and cannot be modified to suit individual company needs.

A. Both statements are false
B. Statement 1 is false, but statement 2 is true
C. Statement 1 is true, but statement 2 is false ✓
D. Both statements are true

Q49 Part B

How can a NOT gate be implemented using a 2-input NOR gate?

A. By connecting both inputs of the NOR gate to the same input signal ✓
B. By connecting two NOR gates in parallel
C. It is not possible to create a NOT gate using a NOR gate.
D. By connecting two NOR gates in series

Q50 Part B

Which of the following metals has the lowest melting point?

A. Mercury ✓
B. Iron
C. Lead
D. Gold

Q51 Part B

A voltage amplifier has a gain of 20 and an input resistance of 1 kΩ. If the input signal is 0.1 V, what is the output voltage and the current drawn from the input signal source?

A. Output voltage = 2 V, Input current = 3 mA
B. Output voltage = 2 V, Input current = 1 mA
C. Output voltage = 5 V, Input current = 0.1 mA
D. Output voltage = 2 V, Input current = 0.1 mA ✓

Q52 Part B

Which of the following terms in the 5S concept refers to making a habit of maintaining the established procedures?

A. Shine
B. Set
C. Sort
D. Sustain ✓

Q53 Part B

A 100-mm prick punch with a 7-mm diameter body could have a 2.5-mm diameter point ground to an angle of _____.

A. 90°
B. 30° ✓
C. 120°
D. 45°

Q54 Part B

Which of the following Boolean expressions represents the behaviour of a 3-input AND gate?

A. A + B + C
B. A * B * C ✓
C. (A * B) + C
D. (A + B) * C

Q55 Part B

Which of the following calipers are used for marking lines, parallel to inside and outside edges and for locating the centre of round bars?

A. Spring joint calipers
B. Leg and point calipers ✓
C. Simple calipers
D. Firm joint calipers

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Q56 Part B HINDI

पहचानें कि परीक्षण जिग (test jig) से संबंधित दिए गए कथन सही हैं या नहीं।

कथन:

I. कुछ सेकंड से अधिक समय लेने वाले परीक्षणों के लिए, परीक्षक डिज़ाइन में एक क्लैंप जोड़ने से आपके बोर्ड के परीक्षण के दौरान अन्य काम करने के लिए आपके हाथों को फ्री करके प्रक्रिया में काफी तेजी आ सकती है।

II: परीक्षण जिग में पीज़ो बज़र (piezo buzzer) और LED लाइट का उपयोग किया जा सकता है।

A. केवल कथन II सही है

B. कथन I और II दोनों गलत हैं

C. केवल कथन I सही है

D. कथन I और II दोनों सही हैं ✓

Q57 Part B

What does 'traceability' in calibration mean?

A. The calibration process is linked to an internationally recognised standard ✓

B. The ability to track past measurements

C. The instrument's accuracy depends on user experience

D. The ability to repeat measurements consistently

Q58 Part B

What is the purpose of negative feedback in a voltage amplifier?

A. To increase the gain of the amplifier

B. To increase the noise sensitivity of the amplifier

C. To decrease the gain of the amplifier ✓

D. To decrease the bandwidth of the amplifier

Q59 Part B

What happens when both the Set (S) and Reset (R) inputs of an RS Flip-Flop are 0?

A. The output remains unchanged. ✓

B. The output is reset to 0.

C. The flip-flop is in an invalid state.

D. The output is set to 1.

Q60 Part B

Which of the following 'V' blocks will have one 'V' groove and two grooves (slots) on either side for clamping in two positions?

A. Double level single groove 'V' block

B. Matched pair 'V' block

C. Single level double groove 'V' block ✓

D. Single level single groove 'V' block

Q61 Part B

What precaution should be taken when measuring resistance in a circuit with capacitors?

A. Reverse the test leads multiple times.

B. Use the highest resistance range.

C. Measure resistance in AC mode.

D. Discharge the capacitors before testing. ✓

Q62 Part B

Which of the following is the primary reason why copper is widely used as a conductor in electrical wiring?

A. Copper has low resistance and high conductivity. ✓

B. Copper has a low melting point.

C. Copper is abundant and inexpensive.

D. Copper has high resistance to electricity.

Q63 Part B

What is the SI unit of 'volume'?

A. Litres

B. Cubic centimetre

C. Cubic metre ✓

D. Millilitres

Q64 Part B

If the length of a resistor is doubled, what happens to its resistance, assuming all other factors remain constant?

A. The resistance is doubled. ✓

B. The resistance remains the same.

C. The resistance is halved.

D. The resistance quadruples.

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Q65 Part B

When creating 10 mm single-stroke capital letters in vertical style, what does the 10 mm distance between horizontal parallel lines represent?

A. Letter width

B. Letter height ✓

C. Stroke thickness

D. Interline spacing

Q66 Part B

Which of the following configurations is commonly used in Darlington amplifier circuits due to its high current gain and low input impedance?

A. Common Emitter with a Common Base stage (CE-CB) ✓

B. Common Base (CB)

C. Common Collector (CC)

D. Common Emitter (CE)

Q67 Part B

An AND gate is used in a digital circuit to enable a certain function. Under what condition will the function be enabled?

A. When all the inputs are low

B. When any one of the inputs is high

C. When all the inputs are high ✓

D. When any one of the inputs is low

Q68 Part B

Which type of line is used to represent hidden edges or surfaces in a technical drawing, as per BIS SP 46-2003?

A. Continuous thin line

B. Continuous thick line

C. Dashed thin line ✓

D. Chain thin line

Q69 Part B

For your safety at work, which of the following should be ensured?
1. All the required protective clothing and equipment are used.
2. Training and instruction necessary for performing tasks safely have been received.

A. Only statement 1

B. Neither statement 1 nor 2

C. Only statement 2

D. Both statements 1 and 2 ✓

Q70 Part B

Which of the following types of errors can be minimised by proper instrument calibration?

A. Random error

B. Gross error

C. Systematic error ✓

D. Observational error

Q71 Part B

The wave set of hacksaw teeth set has a pitch of _____.

A. 2.0 mm

B. 0.5 mm

C. 0.8 mm ✓

D. 1.0 mm

Q72 Part B

What is the significance of the cut-off region in the output characteristic of a transistor?

A. It indicates the region where the transistor is fully turned off. ✓

B. It indicates the minimum collector-emitter voltage.

C. It indicates the maximum collector current.

D. It indicates the region where the transistor is fully turned on.

Q73 Part B

What is the minimum age for employment in factories or mines or other hazardous employment, according to Article 24 of the Indian Constitution?

A. 14 years ✓

B. 12 years

C. 16 years

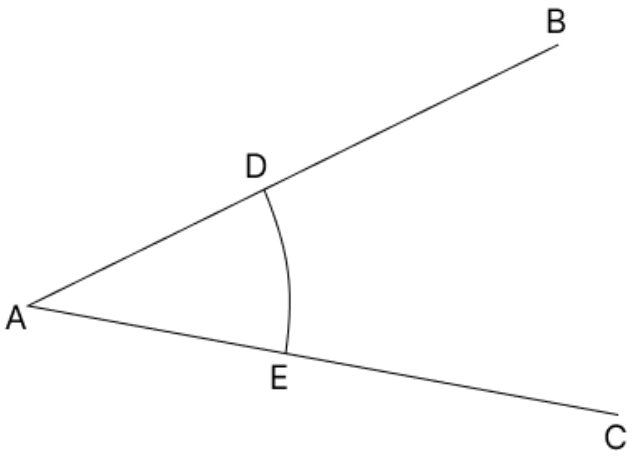
D. 18 years

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Q74 Part B

In the process of bisecting angle BAC in the given figure, why do we draw arcs from points D and E?



A. To find midpoint AB

B. To mark equal lengths

C. To intersect line AC

D. To intersect above A ✓

Q75 Part B

Which logic gate configuration can be used to implement the Boolean function $F = \overline{[A.(B+C)]}$?

A. NOT gate, followed by one AND gate and one OR gate

B. One AND gate, followed by a NOT gate

C. One AND gate, followed by a NOT gate and one OR gate

D. One OR gate, followed by one AND gate and one NOT gate ✓

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Q1 Part B

The wave set of hacksaw teeth set has a pitch of _____.

A. 2.0 mm

B. 0.5 mm

C. 0.8 mm ✓

D. 1.0 mm

Q2 Part B

Which DC motor is preferred in steel rolling mills and elevators?

A. Permanent Magnet DC Motor

B. DC Series Motor

C. Cumulative Compound Motor ✓

D. DC Shunt Motor

Q3 Part B

Which of the following colours is commonly used for caution signs?

A. Blue

B. Yellow ✓

C. Red

D. Green

Q4 Part B

Transformer is a _____.

A. moving device

B. static device ✓

C. synchronous motor as a rotating transformer

D. rotating device

Q5 Part B

Which of the following is the most common application of an Earth Leakage Circuit Breaker (ELCB)?

A. Preventing electrical fires in buildings ✓

B. Protecting high-voltage transmission lines

C. Detecting voltage fluctuations in the system

D. Protecting electrical appliances from overload

Q6 Part B

When should the measurement of electrode resistance be conducted during the installation of an earthing system?

A. After backfilling the earth electrode

B. At the time of initial design

C. Only when the earthing system shows signs of malfunction

D. Before backfilling the earth electrode ✓

Q7 Part B

When creating 10 mm single-stroke capital letters in vertical style, what does the 10 mm distance between horizontal parallel lines represent?

A. Letter width

B. Letter height ✓

C. Stroke thickness

D. Interline spacing

Q8 Part B

Which of the following statements is INCORRECT about end standard?

A. It measures the distance between two parallel flat surfaces.

B. Faces are subject to wear.

C. It is slower but more accurate.

D. It is used to measure the distance between two engraved lines. ✓

Q9 Part B

What is the main purpose of the field winding in a DC generator?

A. To conduct load current

B. To produce the required magnetic field ✓

C. To reduce armature reaction

D. To convert AC to DC

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Q10 Part B

The insulation resistance of any wiring installation should NOT be less than _____ for operating voltage 1000 volt.

- A. 100 ohm
- B. 1 mega ohm ✓
- C. 1 kilo ohm
- D. 10 ohm

Q11 Part B

What should be done if a DC motor overheats during normal operation?

- A. Increase the motor speed
- B. Disconnect the field winding
- C. Reduce the load and check ventilation ✓
- D. Increase brush pressure

Q12 Part B

A voltmeter with a resistance of 10,000 ohms is connected across a circuit that has a voltage of 50 V. What is the current flowing through the voltmeter?

- A. 2 mA
- B. 1 mA
- C. 5 mA ✓
- D. 4 mA

Q13 Part B

Increasing which of the following will decrease the inductance of a solenoid?

- A. Core permeability
- B. Length of the coil ✓
- C. Cross-sectional area
- D. Number of turns

Q14 Part B

Which type of line is used to represent hidden edges or surfaces in a technical drawing, as per BIS SP 46-2003?

- A. Continuous thin line
- B. Continuous thick line
- C. Dashed thin line ✓
- D. Chain thin line

Q15 Part B

When passing stationary vehicles, keep a watch on _____ who may come out suddenly from the front of the stationary vehicle. While overtaking, it should be done on the _____ side. Always keep a good _____ between your vehicle and others.

- A. cyclists; left; interval
- B. vehicles; right; gap
- C. drivers; left; space
- D. pedestrians; right; distance ✓

Q16 Part B

A layer insulation cutter is widely utilised in AC motor winding to:

- A. sever the insulation material between the wire layers ✓
- B. insert the coil into the stator slots
- C. shorten the surplus wire post-winding
- D. measure the resistance of each coil winding

Q17 Part B

A transformer having a voltage ratio of 1000/100 V takes a current of 0.8 A from the primary current at a power factor of 0.6 under open circuit condition. Calculate the magnetising current of the transformer.

- A. 0.64 A ✓
- B. 0.48 A
- C. 1 A
- D. 0.36 A

Q18 Part B

Convert 8.5% into a decimal.

- A. 0.85
- B. 8.5
- C. 0.085 ✓
- D. 85

Q19 Part B

Which of the following switch types is required along with an intermediate switch to control a lamp from three or more positions?

- A. Two-way switches ✓
- B. One-way switches
- C. Dimmer switches
- D. Push-button switches

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Q20 Part B

A 100-mm prick punch with a 7-mm diameter body could have a 2.5-mm diameter point ground to an angle of _____.

A. 90°

B. 30° ✓

C. 120°

D. 45°

Q21 Part B

What is the typical temperature range of a mercury-based clinical thermometer?

A. 0°C to 100°C

B. 35°C to 42°C ✓

C. 0°C to 50°C

D. −10°C to 110°C

Q22 Part B

In a series circuit, three resistors of 10 ohms, 20 ohms, and R ohms are connected in series with a 12 V battery. What is the value of resistance R if current flowing in the circuit is 0.2 A?

A. 10 ohms

B. 20 ohms

C. 30 ohms ✓

D. 40 ohms

Q23 Part B

If the supply frequency (f) of a transformer doubles, then the frequency on the transformer's secondary output voltage side will also:

A. become three times

B. become half

C. become four times

D. become double ✓

Q24 Part B

Which of the following is the primary reason why copper is widely used as a conductor in electrical wiring?

A. Copper has low resistance and high conductivity. ✓

B. Copper has a low melting point.

C. Copper is abundant and inexpensive.

D. Copper has high resistance to electricity.

Q25 Part B

Which of the following types of chisels is used for separating metals after chain drilling?

A. Cross-cut chisel

B. Flat chisel

C. Web chisel ✓

D. Diamond point chisel

Q26 Part B

According to Faraday's law, the magnitude of induced EMF in a DC generator depends on the _____.

A. length of the conductor only

B. resistance of the conductor

C. material of the conductor

D. rate of change of magnetic flux ✓

Q27 Part B

Which of the following 'V' blocks will have one 'V' groove and two grooves (slots) on either side for clamping in two positions?

A. Double level single groove 'V' block

B. Matched pair 'V' block

C. Single level double groove 'V' block ✓

D. Single level single groove 'V' block

Q28 Part B

The SI unit of temperature is/are ____.

A. both kelvin and celsius

B. celsius

C. kelvin ✓

D. fahrenheit

Q29 Part B

In a logic circuit, two inputs A and B are applied to an AND gate, and the output of the AND gate is connected to the input of a NOT gate. If the inputs A and B are both at logic 0, what will be the output of the entire circuit?

A. Undefined

B. 0

C. 1 ✓

D. 2

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Q30 Part B

Which of the following tests is most important for confirming the windings' insulation resistance, following a rewinding of an AC motor before motor starting?

A. No-load test

B. Insulation resistance test ✓

C. Speed test

D. Earth fault test

Q31 Part B

What should be checked after calculating the cross-section of the coil?

A. Electrical resistance

B. Magnetic flux

C. Wire temperature

D. Available space in the coil slot ✓

Q32 Part B

According to IEEE 80, the resistance of the ground system should be _____.

A. equal to the system's total load current

B. moderate to prevent excessive current flow

C. as high as possible to ensure efficient operation

D. low enough to allow fault currents to safely dissipate into the earth ✓

Q33 Part B

Which of the following statements about earth resistance in context of earthing is true?

A. Earth resistance does not affect electrical safety.

B. Higher earth resistance increases the effectiveness of grounding.

C. Lower earth resistance improves the performance of an electrical system. ✓

D. Earth resistance only affects power transmission efficiency.

Q34 Part B

For a DC motor installation with explosion-proof certification, which standard must be followed for enclosure and wiring compliance?

A. ANSI C84.1

B. ISO 9001

C. IEC 60034-1 ✓

D. NFPA 70

Q35 Part B

Data centre transformers commonly utilise laminated core materials, typically made of:

A. Paper

B. Amorphous ✓

C. Plastic

D. Rubber

Q36 Part B

Which parameters of two identical transformers are determined using Back-to-back test?

A. Friction loss and resistance

B. Mechanical loss and inductance

C. Efficiency and voltage regulation ✓

D. Friction loss and inductance

Q37 Part B

What is the minimum age for employment in factories or mines or other hazardous employment, according to Article 24 of the Indian Constitution?

A. 14 years ✓

B. 12 years

C. 16 years

D. 18 years

Q38 Part B

Which component in a thermal relay is responsible for detecting temperature changes?

A. Bimetallic element ✓

B. Transformer

C. Electromagnet

D. Resistor

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Q39 Part B

Match the following types of lines with their correct descriptions according to their orientation and characteristics.

Description	Type of Line
A. A line that is neither parallel to a horizontal plane nor perpendicular to it.	1. Horizontal line
B. A line that is perpendicular to horizontal lines.	2. Vertical line
C. A line that changes its direction continuously.	3. Inclined line
D. A line that is parallel to a horizontal plane.	4. Curved line

A. A - 1, B - 2, C - 3, D - 4

B. A - 2, B - 3, C - 4, D - 1

C. A - 3, B - 2, C - 4, D - 1 ✓

D. A - 2, B - 1, C - 4, D - 3

Q40 Part B

What happens to the speed of a DC series motor when load decreases significantly?

A. Speed remains constant

B. Speed increases dangerously high ✓

C. Speed decreases slightly

D. Speed reduces to zero

Q41 Part B

Toroidal inductors are shaped like a:

A. cone

B. ring ✓

C. cube

D. cylinder

Q42 Part B

The dry-type transformer uses:

A. air as a coolant ✓

B. moisture as a coolant

C. oil as a coolant

D. water as a coolant

Q43 Part B

In a long-shunt compound DC generator, the shunt field winding is connected _____.

A. in series with the armature

B. in parallel with both armature and series field winding ✓

C. between the series field and load

D. only to the load

Q44 Part B

Find the lateral surface area of a cube with side length 5 cm.

A. 125 cm^2

B. 150 cm^2

C. 200 cm^2

D. 100 cm^2 ✓

Q45 Part B

Which of the following calipers are used for marking lines, parallel to inside and outside edges and for locating the centre of round bars?

A. Spring joint calipers

B. Leg and point calipers ✓

C. Simple calipers

D. Firm joint calipers

Q46 Part B

If the length of a resistor is doubled, what happens to its resistance, assuming all other factors remain constant?

A. The resistance is doubled. ✓

B. The resistance remains the same.

C. The resistance is halved.

D. The resistance quadruples.

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Q47 Part B

Which of the following metals has the lowest melting point?

- A. Mercury ✓
- B. Iron
- C. Lead
- D. Gold

Q48 Part B

What does the term 'Ferreed' in Ferreed relay stand for?

- A. A type of current sensing relay
- B. A combination of ferrite and reed switch ✓
- C. A voltage stabiliser component
- D. A thermally operated relay

Q49 Part B

Which component(s) is/are required to obtain a proportional DC voltage for a voltage sensing relay?

- A. Transformer and rectifier ✓
- B. Motor and generator
- C. Resistor and inductor
- D. Capacitor and diode

Q50 Part B

Which of the following statements is NOT correct for using scribers?

- A. Scriber points are very sharp, so they are to be handled very carefully.
- B. While scribing lines, the scriber is used like a pencil.
- C. Do not put the scriber in your pocket.
- D. Place a cork on the point when in use to prevent accidents. ✓

Q51 Part B

For which purpose is mineral oil provided in an oil-filled transformer?

- A. Prevent moisture
- B. Insulation purpose only
- C. Both cooling and insulation purpose ✓
- D. Cooling purpose only

Q52 Part B

In step-up transformer:

- A. primary turns are more than secondary turns
- B. primary turns are less than secondary turns ✓
- C. primary induced emf is more than secondary induced emf
- D. primary turns are equal to secondary turns

Q53 Part B

How does an Earth Leakage Circuit Breaker (ELCB) work in an electrical system?

- A. It compares the incoming and outgoing currents to detect imbalance, indicating leakage to earth. ✓
- B. It regulates the current flowing to the earth electrode.
- C. It detects high current flow and trips to prevent overloads.
- D. It monitors the voltage drop in the system.

Q54 Part B

Which class of insulation has the lowest temperature rating?

- A. Class E
- B. Class B
- C. Class Y ✓
- D. Class A

Q55 Part B

In an ideal transformer, the primary and secondary windings resistance is:

- A. 1000 ohm
- B. 0 ohm ✓
- C. 100 ohm
- D. 1000000 ohm

Q56 Part B

What is NOT an advantage of using plate earthing over other types of earthing?

- A. More suitable for high-voltage systems ✓
- B. Low installation cost
- C. Requires less maintenance
- D. Provides low resistance in high-resistivity soil

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Q57 Part B

What is the primary purpose of conducting a high-voltage withstand test on an AC motor after rewinding?

- A. To measure the power factor
- B. To check the motor's thermal efficiency
- C. To evaluate the balance of the motor's phases
- D. To ensure the motor's insulation can withstand the rated voltage and prevent electrical breakdown ✓

Q58 Part B

In a four-band resistor, what does the third band represent?

- A. Multiplier ✓
- B. First significant digit
- C. Tolerance
- D. Second significant digit

Q59 Part B

If inductance (L) is doubled, what happens to inductive reactance?

- A. It remains the same.
- B. It doubles. ✓
- C. It becomes zero.
- D. It becomes half.

Q60 Part B

Which of the following information is necessary to construct a rectangle?

- A. Length of two adjacent sides ✓
- B. Length of one side and the area of the rectangle
- C. Only the length of one side
- D. Only the length of the diagonal

Q61 Part B

If 50 W of power is applied to the primary of an ideal transformer with a turns ratio of 10, the power delivered to the secondary load is:

- A. 500 W
- B. 100 W
- C. 50 W ✓
- D. 5 W

Q62 Part B

What is the SI unit of 'volume'?

- A. Litres
- B. Cubic centimetre
- C. Cubic metre ✓
- D. Millilitres

Q63 Part B

Which of the following statements about title block is/are true?

Statement 1: The title block is situated in the bottom right-hand corner of the drawing sheet.
Statement 2: The contents of the title block are standardised and cannot be modified to suit individual company needs.

- A. Both statements are false
- B. Statement 1 is false, but statement 2 is true
- C. Statement 1 is true, but statement 2 is false ✓
- D. Both statements are true

Q64 Part B

In the procedure of dismantling the burned winding wire from an AC motor stator, start with:

- A. cutting the power supply to the motor and taking the rotor off the stator ✓
- B. removing the burned wire from the stator slots using a winding extractor
- C. removing the stator slot winding
- D. heating the stator core to soften the insulating, before cutting the winding wire

Q65 Part B

Short circuit test is carried out in transformers to determine which of the following?

- A. Hysteresis loss
- B. Eddy current loss
- C. Equivalent impedance of the transformer ✓
- D. Iron loss

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Q66 Part B

Apart from lamp holders, where else is a cord grip or underwriter's knot used?

- **A.** Pull switches ✓
- **B.** Earthing systems
- **C.** High-voltage substations
- **D.** Circuit breaker panels

Q67 Part B

A typical sign that the stator winding of an AC motor might need rewinding is:

- **A.** reduced motor efficiency under load ✓
- **B.** appropriate current consumption under load
- **C.** excessive vibration
- **D.** elevated insulating resistance

Q68 Part B

For your safety at work, which of the following should be ensured?
1. All the required protective clothing and equipment are used.
2. Training and instruction necessary for performing tasks safely have been received.

- **A.** Only statement 1
- **B.** Neither statement 1 nor 2
- **C.** Only statement 2
- **D.** Both statements 1 and 2 ✓

Q69 Part B

If a DC motor fails to start, what should be checked first?

- **A.** Motor shaft alignment
- **B.** Field winding resistance
- **C.** Commutator polishing
- **D.** Power supply connections and voltage ✓

Q70 Part B

Which of the following terms in the 5S concept refers to making a habit of maintaining the established procedures?

- **A.** Shine
- **B.** Set
- **C.** Sort
- **D.** Sustain ✓

Q71 Part B

Who is authorised to conduct road tests on workshop vehicles?

- **A.** Only trained and certified personnel ✓
- **B.** Visitors to the workshop
- **C.** Any employee
- **D.** The company accountant

Q72 Part B

What may happen if a flexible cable in a pendant lamp is not secured with a cord grip or underwriter's knot?

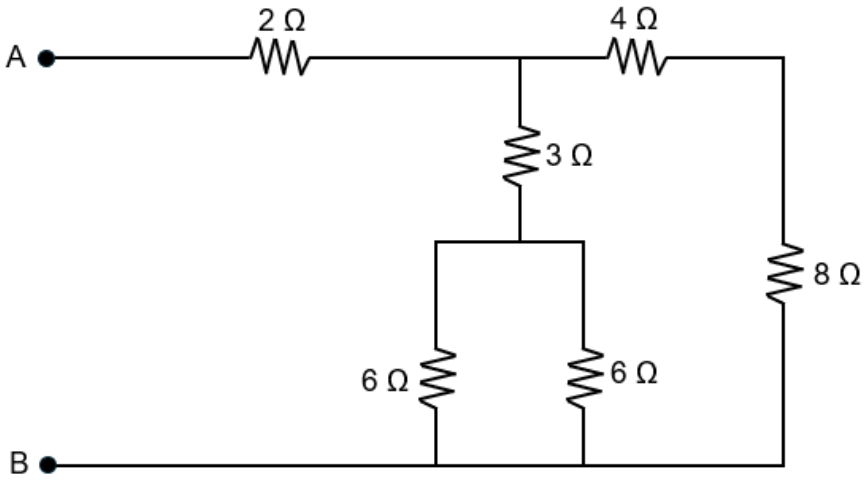
- **A.** The lamp will consume more power.
- **B.** The lamp will emit dim light.
- **C.** The cable connection may come out, leading to a shock hazard. ✓
- **D.** The ceiling will overheat.

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Q73 Part B

After solving the series and parallel combinations, what is the final equivalent resistance between A and B?



A. 6 Ω ✓

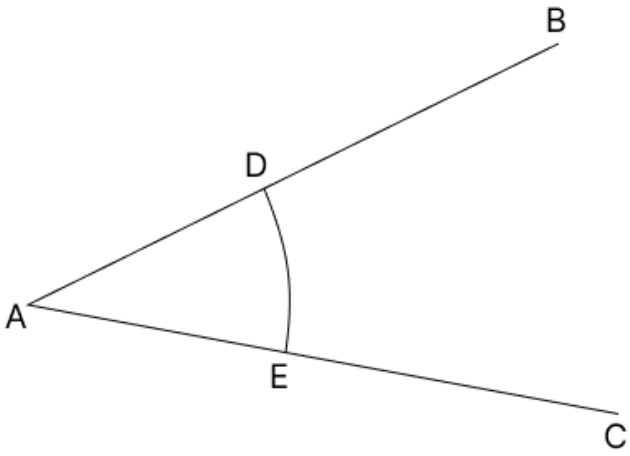
B. 4 Ω

C. 8 Ω

D. 10 Ω

Q74 Part B

In the process of bisecting angle BAC in the given figure, why do we draw arcs from points D and E?



A. To find midpoint AB

B. To mark equal lengths

C. To intersect line AC

D. To intersect above A ✓

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Q75 Part B

What is the formula for the total capacitance of capacitors connected in parallel?

A. $C_{Total} = C_1 + C_2 + C_3 + \ldots$

B. $\frac{1}{C_{TOTAL}} = \frac{1}{C_1} + \frac{1}{C_2} + \frac{1}{C_3} + \ldots$

C. $C_{TOTAL} = \frac{(C_1 * C_2)}{(C_1 + C_2)}$

D. $C_{TOTAL} = (C_1 + C_2)^2$

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Part B — 60 Questions • Answer Key

Q1 Part B
Which of the following is a fundamental unit?

- A. newton
- B. metre ✓
- C. pascal
- D. watt

Q2 Part B
Which of the following maintenance practices helps prevent overheating in a DC motor?

- A. Regular lubrication of bearings ✓
- B. Reducing field current
- C. Disconnecting the load frequently
- D. Increasing armature resistance

Q3 Part B
Select the correct statement regarding grounding and earthing in electrical system.

- A. Grounding is used to protect humans from electric shocks, while earthing is used to reduce power consumption.
- B. The grounding and earthing are related to single phase system.
- C. Grounding and earthing are the same process with no distinction.
- D. Grounding involves connecting the earth to a system's neutral or other conductors, while earthing connects the system's frame or body to the earth. ✓

Q4 Part B
What is the maximum allowable distance of the screw from the end point of a joint during installation of PVC channel?

- A. 15 cm ✓
- B. 10 cm
- C. 5 cm
- D. 20 cm

Q5 Part B
A capacitor with a capacitance of 10 μF is connected in series with a 1 MΩ resistor. How much time will it take for the capacitor to reach 90% of its final charge?

- A. 10.5 seconds
- B. 50.2 seconds
- C. 35.7 seconds
- D. 23.03 seconds ✓

Q6 Part B
Which type of DC generator has its field winding connected in parallel with the armature?

- A. Series DC generator
- B. Shunt DC generator ✓
- C. Separately excited DC generator
- D. Compound DC generator

Q7 Part B
Which power loss is assessed by open-circuit test on transformer?

- A. Winding loss
- B. Copper loss
- C. Core loss ✓
- D. Friction loss

Q8 Part B
Which of the following IEEE standards focuses on the grounding of electrical systems and equipment?

- A. IEEE 80 ✓
- B. IEEE 519
- C. IEEE 1547
- D. IEEE 1100

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Q9 Part B

Which of the following uses of wire gauge is INCORRECT?

- A. It measures the diameter of a wire.
- B. It does not help determine how much current a wire can carry. ✓
- C. Using the wrong wire gauge can damage appliances and electronic devices.
- D. It is used in electrical installations, welding and other applications.

Q10 Part B

Which of the following losses remains variable during normal operation of transformer?

- A. Copper loss ✓
- B. Hysteresis loss
- C. Eddy current loss
- D. Stray loss

Q11 Part B

Which type of material is used to protect the transformer winding from the core?

- A. Steel
- B. Mica ✓
- C. Water
- D. Iron

Q12 Part B

What does inductance (L) oppose in a circuit?

- A. Change in voltage
- B. Change in current magnitude ✓
- C. Change in frequency
- D. Change in resistance

Q13 Part B

What is waste?

- A. Natural resources for living organisms
- B. Valuable substances for agriculture
- C. Useful materials for industries
- D. Unwanted or unusable materials ✓

Q14 Part B

Which of the following punch marks is used for the correct location and seating of the divider point?

- A. Centre punch marks of 30°
- B. Centre punch marks of 60°
- C. Prick punch marks of 120°
- D. Prick punch marks of 30° ✓

Q15 Part B

A device operates at 240 V and consumes 480 W of power. What is the current flowing through the device?

- A. 2 A ✓
- B. 1 A
- C. 1.5 A
- D. 2.5 A

Q16 Part B

Which of the following processes is used to manufacture thick film resistors?

- A. Pasting metal compound and powdered glass on a ceramic base ✓
- B. Embedding metal wire in ceramic
- C. Spraying metal powder on a ceramic base
- D. Coating a metal rod with ceramic

Q17 Part B

What force (effort) will be required to push a load, initially at rest, of mass 500 g, so that at a distance of 20 m, its final velocity is 20 m/sec [Assume that there is no friction and 'g' = 10 m/s^2].

- A. 5 J
- B. 10 N
- C. 5 N ✓
- D. 10 J

Q18 Part B

Pencils are rated in engineering drawings based on the _____.

- A. hardness or softness of the lead ✓
- B. colour of the lead
- C. durability of the lead
- D. shape of the lead

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Q19 Part B

Which of the following statements is/are correct?
Statement I - The annealing process uses heat to reduce the hardness and increase the ductility and toughness of various steels, cast iron, and alloys.
Statement II - Quenching is a rapid cooling process that alters specific properties of materials by manipulating the cooling rate.

- A. Statement (I) is correct but Statement (II) is incorrect.
- B. Statement (I) and (II) both are correct. ✓
- C. Statement (I) is incorrect but Statement (II) is correct.
- D. Statement (I) and (II) both are incorrect.

Q20 Part B

What should be the minimum thickness of the MS clips used for fixing PVC channels under steel joints?

- A. 1.2 mm ✓
- B. 1.7 mm
- C. 0.5 mm
- D. 2.2 mm

Q21 Part B

What is the main difference between grounding and earthing in a three-phase system?

- A. Grounding provides a return path for current, while earthing provides a safe path for fault current. ✓
- B. Grounding and earthing are used interchangeably, with no major difference.
- C. Grounding is used to protect electrical appliances from surge voltages, while earthing is used to prevent system overloads.
- D. Grounding connects only the body of the electrical equipment to the earth, whereas earthing is associated with the neutral conductor.

Q22 Part B

Which of the following parts of a hammer-head is used for shaping and forming work like riveting and bending?

- A. Face
- B. Eyehole
- C. Pein ✓
- D. Cheek

Q23 Part B

In engineering drawing (lettering and numbering), a single stroke means that the _____.

- A. thickness of the line of the letter or number is obtained in one stroke of the pencil ✓
- B. thickness of the line of the letter or number is obtained in three strokes of the pencil
- C. thickness of the line of the letter or number is obtained in no strokes of the pencil
- D. thickness of the line of the letter or number is obtained in two strokes of the pencil

Q24 Part B

What is the blade length of the T1 'T' square, as per IS:1360-1989?

- A. 500 mm
- B. 1500 mm
- C. 700 mm
- D. 1000 mm ✓

Q25 Part B

Which of the following types of wooden mallets are used for hollowing panel beatings?

- A. Standard wooden mallets
- B. End-faked mallets
- C. Side-faked mallets
- D. Bossing mallets ✓

Q26 Part B

Which of the following is an example of a p-type semiconductor?

- A. Silicon doped with phosphorus
- B. Silicon doped with arsenic
- C. Silicon doped with boron ✓
- D. Germanium doped with phosphorus

Q27 Part B

The EMF per turn of a single phase 10 kVA, 2200/220 V, 50 Hz transformer is 10 V. Calculate the number of primary and secondary turns, respectively.

- A. 110 and 10
- B. 220 and 22 ✓
- C. 10 and 110
- D. 22 and 220

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Q28 Part B

Which of the following statements is correct about a protractor?

Statements:
1. A protractor can be used to measure angles from both sides.
2. A protractor is typically made of a rigid metal material.

- A. Neither statement is true
- B. Only statement 2 is true
- C. Only statement 1 is true ✓
- D. Both statements are true

Q29 Part B

A resistor has these colour bands: Brown, Black, Red and Gold. What is its resistance value?

- A. 10 Ω ± 5%
- B. 100 Ω ± 5%
- C. 10,000 Ω (10 kΩ) ± 5%
- D. 1,000 Ω (1 kΩ) ± 5% ✓

Q30 Part B

Which of the following punches is used to make deeper witness marks on scribed lines and make it easier for the drill to start correctly?

- A. Solid punch
- B. Centre punch ✓
- C. Pin punch
- D. Prick punch

Q31 Part B

Which of the following methods is used to reduce earth resistance in an earthing system?

- A. Increasing the depth of the ground electrode ✓
- B. Using larger conductors for grounding
- C. Reducing the distance between the earth and the neutral
- D. Using insulated grounding cables

Q32 Part B

Which of the following statements correctly describes the placement and purpose of orientation marks on a drawing sheet?

1. Orientation marks are placed at two opposite corners of the drawing sheet to indicate the correct orientation on the drawing board.
2. Orientation marks consist of arrow heads placed across the frame, with one at the shorter side and one at the longer side, coinciding with the centering marks.
3. One of the orientation marks always points towards the draughtsman, indicating the direction in which the drawing sheet should be placed.
4. Orientation marks are used to mark the midpoint of each side of the drawing sheet for accurate centering.

- A. 1, 2, and 3 only
- B. 1 and 4 only
- C. 2 and 3 only ✓
- D. 1, 2, and 4 only

Q33 Part B

What is the primary principle behind the generation of electrical energy in a piezoelectric device?

- A. Conversion of thermal energy into electrical energy
- B. Conversion of chemical energy into electrical energy
- C. Conversion of light energy into electrical energy
- D. Conversion of mechanical stress into electrical energy ✓

Q34 Part B

What is the recommended action if a DC motor produces excessive sparking at the brushes?

- A. Reduce the motor speed
- B. Increase the supply voltage
- C. Replace worn-out brushes and clean the commutator ✓
- D. Add resistance to the armature circuit

Q35 Part B

Which of the following is the key difference between a fuse and a circuit breaker?

- A. A fuse can be reset after tripping, while a circuit breaker must be replaced.
- B. A fuse is used for high-voltage circuits, while a circuit breaker is used for low-voltage circuits.
- C. A fuse is a mechanical device, while a circuit breaker is an electronic device.
- D. A fuse is a one-time-use device, while a circuit breaker can be reset and reused. ✓

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Q36 Part B

If the coefficient of linear expansion of a material is 2×10^{-5} °C^{-1}, what does it mean?

- A. The material expands by 2×10^{-5} times its original area per degree Celsius
- B. The material expands by 2×10^{-5} times its original volume per degree Celsius
- C. The material expands by 2×10^{-5} times its original length per degree Celsius ✓
- D. The material always increases by 2×10^{-5} kg when temperature is increased by 1°C

Q37 Part B

What will be the eddy current loss if the supply frequency of a transformer becomes double?

- A. Four times ✓
- B. No change
- C. Double
- D. Half

Q38 Part B

What is the most likely cause if a DC motor runs in the wrong direction?

- A. Faulty bearings
- B. Incorrect field or armature wiring connections ✓
- C. High armature resistance
- D. Worn-out brushes

Q39 Part B

What is the chemical effect that occurs in a battery during the charging process of a Lead Acid battery?

- A. Lead reacts with sulphur to form lead sulphate
- B. Water dissociation into hydrogen and oxygen
- C. Lead sulphate decomposes into lead and sulphuric acid ✓
- D. Sulphuric acid dissociates into hydrogen and sulphate ions

Q40 Part B

Which of the following is a key advantage of using Thyristors in power control applications?

- A. High frequency switching ✓
- B. High efficiency and low power loss
- C. Small size and low cost
- D. Low voltage handling capabilities

Q41 Part B

If a machine has an efficiency of 80%, it means:

- A. the machine produces more output than input
- B. the machine has a velocity ratio and mechanical advantage both equal to 80
- C. the machine does not have any loss in input energy
- D. the machine loses 20% of the input ✓

Q42 Part B

In parallel grouping of capacitors, what happens to the total capacitance?

- A. It remains the same.
- B. It increases. ✓
- C. It becomes zero.
- D. It decreases.

Q43 Part B

Match the correct length and breadth of the Trimmed sizes of sheets.

Designation	Trimmed size
A. A0	P. 297 × 420
B. A1	Q. 420× 594
C. A2	R. 594 × 841
D. A3	S. 841 × 1189

- A. A - R, B - S, C - Q, D - P
- B. A - P, B - R, C - Q, D - S
- C. A - S, B - R, C - P, D - Q
- D. A - S, B - R, C - Q, D - P ✓

Q44 Part B

What determines the appropriate current rating of a fuse in a circuit?

- A. The smallest cable rating in the circuit ✓
- B. The number of electrical devices connected
- C. The length of the circuit wires
- D. The voltage supplied to the circuit

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Q45 Part B

Which of the following types of wooden mallets are used for general purpose work such as flattening and bending?

- A. Bossing mallets
- B. Side-faked mallets
- C. Standard wooden mallets ✓
- D. End-faked mallets

Q46 Part B

When did India implement the Hazardous Wastes (Management and Handling) Rules to regulate the disposal and handling of hazardous waste?

- A. 1987
- B. 2000
- C. 1989 ✓
- D. 1982

Q47 Part B

Which type of wiring is used only for temporary installations?

- A. Casing and capping wiring
- B. Conduit wiring
- C. CTS wiring
- D. Cleat wiring ✓

Q48 Part B

A DC generator delivers a load current of 25 A at 200 V. If the generated EMF is 205 V, what is the armature resistance?

- A. 0.2 Ω ✓
- B. 0.4 Ω
- C. 0.3 Ω
- D. 0.1 Ω

Q49 Part B

What is another name for CTS wiring?

- A. Conduit wiring
- B. Batten wiring ✓
- C. Casing and capping wiring
- D. Cleat wiring

Q50 Part B

What happens to inductive reactance, when frequency increases?

- A. It becomes zero.
- B. It increases. ✓
- C. It decreases.
- D. It remains the same.

Q51 Part B

Which of the following instruments is used to measure the resistance of an earthing electrode?

- A. Clamp meter
- B. Tachometer
- C. Earth resistance tester ✓
- D. Power analyser

Q52 Part B

A shunt release in an MCCB is commonly used for:

- A. overcurrent protection
- B. improving power factor
- C. remote tripping of the MCCB ✓
- D. voltage stabilisation

Q53 Part B

Why is it important to follow proper disposal procedures for industrial waste?

- A. To allow waste to decompose anywhere
- B. To reduce the number of trash bins needed
- C. To save time and effort in sorting waste
- D. To comply with environmental regulations and reduce pollution ✓

Q54 Part B

What does an optical pyrometer measure?

- A. The relative density of liquids
- B. The temperature of the surface ✓
- C. The volume of liquids
- D. The pressure of gases

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Q55 Part B

When drawing a curved line of a specific length in an engineering drawing, which tool is most appropriate for ensuring accuracy?

- A. Protractor
- B. Straightedge
- C. French Curve ✓
- D. Compass

Q56 Part B

In a single-phase transformer, which instrument is used to check continuity between the primary and secondary windings when they are not energised?

- A. Use a multimeter set to ohms ✓
- B. Use a multimeter set to voltage
- C. Use a multimeter set to current
- D. Use an energy meter

Q57 Part B

In engineering drawing, what is defined as the path of a moving point with no thickness?

- A. Angle
- B. Curve
- C. Point
- D. Line ✓

Q58 Part B

What is the primary purpose of implementing Lockout/Tagout (LOTO) procedures when working on a DC motor?

- A. To improve motor cooling
- B. To prevent accidental startup during maintenance ✓
- C. To measure motor speed
- D. To increase motor efficiency

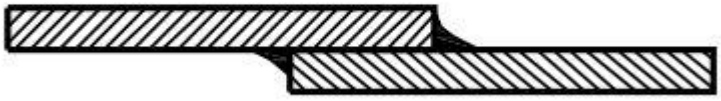
Q59 Part B

What is the significance of the term 'equipotential bonding' in the context of IEEE regulations for earthing?

- A. It ensures that electrical systems operate at different voltage levels.
- B. It is a method to increase the resistance of the grounding system.
- C. It refers to the insulation of electrical cables.
- D. It refers to ensuring that all metallic parts of electrical systems are connected together to maintain the same electrical potential. ✓

Q60 Part B

Identify the type of brazed joint shown below.



- A. Joggle Lap
- B. Simple Lap ✓
- C. Strapped Lap
- D. Butted Flange

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Part B — 60 Questions • Answer Key

Q1 Part B
Why is a DC compound generator preferred for industrial loads?

A. It has no losses.
B. It is easier to manufacture.
C. It provides better efficiency.
D. It has constant voltage characteristics. ✓

Q2 Part B
Which component in an MCB is responsible for detecting a short circuit?

A. Bimetallic strip
B. Solenoid ✓
C. Arc chute
D. Handle

Q3 Part B
In pipe earthing, what is used to connect the earthing conductor to the pipe?

A. ✓
B.
C.
D.

Q4 Part B
A rectangular floor measuring 10 m × 8 m is to be tiled. If each tile covers 0.25 m^2, how many tiles are needed?

A. 200
B. 300
C. 320 ✓
D. 250

Q5 Part B
The SI unit of 'ultimate stress' is _____.

A. pascal (Pa) ✓
B. newton (N)
C. newton per meter (N/m)
D. joule per square meter (J/m^2)

Q6 Part B
Connection of voltage transformer and current transformer across line are _____, respectively.

A. series and parallel ✓
B. series and series
C. parallel and series
D. parallel and parallel

Q7 Part B
In a logic circuit, three SPST (Single Pole Single Throw) switches are used to implement a logic gate. The switches are connected in series. What is the output of the circuit if all switches are closed?

A. Undefined
B. 1 ✓
C. The output will depend on the type of gate used
D. 0

Q8 Part B
How should the electrode resistance be measured if multiple earthing electrodes are used in parallel?

A. Measure electrode resistance individually and then add it
B. Use a clamp meter to measure the resistance of parallel electrodes
C. Measure electrode resistance individually and then average the values
D. Measure the total resistance of the combined electrodes in parallel ✓

Q9 Part B
Which type of electrolytic capacitor is generally more stable and has better performance in small sizes?

A. Tantalum capacitor
B. Mica capacitor
C. Aluminium capacitor ✓
D. Ceramic capacitor

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Q10 Part B

Read the Assertion (A) and Reason (R) carefully, and select the correct option.

Assertion (A): The earth resistance must be kept as low as possible to ensure that the earthing system is effective during fault conditions.
Reason (R): A low resistance allows fault current to flow easily into the ground, ensuring safety by preventing electrical hazards.

- **A.** Both Assertion (A) and Reason (R) are correct, and the reason correctly explains the assertion. ✓
- **B.** Assertion (A) is incorrect, but Reason (R) is correct.
- **C.** Both Assertion (A) and Reason (R) are correct, but the reason does not correctly explain the assertion.
- **D.** Assertion (A) is correct, but Reason (R) is incorrect.

Q11 Part B

While performing short circuit test on a transformer to determine its parameter, instruments are placed on the:

- **A.** low voltage side, while the high voltage side is short circuit
- **B.** high voltage side, while the low voltage side is short circuit ✓
- **C.** high voltage side, while the low voltage side is open circuit
- **D.** low voltage side, while the high voltage side is open circuit

Q12 Part B

According to Ohm's Law, how is current related to voltage and resistance?

- **A.** It is directly proportional to voltage and inversely proportional to resistance. ✓
- **B.** It has no relation with voltage or resistance.
- **C.** It is directly proportional to voltage and resistance.
- **D.** It is inversely proportional to voltage and resistance.

Q13 Part B

Which option shows the correct answer when 27°C is converted to the kelvin scale?

- **A.** – 300 K
- **B.** 246 K
- **C.** 300 K ✓
- **D.** – 246 K

Q14 Part B

What is the objective of testing an earthing system?

- **A.** To test the current capacity of the earthing system
- **B.** To check the voltage levels
- **C.** To measure the insulation resistance of cables
- **D.** To ensure the system has a low resistance path to the earth ✓

Q15 Part B

Which device is used to protect against electric shocks and fires caused by earth leakage currents?

- **A.** ELCB ✓
- **B.** MCCB
- **C.** MCB
- **D.** ECB

Q16 Part B

In a circuit with a NTC type thermistor and a fixed resistor connected in series connected to a DC power supply, what will happen to the output voltage if there is a rise in temperature?

- **A.** The output voltage will increase. ✓
- **B.** The output voltage will remain constant.
- **C.** The output voltage will fluctuate depending on the resistor value.
- **D.** The output voltage will decrease.

Q17 Part B

Transformer oil should have _____ dielectric strength and _____ viscosity.

- **A.** high; high
- **B.** low; high
- **C.** high; low ✓
- **D.** low; low

Q18 Part B

What are the two types of mica capacitors?

- **A.** Ceramic and film capacitors
- **B.** Electrolytic and paper capacitors
- **C.** Variable and fixed capacitors
- **D.** Stacked foil and silvered mica capacitors ✓

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Q19 Part B

Which of the following actions is a part of the emergency response team's responsibilities during an active emergency?

- A. Preparing reports on emergency incidents
- B. Rescuing persons in immediate danger ✓
- C. Conducting routine safety checks
- D. Scheduling regular evacuation drills

Q20 Part B

Which of the following is a primary difference between a primary and a secondary electrochemical cell?

- A. A secondary cell produces more energy than a primary cell.
- B. A primary cell can be recharged, while a secondary cell cannot be recharged.
- C. A primary cell cannot be recharged, while a secondary cell can be recharged. ✓
- D. There is no difference between primary and secondary cells.

Q21 Part B

What should be the position of the 'OFF' marking on a fireman's switch?

- A. At the top ✓
- B. In the centre
- C. At the bottom
- D. On the side

Q22 Part B

What is the primary reason for the heating effect in a conductor when an electric current passes through it?

- A. The electric field in the conductor causes heat generation.
- B. The movement of electrons causes heat generation. ✓
- C. The conductor absorbs heat from the surrounding environment.
- D. The movement of protons causes heat generation.

Q23 Part B

In the context of earthing system measurement, what does 'Earth resistance' refer to?

- A. The resistance between any two points of the ground with a distance of 1 metre
- B. The resistance between the live wire and the earth
- C. The ability of the ground to resist current flow ✓
- D. The voltage required to activate the earthing system

Q24 Part B

Which of the following types of DC motor is commonly used in electric traction applications such as trains and trams?

- A. Permanent Magnet DC Motor
- B. DC Compound Motor
- C. DC Series Motor ✓
- D. DC Shunt Motor

Q25 Part B

Which of the following is a key electrical safety tip in a workshop?

- A. Operate machines with wet hands
- B. Ignore frayed wires if the device is still working
- C. Use water to clean electrical panels
- D. Ensure electrical equipment is properly grounded ✓

Q26 Part B

Sine bars are used when a high degree of accuracy less than _____ is needed for measuring angles.

- A. 1 degree
- B. 30 degrees
- C. 1 minute ✓
- D. 30 minutes

Q27 Part B

For which of the following calipers, a screw and nut are provided for opening and closing the caliper legs?

- A. Spring joint calipers ✓
- B. Firm joint calipers
- C. Simple calipers
- D. Leg and point calipers

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Q28 Part B

Which DC motor type provides the best speed regulation under varying loads?

- A. DC Series Motor
- B. Cumulative Motor
- C. DC Shunt Motor ✓
- D. Permanent Magnet DC Motor

Q29 Part B

Two coils, A and B, have self-inductances of 120 µH and 300 µH, respectively. When a current of 1 A flows through coil A, it induces a flux linkage of 100 µWb turns in coil B. What is the mutual inductance between the coils?

- A. 50 µH
- B. 100 µH ✓
- C. 120 µH
- D. 300 µH

Q30 Part B

What is the primary goal of the 5S concept?

- A. To replace traditional safety measures
- B. To increase the number of safety regulations
- C. To improve workplace organisation and efficiency ✓
- D. To eliminate the need for maintenance

Q31 Part B

In a transformer, insulation resistance test is carried out to measure:

- A. frequency
- B. magnetic flux
- C. the resistance of the insulation between windings and core ✓
- D. the inductance between different parts of the transformer

Q32 Part B

What is the primary cause of sudden insulation resistance failure in a DC generator?

- A. Moisture ingress or contamination ✓
- B. High ambient temperature
- C. Increase in rotational speed
- D. Excessive armature current

Q33 Part B

Which of the following screwdrivers has cross-shaped tips that are unlikely to slip from the cruciform slots in Philips recessed head screws?

- A. Stumpy screwdriver
- B. Offset screwdriver
- C. Cross-recess screwdriver ✓
- D. Ratchet screwdriver

Q34 Part B

Which electrical component is used to perform a polarity test to check whether or not the switches are connected in phase/live cable?

- A. Megger
- B. Ammeter
- C. Multimeter
- D. Test lamp ✓

Q35 Part B

What is the term used to describe programs that distinguish between uppercase and lowercase letters, treating "yes" and "YES" as different inputs?

- A. Case-insensitive
- B. Numerical
- C. Case-sensitive ✓
- D. Alphabetical

Q36 Part B

What is the primary purpose of preventive maintenance?

- A. To increase the workload of employees
- B. To reduce unexpected equipment failures ✓
- C. To delay repairs until breakdowns occur
- D. To eliminate the need for regular inspections

Q37 Part B

What is the primary reason for conducting a vehicle road test?

- A. To test how fast the vehicle can go
- B. To avoid the need for inspections
- C. To increase fuel efficiency
- D. To ensure the vehicle is functioning safely and correctly ✓

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Q38 Part B

In crane and hoist applications, why is a DC series motor preferred over a DC shunt motor?

- A. It requires minimal maintenance compared to other motors.
- B. It maintains constant speed regardless of load variations.
- C. It provides a high starting torque, which is required for lifting loads. ✓
- D. It consumes less power at no load.

Q39 Part B

Why do cars have treaded tyres?

- A. To increase friction and grip on the road ✓
- B. To reduce weight
- C. To decrease friction
- D. To increase speed

Q40 Part B

Which of the following care and maintenance of a marking table is INCORRECT?

- A. The marking table should be protected from damage.
- B. The marking table should be protected from rust.
- C. After use, the marking table should be cleaned with a soft cloth.
- D. The surface of the marking table should not be given a thin layer of oil. ✓

Q41 Part B

What is the importance of following the manufacturer's guidelines for DC motor maintenance?

- A. Ensures safe and efficient operation ✓
- B. Modifies the motor's design
- C. Increases the motor's power output
- D. Saves time and resources

Q42 Part B

What is the purpose of measuring the electrode resistance during the installation of an earthing system?

- A. To measure the insulation resistance of the system
- B. To determine the electrical load capacity of the system
- C. To ensure the earthing system has low impedance for fault current dissipation ✓
- D. To ensure proper grounding of electrical equipment

Q43 Part B

What is the primary purpose of shielding in electrical cables?

- A. To increase the voltage capacity of the cable
- B. To increase the current-carrying capacity of the cable
- C. To protect the cable from external electromagnetic interference ✓
- D. To prevent heat loss from the cable

Q44 Part B

A 100-mm centre-punch could have a 10-mm diameter body and a 6-mm diameter point ground to an angle of _____.

- A. 120°
- B. 90° ✓
- C. 60°
- D. 30°

Q45 Part B

What is the unit of measurement for earth fault loop impedance?

- A. Amperes (A)
- B. Ohms (Ω) ✓
- C. Volts (V)
- D. Farads (F)

Q46 Part B

The accuracy of measurement by a try square is about:

- A. 0.02 mm per 10 mm length
- B. 0.001 mm per 10 mm length
- C. 0.004 mm per 10 mm length
- D. 0.002 mm per 10 mm length ✓

Q47 Part B

Which of the following types of resistors is preferred for high-current applications?

- A. Film resistor
- B. Wire-wound resistor ✓
- C. Variable resistor
- D. Carbon composition resistor

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Q48 Part B

_____ recommend(s) 20 mm wide margins for sheet sizes AO and A1 in engineering drawings.

- **A.** Borders and frames: SP: 46 (2003) ✓
- **B.** Geographic coordinate systems
- **C.** Custom grids
- **D.** Grid reference system

Q49 Part B

Which of the following is a major risk associated with fuel spillage?

- **A.** Fire hazards and environmental contamination ✓
- **B.** Better lubrication for workshop floors
- **C.** Increased productivity
- **D.** Reduced need for ventilation

Q50 Part B

An angle greater than 180 degrees is referred to as _____.

- **A.** a right angle
- **B.** an acute angle
- **C.** an obtuse angle
- **D.** a reflex angle ✓

Q51 Part B

Which of the following is INCORRECT about line standard?

- **A.** More accurate due to line thickness ✓
- **B.** Subject to parallax error
- **C.** Quick measurements over a wide range
- **D.** Used to measure the distance between two engraved lines

Q52 Part B

What is the maximum total current allowed in a ring circuit as per IEE regulations?

- **A.**
- **B.**
- **C.** ✓
- **D.**

Q53 Part B

Which of the following conversions are correct?

- **A.** 1 L = 1000 dm^3 and 1 mL = 1000 cm^3
- **B.** 1000 L = 1 dm^3 and 1000 mL = 1 cm^3
- **C.** 1 L = 1 dm^3 and 1 mL = 1 cm^3 ✓
- **D.** 1000 L = 1 dm^3 and 1 mL = 1000 cm^3

Q54 Part B

Match the following designations of sheets with their respective trimmed sizes in length and breadth.

Designation Trimmed Size
A) A0 P) 297 × 420
B) A1 Q) 420 × 594
C) A2 R) 594 × 841
D) A3 S) 841 × 1189

- **A.** A-S ; B-R ; C-Q ; D-P ✓
- **B.** A-Q ; B-R ; C-S ; D-P
- **C.** A-S ; B-P ; C-Q ; D-R
- **D.** A-P ; B-R ; C-Q ; D-S

Q55 Part B

The Insulation Resistance value for a transformer is measured in:

- **A.** megaohms ✓
- **B.** ohms
- **C.** KVA
- **D.** kiloohms

Q56 Part B

Natural rubber is soft at high temperatures and brittle at low temperatures; hence raw rubber is heated with sulphur and other additives at a temperature range between 373 – 415 K to make it strong. This process is called _____ of rubber.

- **A.** vulcanisation ✓
- **B.** molding
- **C.** latex
- **D.** extrusion

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Q57 Part B

Which of the following statements is/are true about Non-Functional Dimensions (NF) in engineering drawing?

Statement 1: Non-functional Dimensions are shown without limits, as they do not affect the functionality of the component or space.
Statement 2: Non-Functional Dimensions are typically used for reference purposes only, and do not impact the assembly or performance of the component or space.

- A. Only statement 2 is true ✓
- B. Only statement 1 is true
- C. Both statements are true
- D. Neither statement is true

Q58 Part B

A statement and conclusion for pictorial drawing are given below. Determine the logical relationship between them.

Statement: Pictorial drawings are three-dimensional and provide a visual representation of an object.

Conclusion: Therefore, pictorial drawings are useful for describing the shape of a piece part or component.

- A. The conclusion does not logically follow from the statement.
- B. The conclusion is partially supported by the statement.
- C. The conclusion is unrelated to the statement.
- D. The conclusion logically follows from the statement. ✓

Q59 Part B

The energy stored (W) in an inductor is given by the formula _____, where C = Capacitance, V= Voltage, I = Current, and L= inductance.

- A. $W = \frac{1}{2}VI$
- B. $W = \frac{1}{2}LI^2$ ✓
- C. $W = LI$
- D. $W = \frac{1}{2}CV^2$

Q60 Part B

The voltage regulation in percentage for transformer is given by:

- A. $\text{Voltage regulation} = \frac{V_{noload} - V_{load}}{V_{noload}} \times 100$
- B. $\text{Voltage regulation} = \frac{V_{noload} - V_{load}}{V_{load}} \times 100$ ✓
- C. $\text{Voltage regulation} = \frac{V_{noload} - V_{noload}}{V_{load}} \times 100$
- D. $\text{Voltage regulation} = \frac{V_{load} - V_{noload}}{V_{load}} \times 100$

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Part B — 75 Questions • Answer Key

Q1 Part B

What is the purpose of a pipe vise in pipe cutting?

- A. To measure the pipe diameter
- B. To hold the pipe securely in place ✓
- C. To increase cutting force
- D. To bend the pipe before cutting

Q2 Part B

Which type of flux is generally recommended for soldering ferrous metals?

- A. Rosin-based flux
- B. Water-insoluble flux
- C. Acid-based flux ✓
- D. No flux is needed

Q3 Part B

A/An _____ is provided to keep the micrometer fixed so that the reading can be done easily and without any difficulty.

- A. sleeve or barrel
- B. thimble
- C. lock nut ✓
- D. anvil

Q4 Part B

The terms ____ and ____ refer to the greatest and smallest variance, respectively, specified on a fundamental size or nominal measurement.

- A. jig; fixture
- B. low limit; high limit
- C. limit; fit
- D. high limit; low limit ✓

Q5 Part B

Parallel milling is primarily used for machining:

- A. flat surfaces ✓
- B. internal threads
- C. cylindrical workpieces
- D. gear teeth

Q6 Part B

What is the advantage of giving heat treatment to a material?

- A. To decrease the melting point of the material
- B. To increase the weight of the material
- C. To change it from one element to another element
- D. To make surgical knives of sharp edges ✓

Q7 Part B

In drawing down thicker sections, which tool is commonly used to localise deformation?

- A. Fuller ✓
- B. Chisel
- C. Swage block
- D. Anvil horn

Q8 Part B

What is the purpose of an emergency evacuation plan?

- A. To ensure safe and orderly evacuation during emergencies ✓
- B. To avoid safety drills
- C. To increase productivity
- D. To allow workers to leave early

Q9 Part B

What should you do to ensure your personal safety at work?

- A. Wear personal protective equipment. ✓
- B. Work in a hurry without checking equipment.
- C. Ignore warning signs and instructions.
- D. Take risks to finish tasks quickly.

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Q10 Part B

A circular hole of radius 3 cm is cut from a rectangular sheet of dimensions 12 cm × 10 cm. Find the remaining area.

(Take π = 3.14)

A. 100 cm^2

B. 91.74 cm^2 ✓

C. 95.86 cm^2

D. 75.74 cm^2

Q11 Part B

In a lead-acid battery, what is the chemical composition of the material used for the positive plate during discharge?

A. Sulphuric acid (H_2SO_4)

B. Lead (Pb)

C. Lead dioxide (PbO_2) ✓

D. Lead sulfate ($PbSO_4$)

Q12 Part B

Which of the following is commonly used to hold a workpiece in surface grinding?

A. Mandrel

B. Tailstock

C. 3-jaw chuck

D. Magnetic chuck ✓

Q13 Part B

Which of the following organisations is responsible for enforcing workplace safety regulations in India?

A. World Health Organization (WHO)

B. Food and Drug Administration (FDA)

C. Directorate General of Factory Advice Service and Labour Institutes (DGFASLI) ✓

D. Environmental Protection Agency (EPA)

Q14 Part B

According to BIS SP 46-2003, which of the following applications is correctly represented by a chain-thin line in engineering drawings?

A. Center lines ✓

B. Hidden edges

C. Dimension lines

D. Visible edges

Q15 Part B

The key difference between a marking gauge and a mortise gauge is:

A. method of adjustment

B. material of construction

C. number of scribing pins ✓

D. size of the tool

Q16 Part B

Which of the following advantages of chain drive over belt drive is INCORRECT?

A. It may be used for both long as well as short distances.

B. It gives a high transmission efficiency.

C. The production cost of chains is relatively high. ✓

D. It gives less load on the shafts.

Q17 Part B

Which of the following tools is NOT under the requirement to complete the Step Turning Process?

A. Snipping tool

B. Parting Tool

C. Vernier Caliper ✓

D. Turning tool

Q18 Part B

Which of the following types of pliers is used to shape loops in wires and to form curves in light metal strips?

A. Flat nose pliers

B. Round nose pliers ✓

C. Slip-joint pliers

D. End cutting pliers

Q19 Part B

What is the primary reason behind acetylene being preferred over propane for welding?

A. Acetylene has a lower risk of explosion.

B. Acetylene produces a higher flame temperature. ✓

C. Acetylene does not require oxygen for combustion.

D. Acetylene is cheaper than propane.

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Q20 Part B

If the basic size of the diameter of a shaft is 75 mm and variation limit of ±0.02 mm is given, then its tolerance in mm is:

- A. −0.02
- B. −0.04
- C. +0.04 ✓
- D. +0.02

Q21 Part B

Which tool is commonly used to apply uniform twisting force during forging operations?

- A. Chisel
- B. Hammer
- C. Swage block
- D. Twisting wrench ✓

Q22 Part B

What is a key advantage of using MOSFETs in electronic circuits compared to other types of transistors?

- A. High frequency response
- B. High input impedance and low power consumption ✓
- C. Ability to handle higher voltages and currents than BJTs
- D. Ability to amplify both AC and DC signals

Q23 Part B

For what purpose are pins and clips used in engineering drawings?

- A. To transfer dimensions and dividing lines into a number of equal parts
- B. To draw horizontal lines, parallel lines and to guide/hold the set squares
- C. To fasten the drawing sheet on to the drawing board firmly so that it does not shake ✓
- D. To support the drawing paper/tracing paper for making drawings

Q24 Part B

A drawing instrument box is used to carry all _____ instruments.

- A. drawing ✓
- B. screening
- C. drilling
- D. casting

Q25 Part B

Which of the following parts of a file is the part fitted to the tang for holding the file?

- A. Tip or Point
- B. Handle ✓
- C. Edge
- D. Tang

Q26 Part B

Which of the following hand-operated drilling machines is used for drilling small diameter holes up to 6 mm?

- A. Electric hand drill
- B. Ratchet drilling machine
- C. Breast drilling machine
- D. Bevel gear type drilling machine ✓

Q27 Part B

Which tool is used to check high and low spots on a scraped surface?

- A. Micrometer
- B. Straight edge ✓
- C. Feeler gauge
- D. Dial gauge

Q28 Part B

Which of the following vices consists of a handle and a small collet chuck at one end?

- A. Hand vice
- B. Pin vice ✓
- C. Pipe vice
- D. Toolmaker's vice

Q29 Part B

The process of _____ involves using a cutting tool called a tap to sever internal threads in a hole.

- A. facing
- B. chamfering
- C. tapping ✓
- D. knurling

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Q30 Part B

What is the difference between a bevel gauge and a bevel protractor?

- A. There is no difference; both tools are the same.
- B. A bevel protractor is used for depth measurement, while a bevel gauge is used for height measurement.
- C. A bevel gauge is fixed, while a bevel protractor is adjustable.
- D. A bevel gauge is adjustable, while a bevel protractor provides precise angular measurements. ✓

Q31 Part B

What is the primary reason for electrical injuries when a person comes in contact with electrical equipment?

- A. Electrical equipment is not properly grounded.
- B. Current flows through the body causing harm. ✓
- C. Devices are used for too long.
- D. Electrical devices are too powerful.

Q32 Part B

The term _____ refers to the limit of variation allowed on either side of the correct dimension to provide the job property of interchangeability (in mass production of part).

- A. tolerance ✓
- B. low limit
- C. fit
- D. high limit

Q33 Part B

Why is the scraping process preferred over grinding in precision fitting?

- A. Scraping is done using CNC machines.
- B. Scraping produces an oil-retaining surface. ✓
- C. Scraping is faster than grinding.
- D. Scraping is less labour-intensive than grinding.

Q34 Part B

Which of the following is an important safety measure during a power failure?

- A. Using candles for lighting
- B. Continuing to use equipment without verifying power status
- C. Ensuring all machines and electrical equipment are turned off ✓
- D. Ignoring alarm systems

Q35 Part B

When two pulleys are more than 8 metres apart, then which of the following belt drives is used for power transmission?

- A. Circular belt ✓
- B. Flat belt
- C. V-belt
- D. Light drive

Q36 Part B

What is single-riveted lap joint?

- A. Joint made with two row of rivets
- B. Joint made with three row of rivets
- C. Joint made with only one row of rivets ✓
- D. Joint made with four row of rivets

Q37 Part B

The unit for specific gravity is _____.

- A. m/s^2
- B. g/cm^3
- C. kg/m^3
- D. no unit (dimensionless) ✓

Q38 Part B

The type of workpieces that can be successfully held in a 4-jaw chuck, and might be difficult to hold in a 3-jaw chuck, are:

- A. only round workpieces
- B. only hexagonal workpieces
- C. only small diameter workpieces
- D. irregular or eccentric workpieces ✓

Q39 Part B

Which characteristic of cellulosic electrodes makes them unsuitable for high-strength steels?

- A. They produce high levels of hydrogen in the weld. ✓
- B. They operate only on a low-voltage DC supply.
- C. They have a very thin coating, causing rapid wear.
- D. They create excessive slag, leading to contamination.

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Q40 Part B

The purpose of providing a side relief angle of 1° to 2° on a grooving tool is to:

- A. reduce the cutting force
- B. increase the cutting speed
- C. prevent rubbing against the sides of the groove ✓
- D. improve the surface finish

Q41 Part B

Arrange the following steps in the correct order to draw an equilateral triangle with each side of 35 mm.

1. Join CA and CB.
2. Draw a line and mark AB 35 mm as the side of the triangle.
3. With radius AB and center A and B, draw arcs cutting at C.
4. ABC is the required triangle.

- A. 2, 3, 1, 4 ✓
- B. 1, 2, 4, 3
- C. 2, 1, 3, 4
- D. 3, 2, 1, 4

Q42 Part B

An electronic digital caliper displays the measurement on a _____.

- A. liquid crystal display screen ✓
- B. dial gauge
- C. Vernier scale
- D. mechanical counter

Q43 Part B

In a forward Vernier scale, the size of one Vernier scale division is:

- A. equal to 1 main scale division
- B. 1 mm
- C. larger than 1 main scale division
- D. smaller than 1 main scale division ✓

Q44 Part B

What is the unit of specifying slip gauges?

- A. Millimetres ✓
- B. Kilograms
- C. Kilometres
- D. Newtons

Q45 Part B

In Lathe Machine operation, the act of making plain ends of a job in their actual length is called _____.

- A. knurling
- B. chamfering
- C. facing ✓
- D. step turning

Q46 Part B

Why is it necessary to store low-hydrogen electrodes (e.g. E7018) in an oven?

- A. To maintain electrode conductivity
- B. To increase arc voltage
- C. To prevent moisture absorption ✓
- D. To improve slag formation

Q47 Part B

When using a multimeter to measure current, which of the following is correct?

- A. The multimeter is connected directly to the power source.
- B. The multimeter is connected in series with the load. ✓
- C. The multimeter is connected only across resistive components.
- D. The multimeter is connected in parallel with the load.

Q48 Part B

If the current flowing through a conductor is 5 A and the resistance of the conductor is 10 ohms, what will be the voltage across the conductor, according to Ohm's Law?

- A. 15 V
- B. 50 V ✓
- C. 5 V
- D. 10 V

Q49 Part B

Which hardness test uses a diamond pyramid-shaped indenter?

- A. Brinell
- B. Vickers ✓
- C. Shore
- D. Rockwell

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Q50 Part B

What type of surfaces can a telescopic gauge measure?

- A. Only deep holes
- B. Both circular and irregular bores ✓
- C. Only circular bores
- D. Only external cylindrical surfaces

Q51 Part B

Which of the following is NOT a recommended maintenance practice for a shaping machine?

- A. Tightening loose bolts
- B. Regular lubrication
- C. Ignoring minor vibrations ✓
- D. Cleaning the machine after use

Q52 Part B

Match the following terminologies in riveted joint with their corresponding meanings.

Column I Column II
Pitch (A) distance between centres of adjoining rivets in the same row (P)
Margin (B) distance between an edge of the plate and the nearest rivet-hole (Q)
Lap joint (C) plates to be connected overlap each other (R)
Row pitch (D) distance between the rows of rivets (S)

- A. A-S, B-R, C-Q, D-P
- B. A-P, B-R, C-Q, D-S
- C. A-S, B-Q, C-R, D-P ✓
- D. A-S, B-P, C-Q, D-R

Q53 Part B

Which type of flame is suitable for cutting steel in oxy-fuel cutting?

- A. Neutral flame
- B. Oxidising flame ✓
- C. Diffused flame
- D. Carburising flame

Q54 Part B

In general, a softer material will produce an indentation that is:

- A. larger and deeper ✓
- B. smaller and shallower
- C. identical in all cases
- D. unpredictable

Q55 Part B

Why is it important for every person to follow safety procedures in the workplace?

- A. To increase overall production efficiency
- B. To minimise risks and avoid accidents ✓
- C. To reduce operational costs significantly
- D. To limit the need for frequent supervision

Q56 Part B

In thread cutting, 'BSW' stands for _____.

- A. British Standard Whitworth ✓
- B. British Standard Weight
- C. Bharath Standard Whitworth
- D. British Stationary Whitworth

Q57 Part B

When scraping a flat surface, what pattern is usually followed?

- A. Cross-hatch pattern ✓
- B. Straight-line pattern
- C. Random pattern
- D. Circular pattern

Q58 Part B

A circuit consists of three resistors; 15 ohms, 10 ohms, and 20 ohms. The 15-ohm resistor is in series with the parallel combination of the 10-ohm and 20-ohm resistors. If a 24 V battery is applied across the circuit, what is the total current flowing through the circuit?

- A. 3.1 A
- B. 0.1 A
- C. 1.1 A ✓
- D. 2.1 A

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Q59 Part B

For holding cylindrical workpieces in a shaper machine, which device is used?

- A. Dividing head
- B. Machine vise
- C. Magnetic chuck
- D. V-block with clamps ✓

Q60 Part B

Non-functional dimensions are _____.

- A. not essential for the function of the space or component ✓
- B. essential for the function of the space or component
- C. derived from the values of the related features of a drawing
- D. directly derived from the values given on a drawing

Q61 Part B

Gaskets, seals and spacers are made using:

- A. centre punch
- B. hollow punch ✓
- C. pin punch
- D. prick punch

Q62 Part B

When the size of the shaft or male part of a job is more than hole or female part, the difference between the two will be known as _____.

- A. positive allowance
- B. either positive or negative allowance
- C. neither positive nor negative allowance
- D. negative allowance ✓

Q63 Part B

If a quenched hand tool shows cracks after cooling, what is the most likely reason?

- A. Internal stresses developed due to rapid cooling. ✓
- B. The tempering process was repeated too many times.
- C. The quenching medium used to cool was too cold.
- D. The tool was cooled too slowly after quenching.

Q64 Part B

Which of the following types of thread is usually found on the machine spindle?

- A. Square thread ✓
- B. Buttress thread
- C. Unified standard thread
- D. Knuckle thread

Q65 Part B

Toughness is the ability of a material to:

- A. resist elastic deformation
- B. resist scratches and indentation
- C. undergo plastic deformation without failure
- D. absorb energy before fracture ✓

Q66 Part B

When selecting a sheet size for an original drawing, what should be the primary consideration?

- A. The standard size of the drawing office.
- B. The clarity and resolution required. ✓
- C. The orientation of the drawing (horizontal or vertical).
- D. The size of the reproduction.

Q67 Part B

Which of the following is a key characteristic of a low-pressure blowpipe/torch in welding?

- A. It requires an external pump to supply acetylene gas.
- B. It directly mixes acetylene and oxygen in equal proportions.
- C. It operates only with high-pressure acetylene cylinders.
- D. It uses high-pressure oxygen to create a vacuum for acetylene suction. ✓

Q68 Part B

When measuring the resistance of a resistor using an ohmmeter, what does a reading of zero resistance indicate?

- A. The resistor is functioning normally.
- B. The resistor is open-circuited.
- C. The resistor is short-circuited. ✓
- D. The ohmmeter is malfunctioning.

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Q69 Part B

In a velocity-time graph, the negative slope represents _____.

- **A.** retardation ✓
- **B.** displacement
- **C.** acceleration
- **D.** distance

Q70 Part B

Which of the following files is used for filing narrow grooves and angles above 10°?

- **A.** Knife-edge file ✓
- **B.** Half round file
- **C.** Square file
- **D.** Triangular file

Q71 Part B

Threading is an operation of cutting _____ on the external cylindrical surface of the job.

- **A.** rectangular grooves
- **B.** helical grooves ✓
- **C.** circular grooves
- **D.** v-shaped grooves

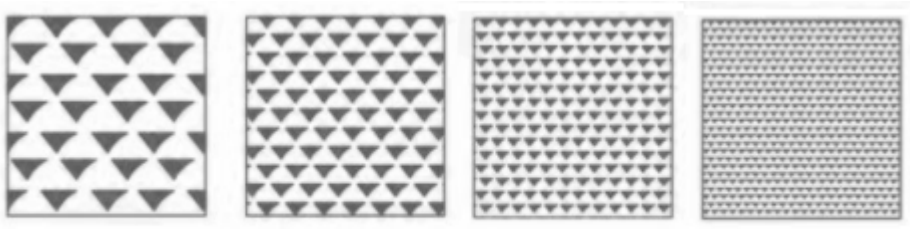
Q72 Part B

$(\frac{3}{8}) + (\frac{5}{12})$

- **A.** $\frac{17}{24}$
- **B.** $\frac{19}{24}$ ✓
- **C.** $\frac{8}{20}$
- **D.** $\frac{7}{12}$

Q73 Part B

Identify the rough file grade from the figures given below.



(a) (b) (c) (d)

- **A.** (b)
- **B.** (d)
- **C.** (c)
- **D.** (a) ✓

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Q74 Part B

$\cos\theta$

A. $\frac{3}{5}$

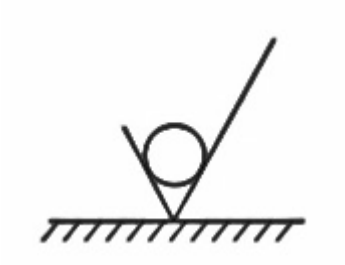
B. $\frac{4}{5}$ ✓

C. $\frac{5}{4}$

D. $\frac{3}{4}$

Q75 Part B

What does the given surface finish symbol represent?



A. Machining must be performed to remove material.

B. Special machining characteristics must be specified.

C. Material removal is not allowed on this surface. ✓

D. The surface should be finished using grinding only.

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Part B — 75 Questions • Answer Key

Q1 Part B

A material with high toughness must have:

- A. low strength and low ductility
- B. high strength and high ductility ✓
- C. high strength and low ductility
- D. high ductility and low strength

Q2 Part B

A file that is flat on one side and curved on the other side is known as a _____ file.

- A. half-round ✓
- B. triangular
- C. rectangular
- D. square

Q3 Part B

Which of the following statements about slip gauges is true?

- A. Slip gauges do not require calibration.
- B. Slip gauges are used only for rough measurements.
- C. Slip gauges are flexible and can bend easily.
- D. Slip gauges are used for setting measuring instruments. ✓

Q4 Part B

Which of the following soldering methods is most commonly used for joining non-ferrous metals in plumbing applications?

- A. Hard soldering
- B. Soft soldering ✓
- C. Silver soldering
- D. Laser soldering

Q5 Part B

The SI unit of temperature is/are ____.

- A. both kelvin and celsius
- B. celsius
- C. kelvin ✓
- D. fahrenheit

Q6 Part B

What is the minimum age for employment in factories or mines or other hazardous employment, according to Article 24 of the Indian Constitution?

- A. 14 years ✓
- B. 12 years
- C. 16 years
- D. 18 years

Q7 Part B

In internal cylindrical grinding, why is a small grinding wheel used?

- A. To fit inside small bores ✓
- B. To reduce material removal
- C. To increase vibration
- D. To produce a rough surface

Q8 Part B

In a logic circuit, two inputs A and B are applied to an AND gate, and the output of the AND gate is connected to the input of a NOT gate. If the inputs A and B are both at logic 0, what will be the output of the entire circuit?

- A. Undefined
- B. 0
- C. 1 ✓
- D. 2

Q9 Part B

Which of the following information is necessary to construct a rectangle?

- A. Length of two adjacent sides ✓
- B. Length of one side and the area of the rectangle
- C. Only the length of one side
- D. Only the length of the diagonal

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Q10 Part B

Which of the following statements is INCORRECT about end standard?

- A. It measures the distance between two parallel flat surfaces.
- B. Faces are subject to wear.
- C. It is slower but more accurate.
- D. It is used to measure the distance between two engraved lines. ✓

Q11 Part B

Which part of the shaping tool is sharpened during grinding?

- A. Cutting edge ✓
- B. Worktable
- C. Tool handle
- D. Machine bed

Q12 Part B

The wave set of hacksaw teeth set has a pitch of _____.

- A. 2.0 mm
- B. 0.5 mm
- C. 0.8 mm ✓
- D. 1.0 mm

Q13 Part B

Tapering of a small part of a job at its edge or corner is known as _____.

- A. knurling
- B. chamfering ✓
- C. step turning
- D. facing

Q14 Part B

How can burrs be removed after cutting a pipe?

- A. By hitting the pipe with a hammer
- B. By applying oil to the cut section
- C. By heating the pipe end to melt it
- D. By using a file or deburring tool ✓

Q15 Part B

As we know from the graduation of micrometer, if we give one full round to thimble, its spindle moves ½ mm forward or backward. Therefore, one part of the thimble is its _____.

- A. Pitch
- B. Least count ✓
- C. MSR
- D. Lead

Q16 Part B

Which of the following metals has the lowest melting point?

- A. Mercury ✓
- B. Iron
- C. Lead
- D. Gold

Q17 Part B

Which type of line is used to represent hidden edges or surfaces in a technical drawing, as per BIS SP 46-2003?

- A. Continuous thin line
- B. Continuous thick line
- C. Dashed thin line ✓
- D. Chain thin line

Q18 Part B

Find the lateral surface area of a cube with side length 5 cm.

- A. 125 cm^2
- B. 150 cm^2
- C. 200 cm^2
- D. 100 cm^2 ✓

Q19 Part B

Fine-toothed blades are better suited for:

- A. infrequent use
- B. cutting metals ✓
- C. experts due to their durability and flexibility
- D. cutting wood and plastic

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Q20 Part B

Which factor affects the precision of a hole made using a hollow punch?

- A. The type of hammer used
- B. The colour of the leather
- C. The sharpness of the punch ✓
- D. The temperature of the punch

Q21 Part B

_____ must be ascribed for the sake of convenience and is the size of a part in relation to which all limits of variation are determined.

- A. Actual size
- B. Nominal size ✓
- C. Basic size or zero size
- D. Basic size alone

Q22 Part B

Which of the following defects can occur during the bending of hot bars in forging?

- A. Laps and folds ✓
- B. Recrystallisation
- C. Cold shuts
- D. Surface hardening

Q23 Part B

Why is 'soaking time' important in the heating process for forging?

- A. To cool the metal faster after the forging operation
- B. To reduce grain size of the internal structure
- C. To prevent oxidation of the workpiece surface
- D. To ensure uniform heating throughout the section ✓

Q24 Part B

What factor determines the depth of cut in power scraping?

- A. The type of lubricant used
- B. Blade speed and angle ✓
- C. The weight of the machine
- D. The shape of the workpiece

Q25 Part B

Which of the following calipers are used for marking lines, parallel to inside and outside edges and for locating the centre of round bars?

- A. Spring joint calipers
- B. Leg and point calipers ✓
- C. Simple calipers
- D. Firm joint calipers

Q26 Part B

If a welding machine's cooling fan stops working, which of the following should NOT be done?

- A. Inspect for any debris obstructing the fan blades
- B. Check the power supply to the fan
- C. Measure the fan motor voltage and replace it if faulty
- D. Lubricate the fan motor and restart the machine ✓

Q27 Part B

Which type of milling machine is best suited for angular milling?

- A. Fly cutter
- B. Angle milling cutter ✓
- C. Plain milling cutter
- D. Face mill

Q28 Part B

Convert 8.5% into a decimal.

- A. 0.85
- B. 8.5
- C. 0.085 ✓
- D. 85

Q29 Part B

Which type of scraper is most suitable for scraping dovetail slideways?

- A. Three-cornered scraper
- B. Half-round scraper
- C. Hook scraper ✓
- D. Flat scraper

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Q30 Part B

Which of the following 'V' blocks will have one 'V' groove and two grooves (slots) on either side for clamping in two positions?

A. Double level single groove 'V' block

B. Matched pair 'V' block

C. Single level double groove 'V' block ✓

D. Single level single groove 'V' block

Q31 Part B

_____ is a type of turning where a workpiece is turned into a sequence of steps with varying diameters.

A. Knurling

B. Step turning ✓

C. Chamfering

D. Facing

Q32 Part B

A 100-mm prick punch with a 7-mm diameter body could have a 2.5-mm diameter point ground to an angle of _____.

A. 90°

B. 30° ✓

C. 120°

D. 45°

Q33 Part B

Which property is the most important for materials used in automobile crash zones?

A. High hardness

B. High stiffness

C. High brittleness

D. High toughness ✓

Q34 Part B

Which of the following correctly differentiates a cutting blowpipe/torch from a welding blowpipe/torch?

A. A cutting blowpipe has 3 control valves, while a welding blowpipe has 1.

B. A cutting blowpipe has 2 control valves and 1 lever, while a welding blowpipe has 2 control valves. ✓

C. A cutting blowpipe has 2 levers, while a welding blowpipe has 1 lever.

D. A cutting blowpipe has 1 control valve, while a welding blowpipe has 2 control valves.

Q35 Part B

Which of the following is NOT a part of the micrometer?

A. Spindle

B. Anvil

C. Jam ✓

D. Frame

Q36 Part B

In gear cutting, backlash refers to:

A. the gap between indexing plate holes

B. the play between mating gear teeth ✓

C. the clearance between cutter and workpiece

D. the difference in speed between cutter and workpiece

Q37 Part B

When used for fits between shaft and hole, ____ is specified or both shaft and hole.

A. the shaft size is more than the hole size

B. the same basic size ✓

C. the hole size is more than the shaft size

D. different size

Q38 Part B

What is the unit of measurement used for thread pitch in the metric system?

A. Newtons

B. Degrees

C. Threads per inch (TPI)

D. Millimetres (mm) ✓

Q39 Part B

Who is authorised to conduct road tests on workshop vehicles?

A. Only trained and certified personnel ✓

B. Visitors to the workshop

C. Any employee

D. The company accountant

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Q40 Part B

When creating 10 mm single-stroke capital letters in vertical style, what does the 10 mm distance between horizontal parallel lines represent?

A. Letter width

B. Letter height ✓

C. Stroke thickness

D. Interline spacing

Q41 Part B

Wrong setting of machine, wrong use of a tool, defect in measuring tools, defective metal, and carelessness of the mechanic have no effect in the utility of the part. This is an advantage of _____.

A. deviation

B. tolerance

C. limit

D. interchangeability ✓

Q42 Part B

During a lathe operation, the influence of machining allowance on the total depth of cut taken is that:

A. it directly determines the feed rate corresponding to the speed

B. it has no influence on the depth of cut

C. it directly determines the depth of cut in each pass

D. it sets the total material to be removed, which is then divided into multiple cuts ✓

Q43 Part B

Match the following types of lines with their correct descriptions according to their orientation and characteristics.

Description	Type of Line
A. A line that is neither parallel to a horizontal plane nor perpendicular to it.	1. Horizontal line
B. A line that is perpendicular to horizontal lines.	2. Vertical line
C. A line that changes its direction continuously.	3. Inclined line
D. A line that is parallel to a horizontal plane.	4. Curved line

A. A - 1, B - 2, C - 3, D - 4

B. A - 2, B - 3, C - 4, D - 1

C. A - 3, B - 2, C - 4, D - 1 ✓

D. A - 2, B - 1, C - 4, D - 3

Q44 Part B

Which of the following is the primary reason why copper is widely used as a conductor in electrical wiring?

A. Copper has low resistance and high conductivity. ✓

B. Copper has a low melting point.

C. Copper is abundant and inexpensive.

D. Copper has high resistance to electricity.

Q45 Part B

Which of the following colours is commonly used for caution signs?

A. Blue

B. Yellow ✓

C. Red

D. Green

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Q46 Part B

_____ are the greatest option for experts due to their durability and flexibility.

A. Coarse-toothed blades
B. Bi-metal blades ✓
C. Fine-toothed blades
D. High-carbon steel blades

Q47 Part B

For your safety at work, which of the following should be ensured?
1. All the required protective clothing and equipment are used.
2. Training and instruction necessary for performing tasks safely have been received.

A. Only statement 1
B. Neither statement 1 nor 2
C. Only statement 2
D. Both statements 1 and 2 ✓

Q48 Part B

Why is a Vernier height gauge preferred over a simple steel rule for height measurement?

A. It does not require a surface plate.
B. It provides more precise measurements. ✓
C. It is comparatively more portable.
D. It is cheaper than steel rule.

Q49 Part B

Which factor(s) influence(s) the uniformity of twisting in forging?

A. Types of tongs used in forging operations
B. Hardness of the anvil
C. Bar cross-section and heating temperature ✓
D. Frequency of cooling cycles

Q50 Part B

A voltmeter with a resistance of 10,000 ohms is connected across a circuit that has a voltage of 50 V. What is the current flowing through the voltmeter?

A. 2 mA
B. 1 mA
C. 5 mA ✓
D. 4 mA

Q51 Part B

Which of the following statements is NOT correct for using scribers?

A. Scriber points are very sharp, so they are to be handled very carefully.
B. While scribing lines, the scriber is used like a pencil.
C. Do not put the scriber in your pocket.
D. Place a cork on the point when in use to prevent accidents. ✓

Q52 Part B

Which of the following statements about title block is/are true?

Statement 1: The title block is situated in the bottom right-hand corner of the drawing sheet.
Statement 2: The contents of the title block are standardised and cannot be modified to suit individual company needs.

A. Both statements are false
B. Statement 1 is false, but statement 2 is true
C. Statement 1 is true, but statement 2 is false ✓
D. Both statements are true

Q53 Part B

In a series circuit, three resistors of 10 ohms, 20 ohms, and R ohms are connected in series with a 12 V battery. What is the value of resistance R if current flowing in the circuit is 0.2 A?

A. 10 ohms
B. 20 ohms
C. 30 ohms ✓
D. 40 ohms

Q54 Part B

Which of the following types of chisels is used for separating metals after chain drilling?

A. Cross-cut chisel
B. Flat chisel
C. Web chisel ✓
D. Diamond point chisel

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Q55 Part B

If the length of a resistor is doubled, what happens to its resistance, assuming all other factors remain constant?

- A. The resistance is doubled. ✓
- B. The resistance remains the same.
- C. The resistance is halved.
- D. The resistance quadruples.

Q56 Part B

The type of feed primarily used for grooving operations on a lathe is _____ feed.

- A. cross ✓
- B. angular
- C. rotary
- D. longitudinal

Q57 Part B

On what basis is a joint said to be double-riveted lap joint or triple riveted lap joint?

- A. Based on number of rows of rivets in joint ✓
- B. Based on strength of joint
- C. Based on type of joint
- D. Based on number of columns of rivets in joint

Q58 Part B

In oxy-acetylene welding, what happens if the oxygen pressure is too high compared to acetylene?

- A. The flame temperature decreases.
- B. The flame becomes carburising.
- C. The weld joint becomes brittle due to excess carbon.
- D. The flame becomes oxidising. ✓

Q59 Part B

What is the typical temperature range of a mercury-based clinical thermometer?

- A. 0°C to 100°C
- B. 35°C to 42°C ✓
- C. 0°C to 50°C
- D. −10°C to 110°C

Q60 Part B

In an ISO system of Limits and Fits (ISO:286-1:1998), the tolerance size is designated as:

- A. basic value followed by a letter
- B. basic value followed by a number
- C. basic value alone
- D. basic value followed by symbol composed of a letter and number ✓

Q61 Part B

During the turning operation on lathe, if D is the initial diameter and d is the final diameter of the work piece, the depth of cut, t, is calculated by _____.

- A. t = D − d
- B. t = (D − d) / 2 ✓
- C. t = (D + d) / 2
- D. t = D / d

Q62 Part B

What is the purpose of a ground clamp in welding?

- A. To clean the welding surface
- B. To hold the workpiece in place
- C. To complete the electrical circuit ✓
- D. To cool down the electrode

Q63 Part B

Which of the following terms in the 5S concept refers to making a habit of maintaining the established procedures?

- A. Shine
- B. Set
- C. Sort
- D. Sustain ✓

Q64 Part B

If the basic size of the diameter of a shaft is 80 mm and the variation limit of ±0.07 mm is given, then its high limit and low limit are _____ and _____.

- A. 79.93, 80.07
- B. 80.07, 79.93 ✓
- C. 80.00, 79.93
- D. 79.00, 80.07

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Q65 Part B

When passing stationary vehicles, keep a watch on _____ who may come out suddenly from the front of the stationary vehicle. While overtaking, it should be done on the _____ side. Always keep a good _____ between your vehicle and others.

A. cyclists; left; interval

B. vehicles; right; gap

C. drivers; left; space

D. pedestrians; right; distance ✓

Q66 Part B

As we know from the graduation of micrometer, if we give one full round to thimble, its spindle moves ½ mm forward or backward. A buck part can be divided into 0 to 50 parts. The least count of the micrometer is ___ mm.

A. 0.05

B. 0.10

C. 0.01 ✓

D. 0.50

Q67 Part B

Which of the following best describes the application of Atomic Hydrogen Welding (AHW)?

A. It generates a lower temperature arc than other arc welding processes.

B. It is commonly used over modern welding methods due to its efficiency.

C. It is used for all ferrous and non-ferrous metals with a high-temperature arc. ✓

D. It is mainly preferred for low-temperature welding of soft metals.

Q68 Part B

What is the SI unit of 'volume'?

A. Litres

B. Cubic centimetre

C. Cubic metre ✓

D. Millilitres

Q69 Part B

Select the correct representation as Tolerance size for a hole from the given options.

A. 50H8- c7

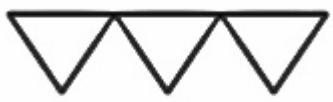
B. 50 H8/g7

C. 50H8 ✓

D. 50g7

Q70 Part B

Observe the given roughness grade symbol and identify the corresponding roughness grade number whose corresponding roughness value is 0.2 µm.



A. N1

B. N3

C. N4 ✓

D. N2

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Q71 Part B

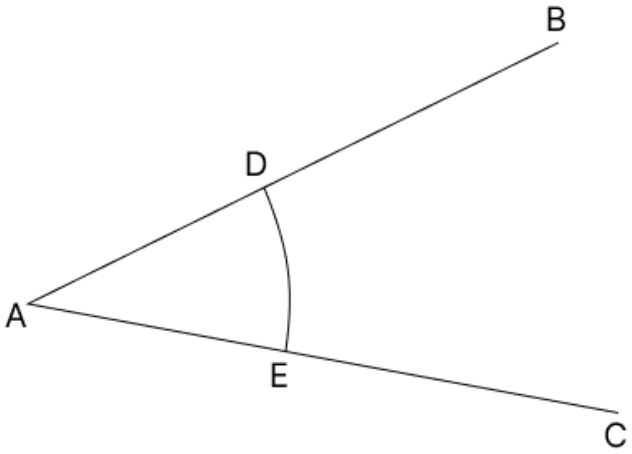
Identify the below tool used on the Lathe.



- **A.** Threading tool ✓
- **B.** Knurling tool
- **C.** Parting tool
- **D.** Boring tool

Q72 Part B

In the process of bisecting angle BAC in the given figure, why do we draw arcs from points D and E?



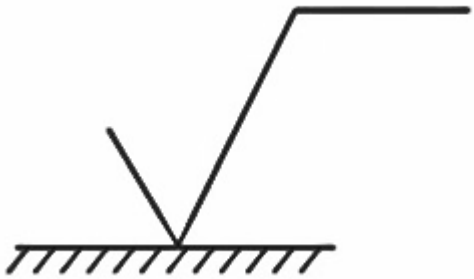
- **A.** To find midpoint AB
- **B.** To mark equal lengths
- **C.** To intersect line AC
- **D.** To intersect above A ✓

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Q73 Part B

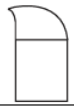
What does the surface finish symbol shown in the given figure represent?



- **A.** A specific surface texture requirement is indicated. ✓
- **B.** The surface must be left in its cast or forged state.
- **C.** The surface should be coated without material removal.
- **D.** No machining is required on this surface.

Q74 Part B

Match the following.

(A)	Threading tool	(P)	
(B)	Profile tool	(Q)	
(C)	Facing tool	(R)	
(D)	Knurling tool	(S)	

- **A.** A - S, B - R, C - Q, D - P ✓
- **B.** A - P, B - R, C - Q, D - S
- **C.** A - S, B - Q, C - R, D - P
- **D.** A - S, B - R, C - P, D - Q

Q75 Part B

In a Full Lap joint, diagonal pitch is given by ____, where p_d - diagonal pitch, p - pitch, d - diameter of rivets

- **A.** $p_d = \frac{(2p+d)}{3}$ ✓
- **B.** $p_d = \frac{(2p+6d)}{4}$
- **C.** $p_d = \frac{(2p \times d)}{3}$
- **D.** $p_d = \frac{(2p-d)}{3}$

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