



RRB ALP 2024 CBT 2

Assistant Loco Pilot · CEN 01/2024 · CBT 2 · Instrument Mechanic Trade · Part B (Instrument Mechanic) · Question Paper

English

All 2 Shifts (Sets) · Part B (Instrument Mechanic) Section · Official Answer Key

About this Compilation

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

✓ Correct option (highlighted green)

15 questions of 02 May 2025, 2:30 PM - 5:00 PM are not in our bank in any language (not saved from any response sheet), so this paper prints 60 of 75 questions.

15 questions of 06 May 2025, 9:30 AM - 12:00 PM are not in our bank in any language (not saved from any response sheet), so this paper prints 60 of 75 questions.

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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Index — All Sets (click to open)

Set 1

02 May 2025
2:30 PM - 5:00 PM

Set 2

06 May 2025
9:30 AM - 12:00 PM

Part B (Instrument Mechanic)

60 Questions • Answer Key

Q1 Part B (Instrument Mechanic)

Which of the following is a fundamental unit?

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



Q2 Part B (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

A capacitor with a capacitance of $10\ \mu\text{F}$ is connected in series with a $1\ \text{M}\Omega$ 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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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



Q9 Part B (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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/s²].

- A. 5 J
- B. 10 N
- C. 5 N ✓
- D. 10 J

Q18 Part B (Instrument Mechanic)

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



Q19 Part B (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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



Q28 Part B (Instrument Mechanic)

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 (Instrument Mechanic)

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

- A. $10\ \Omega \pm 5\%$
- B. $100\ \Omega \pm 5\%$
- C. $10,000\ \Omega\ (10\ \text{k}\Omega) \pm 5\%$
- D. $1,000\ \Omega\ (1\ \text{k}\Omega) \pm 5\%$ ✓

Q30 Part B (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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. ✓



Q36 Part B (Instrument Mechanic)

If the coefficient of linear expansion of a material is $2 \times 10^{-5} \text{ } ^\circ\text{C}^{-1}$, 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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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



Q45 Part B (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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

Q49 Part B (Instrument Mechanic)

What is another name for CTS wiring?

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

Q50 Part B (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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

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



Q60 Part B (Instrument Mechanic)

Identify the type of brazed joint shown below.



- A. Joggle Lap
- B. Simple Lap
- C. Strapped Lap
- D. Butted Flange



Q58 Part B (Instrument Mechanic)

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 (Instrument Mechanic)

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.



Part B (Instrument Mechanic)

60 Questions • Answer Key

Q1 Part B (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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

- A. ✓
- B.
- C.
- D.

Q4 Part B (Instrument Mechanic)

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

Q5 Part B (Instrument Mechanic)

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/m²)

Q6 Part B (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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



Q10 Part B (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

Transformer oil should have _____ dielectric strength and _____ viscosity.

- A. high; high
- B. low; high
- C. high; low ✓
- D. low; low

Q18 Part B (Instrument Mechanic)

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 ✓



Q19 Part B (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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



Q28 Part B (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 ✓



Q38 Part B (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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



Q48 Part B (Instrument Mechanic)

_____ 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

Q49 Part B (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)

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

A.

B.

C. ✓

D.

Q53 Part B (Instrument Mechanic)

Which of the following conversions are correct?

A. 1 L = 1000 dm³ and 1 mL = 1000 cm³

B. 1000 L = 1 dm³ and 1000 mL = 1 cm³

C. 1 L = 1 dm³ and 1 mL = 1 cm³ ✓

D. 1000 L = 1 dm³ and 1 mL = 1000 cm³

Q54 Part B (Instrument Mechanic)

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 (Instrument Mechanic)

The Insulation Resistance value for a transformer is measured in:

A. megaohms ✓

B. ohms

C. KVA

D. kilohms

Q56 Part B (Instrument Mechanic)

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



Q57 Part B (Instrument Mechanic)

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 (Instrument Mechanic)

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 (Instrument Mechanic)**

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 (Instrument Mechanic)

The voltage regulation in percentage for transformer is given by:

A. $\text{Voltage regulation} = \frac{V_{\text{no load}} - V_{\text{load}}}{V_{\text{no load}}} \times 100$

B. $\text{Voltage regulation} = \frac{V_{\text{no load}} - V_{\text{load}}}{V_{\text{load}}} \times 100$



C. $\text{Voltage regulation} = \frac{V_{\text{no load}} - V_{\text{no load}}}{V_{\text{load}}} \times 100$

D. $\text{Voltage regulation} = \frac{V_{\text{load}} - V_{\text{no load}}}{V_{\text{load}}} \times 100$

