



RRB ALP 2024 CBT 2

Assistant Loco Pilot · CEN 01/2024 · CBT 2 · Millwright Maintenance Mechanic Trade ·
Question Paper

English

All 2 Shifts (Sets) · Official Answer Key

About this Compilation

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

✓ Correct option (highlighted green)

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
9:30 AM - 12:00 PM

Set 2

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

Part A

100 Questions • Answer Key

Q1 Part A

In the SI system, which of the following options best describes the base quantities?

- A. Length, mass, time ✓
- B. Distance, speed, acceleration
- C. Force, power, energy
- D. Temperature, pressure, volume

Q2 Part A

Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusion(s) logically follow(s) from the statements.

Statements:

- I. Some desks are tables.
- II. All tables are cabinets.
- III. All cabinets are beds.

Conclusions:

- I. Some beds are tables.
- II. All cabinets are desks.

- A. Neither conclusion I nor conclusion II follows.
- B. Both conclusions I and II follow.
- C. Only conclusion II follows.
- D. Only conclusion I follows. ✓

Q3 Part A

Which of the following will verify the credentials and documents of applicants uploaded on National Scholarship Portal?

- A. Third party
- B. National Scholarship Portal
- C. Government
- D. University/Institute in which applicant is studying ✓

Q4 Part A

Based on the English alphabetical order, three of the following four letter-clusters are alike in a certain way and thus form a group. Which letter-cluster DOES NOT belong to that group?

(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)

- A. GMOT
- B. LRTY
- C. FLNS
- D. NTVB ✓

Q5 Part A

A fruit seller initially had some apples. He sold 40% of those and still had 300 apples. How many apples did he initially have?

- A. 450
- B. 750
- C. 600
- D. 500 ✓

Q6 Part A

Convert 1 kilowatt hour (kW h) into joule.

- A. $1 \text{ kW h} = 3.6 \times 10^3 \text{ J}$
- B. $1 \text{ kW h} = 3.6 \times 10^7 \text{ J}$
- C. $1 \text{ kW h} = 3.6 \times 10^5 \text{ J}$
- D. $1 \text{ kW h} = 3.6 \times 10^6 \text{ J}$ ✓

Q7 Part A

Which of the following statements regarding the use of a fire extinguisher is/are correct?

Statement 1: It is safe to attempt to extinguish any fire regardless of the presence of toxic smoke.
Statement 2: The P.A.S.S. technique, which stands for Pull, Aim, Squeeze and Sweep, is recommended for the effective use of a fire extinguisher.

- A. Only Statement 2 is correct. ✓
- B. Neither Statement 1 nor 2 is correct.
- C. Only Statement 1 is correct.
- D. Both Statements 1 and 2 are correct.



Q8 Part A

Potential energy belongs to which of the following categories of energy?

- A. Heat energy
- B. Light energy
- C. Mechanical energy ✓
- D. Chemical energy

Q9 Part A

Two plumbers, X and Y, are paid a total of ₹770 per day by their employer. If X is paid 140% of the sum paid to Y, then how much is Y paid (in ₹, rounded off to two decimal places) per day?

- A. 320.83 ✓
- B. 220.83
- C. 270.83
- D. 370.83

Q10 Part A

A copper spoon is dipped in hot water. What happens to its other end?

- A. It becomes hot by conduction. ✓
- B. It becomes cold by convection.
- C. It becomes cold by conduction.
- D. It becomes hot by convection.

Q11 Part A

Which of the following is true?

- A. Both insulators and conductors allow heat to pass through them easily.
- B. Wood is a good conductor of heat.
- C. In a kitchen, aluminium vessels are used because aluminium is a good conductor of heat. ✓
- D. Plastic is a good conductor of heat.

Q12 Part A

In the following number-pairs, the second number is obtained by applying certain mathematical operations to the first number. Which numbers should replace X and Y so that the pattern followed by the two numbers on the left side of :: is same as that on the right side of ::?

(NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into their constituent digits. E.g. 13 – Operations on 13 such as adding/subtracting/multiplying to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

X : 85 :: 36 : Y

- A. X = 42, Y = 71
- B. X = 43, Y = 77
- C. X = 42, Y = 73 ✓
- D. X = 44, Y = 73

Q13 Part A

According to the ISO-A size series, what is the designation of a trimmed sheet with dimensions 297 mm × 420 mm?

- A. A1
- B. A2
- C. A3 ✓
- D. A4

Q14 Part A

What is the value of 10 km/hr in SI units?

- A. 2.7 m/s ✓
- B. 1000 m/s
- C. 10 m/s
- D. 0.16 m/s

Q15 Part A

Amit's income in 2019 was ₹27,000. He gets an increment of 10% every year. What was his income (in ₹) in 2021?

- A. 27,000
- B. 29,700
- C. 32,400
- D. 32,670 ✓



Q16 Part A

Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.

Statements:

Some bananas are litchis.
All litchis are kiwis.
Some kiwis are strawberries.

Conclusions:

1. All bananas being kiwis is a possibility.
2. All kiwis are litchis.

A. Neither conclusion 1 nor 2 follows

B. Only conclusion 1 follows

C. Only conclusion 2 follows

D. Both conclusions 1 and 2 follow

Q17 Part A

In the following series, only one letter-cluster is incorrect. Select the INCORRECT letter-cluster.

PCO MEM JGK GIJ DKG AME

A. AME

B. JGK

C. GIJ

D. DKG

Q18 Part A

If $x^3 + y^3 = 16$ and $x + y = 4$, what is the value of xy ?

A. 2

B. 3

C. 4

D. 0

Q19 Part A

What is the average human body temperature?

A. 42°C

B. 40°C

C. 37°C

D. 32°C

Q20 Part A

Which of the following is the best way to identify workplace hazards?

A. Ignoring small risks

B. Waiting for an incident to occur

C. Conducting regular safety inspections

D. Relying on employees to report accidents

Q21 Part A

Each of Preeti, Kiran, Grace, Ankit, Deepak, Nitin and Neelam has an exam on a different day of a week, starting from Monday and ending on Sunday of the same week. Preeti has an exam on Thursday. Only one person has an exam between Preeti and Nitin. Grace has exam on the day immediately before Nitin but not on a Monday. Only two people have exams between Grace and Deepak. Neelam's exam is on one of the days before Ankit's but on one of the days after Kiran's. Who among the following has an exam on Monday?

A. Deepak

B. Nitin

C. Kiran

D. Neelam

Q22 Part A

Which of the following is a supplementary protocol that allows non-ASCII data to be sent through e-mail?

A. Multipurpose Internet Mail Extensions (MIME)

B. Mailing Lists

C. DNS

D. HTTPS

Q23 Part A

The sum of the ages of Yash and his father is 90 years. When Yash is as old as his father's present age, he will be five times as old as his son Suraj's present age. Suraj will be 12 years older than Yash's present age, when Yash is as old as his father at present. How old is Suraj at present?

A. 15 years

B. 18 years

C. 12 years

D. 16 years



Q24 Part A

The weight of an object on Earth is 60 N. What is its weight on the surface of the moon?

A. 10 N



B. 60 N

C. 600 N

D. 6 N

Q25 Part A

In a hospital, the ratio between the number of doctors and the number of nurses was 1 : 3. When 12 new doctors joined the hospital and 24 nurses left the hospital, the ratio became 3 : 4. After the resignation of k more nurses from the hospital, the ratio becomes 1 : 1. Find the value of k.

A. 28

B. 26

C. 12



D. 24

Q26 Part A

What is the primary source of energy for most of the ecosystems?

A. Water

B. Soil

C. Wind

D. Sunlight

**Q27 Part A**

Which of the following statements about geometric figures is/are true?

1. Geometric shapes are enclosed figures made by joining two or more points, lines, or curves.
2. Geometric shapes are always open-ended and made up of only straight lines.

A. Both statements 1 and 2 are true

B. Only statement 2 is true

C. Neither statement 1 nor 2 is true

D. Only statement 1 is true

**Q28 Part A**

6 men or 5 women can complete a job in 7 days. 6 men work for 5 days and leave. The number of women required to complete the remaining work in 5 days is:

A. 1

B. 4

C. 3

D. 2

**Q29 Part A**

Rinku riding his car covers 136 metres in 17 seconds. What is his speed (in km/hr)?

A. 11.6

B. 17

C. 26

D. 28.8

**Q30 Part A**

Which of the following ecosystems has very low temperatures and frozen soil?

A. Grassland

B. Tropical rainforest

C. Desert

D. Tundra

**Q31 Part A**

Which of the following statements is/are true?

Statement 1: Heat conductors allow heat to pass through them easily.

Statement 2: All plastics are good conductors of heat.

A. Neither statement 1 nor 2

B. Both statements 1 and 2

C. Only statement 2

D. Only statement 1



Q32 Part A

In a certain code language, 'BARE' is coded as '8264' and 'RIDS' is coded as '3587'. What is the code for 'R' in the given code language?

A. 6

B. 3

C. 5

D. 8

**Q33 Part A**

Ganpat starts from Point A and walks 18 m towards west. He takes a left turn, walks 32 m, takes a left turn, walks 26 m, turns left, walks 61 m and stops at Point B. Meena starts from Point Z, which is 22 m towards the east of Point A. She walks 42 m towards north, takes a right turn, walks 35 m, turns right and walks 13 m and stops at Point Y. What is the shortest distance between Point B and Point Y? (All turns are 90-degree turns only.)

A. 52 m

B. 57 m

C. 49 m



D. 43 m

Q34 Part A

The area of a regular polygon with a side of 8 cm is 112 cm^2 . If the perpendicular distance from the centre to the side of the polygon is 7 cm, then the number of sides of the polygon is:

A. 6

B. 5

C. 7

D. 4

**Q35 Part A**

A 280 m long train running at a speed of 72 km/hr passes a platform in 30 seconds. Find the length of the platform (in m).

A. 320



B. 335

C. 300

D. 280

Q36 Part A

The rate of doing work is known as _____.

A. kinetic energy

B. potential energy

C. power



D. force

Q37 Part A

Refer to the following letter and symbol series and answer the question that follows. Counting to be done from left to right only.

(Left) ^ T J # * £ B L R Ω Y # E % S U \$ K Q & (Right)

How many such letters are there, each of which is immediately preceded by a letter and also immediately followed by a symbol?

A. Three

B. One

C. Four



D. Two

Q38 Part A

In a certain code language, 'CARD' is coded as '8674' and 'MICE' is coded as '3517'. What is the code for 'C' in the given code language?

A. 7



B. 1

C. 8

D. 6

Q39 Part A

Two resistors of resistance 20Ω and 30Ω are connected in series in a circuit. What is the current flow in the circuit if the voltage given is 250 V?

A. 5 A



B. 20 A

C. 8 A

D. 12 A



Q40 Part A

Refer to the following letter and symbol series and answer the question that follows. Counting to be done from left to right only.

(Left) L R Ω Y A \$ K ^ T J # Q & # E % S U * £ B (Right)

How many such symbols are there, each of which is immediately preceded by a vowel and also immediately followed by a letter?

- A. Four
- B. One
- C. Two
- D. Three

Q41 Part A

What is the total circuit resistance if it contains resistors 10 Ω , 20 Ω and 60 Ω , connected in parallel?

- A. 60 Ω
- B. 90 Ω
- C. 20 Ω
- D. 6 Ω

Q42 Part A

Two sets of numbers are given below. In each set of numbers, certain mathematical operation(s) on the first number result(s) in the second number. Similarly, certain mathematical operation(s) on the second number result(s) in the third number and so on. Which of the given options follows the same set of operations as in the given sets?

(NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into their constituent digits. E.g. 13 – Operations on 13 such as adding/subtracting/multiplying to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

3 - 9 - 12 - 24; 4 - 16 - 20 - 40

- A. 1 - 1 - 2 - 4
- B. 9 - 2 - 11 - 24
- C. 6 - 12 - 18 - 34
- D. 7 - 49 - 56 - 122

Q43 Part A

Which of the following actions can help prevent slip and fall injuries?

- A. Walking on wet floors carefully
- B. Ignoring clutter in walkways
- C. Cleaning up spills immediately and using warning signs
- D. Wearing loose footwear for comfort

Q44 Part A

A dozen pairs of jeans quoted at ₹3,520 are available at a discount of 35%. How many pairs of jeans can be bought for ₹572?

- A. 1
- B. 3
- C. 5
- D. 2

Q45 Part A

Which type of thermometer is used for measuring the internal temperature of ice?

- A. Digital thermometer
- B. Laboratory thermometer
- C. Clinical thermometer
- D. Infrared thermometer

Q46 Part A

Which of the following orders of components is primarily responsible for executing instructions, storing permanent firmware, temporarily storing data during program execution and providing a platform for interconnecting hardware components on a computer motherboard?

- A. RAM - ROM - CPU - PCB
- B. CPU - ROM - RAM - PCB
- C. CPU - RAM - ROM - PCB
- D. PCB - ROM - CPU - RAM

Q47 Part A

Which of the following is the work done by the gravitational force on the object of mass 50 kg when the object is moved from one point to another point along a horizontal line ($g = 10 \text{ m/s}^2$)?

- A. Zero
- B. 500 J
- C. 50 J
- D. -500 J



Q48 Part A

Jaspreet deposited a sum of ₹58,550 at 20% rate of interest per annum, compounded annually. The total amount (in ₹) received by Jaspreet after 2 years will be:

A. 84,312



B. 83,876

C. 84,735

D. 84,700

Q49 Part A

In the following triad, each group of letters is related to the subsequent one following a certain logic. Select from the given options, the one which follows the same logic.

TERM-ERTM-TMRE

A. ZERO-EZRO-ZREO

B. WHEN-HWEN-WENH

C. USER-RESU-REUS

D. VICE-ICVE-VECI

**Q50 Part A**

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

Statement 1: Functional Dimensions are essential to the function of the component or space.

Statement 2: Functional Dimensions are typically shown without limits.

Statement 3: Functional Dimensions are only shown for reference purposes.

A. Only statement 3 is true

B. Only statement 1 is true



C. Only statements 2 and 3 are true

D. Only statements 1 and 2 are true

Q51 Part A

The areas of three adjacent faces of a solid cuboid are 216 cm², 114 cm² and 19 cm². What is the volume (in cm³) of the cuboid?

A. 955

B. 532

C. 684



D. 880

Q52 Part A

If 'A' stands for '+', 'B' stands for '×', 'C' stands for '+' and 'D' stands for '-', what will come in place of the question mark (?) in the following equation?

$$38 \text{ C } 32 \text{ A } 4 \text{ D } 5 \text{ B } 7 = ?$$

A. 10

B. 11



C. 8

D. 9

Q53 Part A

Which of the following is the safest method for disposing of toxic dust?

A. Sweeping it into open areas

B. Releasing it into the air for dilution

C. Using specialised hazardous waste disposal containers



D. Dumping it in regular trash bins

Q54 Part A

Megha bought a bag for ₹1,271 after getting a discount of 18% on its marked price. Find the marked price of the bag.

A. ₹1,550



B. ₹1,650

C. ₹1,350

D. ₹1,450

Q55 Part A

A cube with a mass of 5.74 g occupies a volume of 1.2 cm³. The density (in g/cm³) expressed with the correct number of significant figures is _____.

A. 4.8



B. 4.7833

C. 4.78

D. 4.783



Q56 Part A

Use of energy-efficient machineries in industrial settings primarily helps ____.

- A. reduce industrial energy requirement and improve products' competitiveness. ☒
- B. decrease operational efficiency
- C. increase energy consumption and thereby product cost
- D. extend the lifespan of outdated equipment

Q57 Part A

Which of the following best describes the primary function of a digital signature in electronic communication?

- A. It allows the recipient to edit the document before signing.
- B. It verifies the identity of the sender and ensures the integrity of the message. ☒
- C. It automatically archives all electronic documents for future reference.
- D. It encrypts the entire message content to ensure privacy.

Q58 Part A

Which of the following devices is used to measure temperature?

- A. Thermometer ☒
- B. Hygrometer
- C. Odometer
- D. Voltmeter

Q59 Part A

A, B, C, D, E and F live on six different floors of the same building. The lowermost floor in the building is numbered 1, the floor above it is numbered 2 and so on till the topmost floor is numbered 6. D lives on an odd-numbered floor but not 3. The sum of floors on which D and E live is 7. A lives immediately below C. F lives on the top floor. How many people live between E and F?

- A. 2
- B. 3 ☒
- C. 4
- D. 1

Q60 Part A

Which of the following is NOT a benefit of use of mobile governance using ICT?

- A. Increased transparency and accountability in the government
- B. Increased efficiency in government processes
- C. Reduced costs for the government ☒
- D. Improved access to government services for citizens

Q61 Part A

Which of the following statements is correct about negative work done?

- A. Work done is negative when the force and displacement are in the same direction.
- B. Work done cannot be negative.
- C. Work done is negative when the force is perpendicular to the displacement.
- D. Work done is negative when the force acts opposite to the direction of displacement. ☒

Q62 Part A

Simplify $976 \times 265 + 976 \times 735$.

- A. 752800
- B. 976000 ☒
- C. 658200
- D. 876000

Q63 Part A

Which of the following is a geometrical figure with a three-dimensional geometry that has eight vertices and six rectangular faces?

- A. Cylinder
- B. Cuboid ☒
- C. Parallelogram
- D. Pyramid

Q64 Part A

On which of the following factors does the resistivity of a conductor depend?

- A. Diameter of the conductor
- B. Area of the conductor
- C. Mass of the conductor
- D. Nature of the conductor ☒



Q65 Part A

An ammeter has 20 divisions between 0 A and 2 A. The least count of ammeter is _____.

- A. 0.2 A
- B. 1 A
- C. 0.1 A
- D. 2 A

**Q66 Part A**

The average of three numbers is 20. If two numbers are 16 and 24, the third number is:

- A. 22
- B. 19
- C. 21
- D. 20

**Q67 Part A**

A man purchased two varieties of pens at the rates of ₹8 for 9 pens and ₹8 per pen. If he purchased an equal number of pens of each of the two varieties and then sold all his pens at ₹6 per pen, what was his profit percentage?

- A. 32%
- B. 33%
- C. 35%
- D. 45%

**Q68 Part A**

How many base units are used to measure the physical quantities, according to SI units system?

- A. 5
- B. 7
- C. 10
- D. 4

**Q69 Part A**

Kinetic energy and potential energy together are called which form of energy?

- A. Thermal
- B. Mechanical
- C. Nuclear
- D. Chemical

**Q70 Part A**

Ten people are sitting in two parallel rows with five people each in such a way that there is equal distance between adjacent persons.

In row I, A, B, C, D and E are seated and all of them are facing south.

In row II, R, S, T, U and V are seated and all of them are facing north.

Thus each person faces another person from the other row.

A sits at the extreme right end of their row and is facing U.

R sits at the centre of their row and is facing C. E sits

between C and D and is facing T. S sits at the extreme right end of their row.

Who sits exactly opposite B?

- A. U
- B. V
- C. R
- D. T

**Q71 Part A**

In hot climate regions, the outer walls of the house are preferred to be white in colour because _____.

- A. white colour reflects sunlight to make the interior of the house cool
- B. white colour looks good
- C. white colour absorbs more sunlight to make the house bright
- D. white colour makes the wall more durable

**Q72 Part A**

Which of the following relations is NOT correct?

- A. Electric Power = (Voltage)² / Resistance
- B. Electric Power = Voltage / Current
- C. Electric Power = Voltage × Current
- D. Electric Power = (Current)² × Resistance

**Q73 Part A**

Which of the following noise levels is considered potentially harmful to human health if experienced over extended periods?

- A. 30 dB
- B. 70 dB
- C. 90 dB
- D. 50 dB



Q74 Part A

An ammeter of range 0 to 10 A shows a current of 7.5 A. If its true value is 6.2 A, the relative error is _____.

- A. 17.33%
- B. 13%
- C. 20.96% ✓
- D. 4.8%

Q75 Part A

What should come in place of the question mark (?) in the given series?

185 174 163 152 ? 130

- A. 143
- B. 144
- C. 142
- D. 141 ✓

Q76 Part A

Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which letter-cluster pair DOES NOT belong to that group?

(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)

- A. GN – PV
- B. AH – JR ✓
- C. JQ – SY
- D. HO – QW

Q77 Part A

What is the term used to describe organisms that produce their own food in an ecosystem?

- A. Herbivores
- B. Consumers
- C. Producers ✓
- D. Decomposers

Q78 Part A

What should come in place of the question mark (?) in the given alpha-numeric series?

G5, I10, L15, N20, Q25, S30, ?

- A. W35
- B. V40
- C. U35
- D. V35 ✓

Q79 Part A

Vijay rides a bicycle 10 m from home to his tuition, then 5 m to a shop. He travels back home the same way, covering the same distance. What is his total path length?

- A. 20 m
- B. 15 m
- C. 30 m ✓
- D. Zero

Q80 Part A

Four resistors of 4 ohm each are connected in parallel. Four such parallel combinations are then connected in series. The equivalent resistance is _____.

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

Q81 Part A

If $50 : x :: x : 32$, and $x > 0$, then find the value of x .

- A. 45.8
- B. 40.6
- C. 40 ✓
- D. 38.7

Q82 Part A

What should come in place of the question mark (?) in the given series?

893 891 889 887 ? 883

- A. 886
- B. 986
- C. 885 ✓
- D. 985



Q83 Part A

In a certain code language,

'A + B' means 'A is the mother of B',
 'A - B' means 'A is the brother of B',
 'A × B' means 'A is the wife of B' and
 'A & B' means 'A is the father of B'.

How is E related to T if 'E & F + G - H × T'?

A. Wife's mother's father



B. Wife's brother

C. Wife's mother's brother

D. Wife's father

Q84 Part A

What should be done immediately after a fuel spillage in a workshop?

A. Use water to wash it away

B. Evacuate the area and contain the spill using absorbent materials



C. Leave it unattended and inform the supervisor later

D. Cover it with plastic to prevent evaporation

Q85 Part A

Match the columns.

Engineering Applications Type of Engineering Drawings

A) Plan, front elevation of homes to be built, foundation drawings P) Mechanical Engineering Drawings
 B) Circuit diagrams and Electrical installation drawings Q) Electronics Engineering drawings
 C) PCB tracks drawings R) Electrical Engineering drawings
 D) Riveted joints and Welded joints S) Civil Engineering drawings

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

Q86 Part A

Eight people are sitting in two parallel rows containing 4 people each in such a way that there is equal distance between adjacent persons. In row 1, A, B, C and D are seated, and all of them are facing south. In row 2, P, Q, R and S are seated, and all of them are facing north. Thus, each person faces another person from the other row. Only two people sit between P and Q. A faces the person sitting to the immediate left of P. R sits to the immediate left of S. D sits to the immediate right of C. Who among the following faces P?

A. B



B. C

C. A

D. D

Q87 Part A

The average of 5 results is 51 and that of the first 4 is 50. The 5th result is ____.

A. 55



B. 51

C. 50

D. 54

Q88 Part A

Which of the following letter-clusters should replace # and % so that the pattern and relationship followed between the letter-cluster pair on the left side of :: is the same as that on the right side of ::?

: HDI :: MIN : %

A. # = JFK, % = KGL



B. # = JFI, % = KGL

C. # = JFK, % = KHL

D. # = JFK, % = KGM

Q89 Part A

Which of the following is NOT a valid representation of electrical power P in a circuit? (The current, potential difference and resistance are written symbolically as I, V and R, respectively.)

A. $P = IR^2$



B. $P = V^2/R$

C. $P = I^2R$

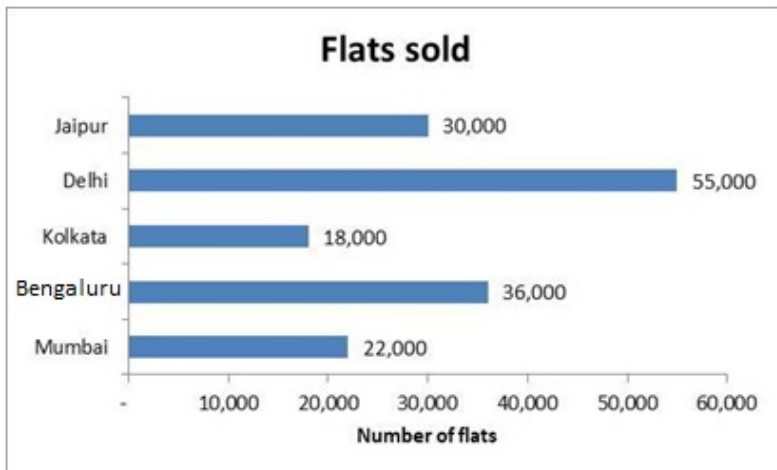
D. $P = VI$



Q90 Part A

Study the given bar-graph and answer the question that follows.

The given bar-graph indicates the number of flats sold by a builder in five different cities in 2020.



The number of flats sold in Delhi is what percentage more than the number of flats sold in Mumbai?

- A. 120%
- B. 75%
- C. 125%
- D. 150%

**Q91** Part A

A cistern has two inlets I_1 and I_2 . I_1 alone can fill it in 8 hours and I_2 in 4 hours. If both the inlets are open, what will be the time required to fill the cistern.

- A. 2 hours
- B. $4\frac{2}{3}$ hours
- C. $2\frac{2}{3}$ hours
- D. $3\frac{2}{3}$ hours

**Q92** Part A

What does the symbol given below denote in a circuit diagram?



- A. Variable resistor
- B. Resistor
- C. Voltmeter
- D. Voltage source



Q93 Part A

Which of the following expressions is NOT correct for electric power?

A. $P = \frac{V^2}{R}$

B. $P = VI$

C. $P = \frac{I^2}{R}$ ✓

D. $4. P = I^2 R$

Q94 Part A

A piece of rod $\frac{8}{9}$ metre long is broken into two pieces. If one piece is $\frac{1}{3}$ metre long, find the length (in m) of the other piece.

A. $\frac{7}{9}$

B. $\frac{5}{9}$ ✓

C. $\frac{2}{9}$

D. $\frac{4}{9}$

Q95 Part A

Find the value of $x^2 + y^2$, given the following.

$x = 7 + \sqrt{5}, y = 7 - \sqrt{5}$

A. 96

B. 108 ✓

C. 124

D. 137

Q96 Part A

$\frac{p^2 - n^2}{pn}$

A. $\sin A \cos A$ ✓

B. $\cot A \cos A$

C. $\frac{\tan A}{\sec A}$

D. $= \cos A \cot A$



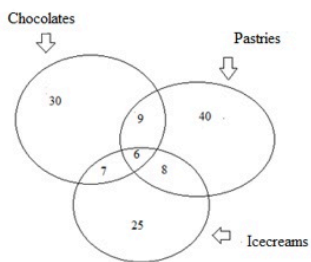
Q97 Part A

Work done is defined in science as _____.

- A. 1. force $\times$ distance
- B. $\frac{\text{force}}{\text{distance}}$
- C. 3. force $\times$ displacement ☒
- D. $\frac{\text{force}}{\text{displacement}}$

Q98 Part A

Study the given diagram carefully and answer the question that follows. The numbers in different sections indicate the number of children preferring different desserts.



How many children prefer both pastries and ice creams but NOT chocolates?

- A. 8 ☒
- B. 7
- C. 6
- D. 9

Q99 Part A

From a rectangular cardboard sheet of length 46 m and breadth 8 m, three circular plates of radii 3 m, 2 m and 1 m are cut out. If the area of the remaining part of the cardboard sheet is equal to the area of a square, then find the length of each side of the square (use $\pi = \frac{22}{7}$).

- A. 16 m
- B. 20 m
- C. 18 m ☒
- D. 14 m



Q100 Part A

If $\frac{5}{9}$ of a number is 6 more than $\frac{1}{2}$ of the number, then what is the number?

A. 102

B. 104

C. 108



D. 106

Part B (Millwright Maintenance Mechanic)

75 Questions • Answer Key

Q101 Part B (Millwright Maintenance Mechanic)

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

Q102 Part B (Millwright Maintenance Mechanic)

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

Q103 Part B (Millwright Maintenance Mechanic)

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

Q104 Part B (Millwright Maintenance Mechanic)

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

**Q105 Part B (Millwright Maintenance Mechanic)**

Parallel milling is primarily used for machining:

A. flat surfaces



B. internal threads

C. cylindrical workpieces

D. gear teeth

Q106 Part B (Millwright Maintenance Mechanic)

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

**Q107 Part B (Millwright Maintenance Mechanic)**

In drawing down thicker sections, which tool is commonly used to localise deformation?

A. Fuller



B. Chisel

C. Swage block

D. Anvil horn

Q108 Part B (Millwright Maintenance Mechanic)

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



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Q109 Part B (Millwright Maintenance Mechanic)

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.

Q110 Part B (Millwright Maintenance Mechanic)

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

(Take $\pi = 3.14$)

A. 100 cm²

B. 91.74 cm² ✓

C. 95.86 cm²

D. 75.74 cm²

Q111 Part B (Millwright Maintenance Mechanic)

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

A. Sulphuric acid (H₂SO₄)

B. Lead (Pb)

C. Lead dioxide (PbO₂) ✓

D. Lead sulfate (PbSO₄)

Q112 Part B (Millwright Maintenance Mechanic)

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 ✓

Q113 Part B (Millwright Maintenance Mechanic)

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)

Q114 Part B (Millwright Maintenance Mechanic)

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

Q115 Part B (Millwright Maintenance Mechanic)

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

Q116 Part B (Millwright Maintenance Mechanic)

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.

Q117 Part B (Millwright Maintenance Mechanic)

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

Q118 Part B (Millwright Maintenance Mechanic)

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



Q119 Part B (Millwright Maintenance Mechanic)

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.

Q120 Part B (Millwright Maintenance Mechanic)

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

Q121 Part B (Millwright Maintenance Mechanic)

Which tool is commonly used to apply uniform twisting force during forging operations?

- A. Chisel
- B. Hammer
- C. Swage block
- D. Twisting wrench ✓

Q122 Part B (Millwright Maintenance Mechanic)

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

Q123 Part B (Millwright Maintenance Mechanic)

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

Q124 Part B (Millwright Maintenance Mechanic)

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

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

Q125 Part B (Millwright Maintenance Mechanic)

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

Q126 Part B (Millwright Maintenance Mechanic)

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 ✓

Q127 Part B (Millwright Maintenance Mechanic)

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

Q128 Part B (Millwright Maintenance Mechanic)

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



Q129 Part B (Millwright Maintenance Mechanic)

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



Q130 Part B (Millwright Maintenance Mechanic)

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.



Q131 Part B (Millwright Maintenance Mechanic)

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.



Q132 Part B (Millwright Maintenance Mechanic)

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



Q133 Part B (Millwright Maintenance Mechanic)

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.



Q134 Part B (Millwright Maintenance Mechanic)

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



Q135 Part B (Millwright Maintenance Mechanic)

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



Q136 Part B (Millwright Maintenance Mechanic)

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



Q137 Part B (Millwright Maintenance Mechanic)

The unit for specific gravity is _____.

- A. m/s²
- B. g/cm³
- C. kg/m³
- D. no unit (dimensionless)



Q138 Part B (Millwright Maintenance Mechanic)

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



Q139 Part B (Millwright Maintenance Mechanic)

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.

Q140 Part B (Millwright Maintenance Mechanic)

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

Q141 Part B (Millwright Maintenance Mechanic)

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

Q142 Part B (Millwright Maintenance Mechanic)

An electronic digital caliper displays the measurement on a _____.

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

Q143 Part B (Millwright Maintenance Mechanic)

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

Q144 Part B (Millwright Maintenance Mechanic)

What is the unit of specifying slip gauges?

- ☒ A. Millimetres
- ☐ B. Kilograms
- ☐ C. Kilometres
- ☐ D. Newtons

Q145 Part B (Millwright Maintenance Mechanic)

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

Q146 Part B (Millwright Maintenance Mechanic)

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

Q147 Part B (Millwright Maintenance Mechanic)

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.

Q148 Part B (Millwright Maintenance Mechanic)

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



Q149 Part B (Millwright Maintenance Mechanic)

Which hardness test uses a diamond pyramid-shaped indenter?

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

Q150 Part B (Millwright Maintenance Mechanic)

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

Q151 Part B (Millwright Maintenance Mechanic)

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

Q152 Part B (Millwright Maintenance Mechanic)

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

Q153 Part B (Millwright Maintenance Mechanic)

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

Q154 Part B (Millwright Maintenance Mechanic)

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

Q155 Part B (Millwright Maintenance Mechanic)

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

Q156 Part B (Millwright Maintenance Mechanic)

In thread cutting, 'BSW' stands for _____.

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

Q157 Part B (Millwright Maintenance Mechanic)

When scraping a flat surface, what pattern is usually followed?

- A. Cross-hatch pattern
- B. Straight-line pattern
- C. Random pattern
- D. Circular pattern



Q158 Part B (Millwright Maintenance Mechanic)

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

Q159 Part B (Millwright Maintenance Mechanic)

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



Q160 Part B (Millwright Maintenance Mechanic)

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

Q161 Part B (Millwright Maintenance Mechanic)

Gaskets, seals and spacers are made using:

A. centre punch

B. hollow punch



C. pin punch

D. prick punch

Q162 Part B (Millwright Maintenance Mechanic)

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



Q163 Part B (Millwright Maintenance Mechanic)

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.

Q164 Part B (Millwright Maintenance Mechanic)

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

Q165 Part B (Millwright Maintenance Mechanic)

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



Q166 Part B (Millwright Maintenance Mechanic)

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.

Q167 Part B (Millwright Maintenance Mechanic)

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.



Q168 Part B (Millwright Maintenance Mechanic)

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.

Q169 Part B (Millwright Maintenance Mechanic)

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

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

Q170 Part B (Millwright Maintenance Mechanic)

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

Q171 Part B (Millwright Maintenance Mechanic)

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

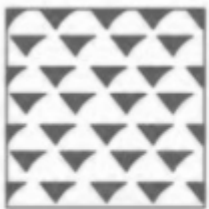
Q172 Part B (Millwright Maintenance Mechanic)

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

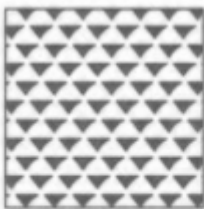
- A. $\frac{17}{24}$
- B. $\frac{19}{24}$ ✓
- C. $\frac{8}{20}$
- D. $\frac{7}{12}$

Q173 Part B (Millwright Maintenance Mechanic)

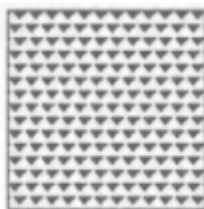
Identify the rough file grade from the figures given below.



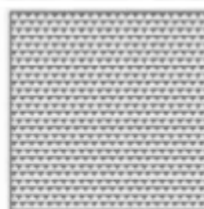
(a)



(b)



(c)



(d)

- A. (b)
- B. (d)
- C. (c)
- D. (a) ✓



Q174 Part B (Millwright Maintenance Mechanic)

$\cos \theta$

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

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

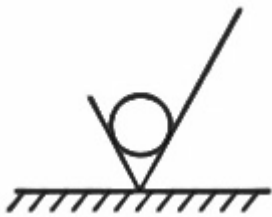
C. $\frac{5}{4}$

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



Q175 Part B (Millwright Maintenance Mechanic)

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.



Part A

100 Questions • Answer Key

Q1 Part A

A can do a work in 14 hours. B can do the same work in 21 hours. A started working alone. After how many hours should B join A so that the whole work is completed in 10 hours?

A. 3.5

B. 4

C. 3

D. 4.5

Q2 Part A

Which of the following is an ethical concern related to Information Technology?

A. Increased accessibility to educational resources

B. Enhancement of communication channels

C. Privacy violations and data breaches

D. Reduction in administrative costs

Q3 Part A

Based on the English alphabetical order, three of the following four letter-clusters are alike in a certain way and thus form a group. Which letter-cluster DOES NOT belong to that group?

(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)

A. EKJR

B. VBZI

C. GMKT

D. IOMV

Q4 Part A

Which element is used in thermometers?

A. Lead

B. Mercury

C. Gallium

D. Bromine

Q5 Part A

If an electric load draws a current of 2 A for 1 second, then calculate the number of electrons (with charge 1.6×10^{-19} C) passing through the load.

A. 1.25×10^{19} B. 1.25×10^{20} C. 0.25×10^{20} D. 0.25×10^{19}

Q6 Part A

In order to resolve disputes arising from cyber crime, such as tampering with computer source documents, hacking the computer system, using password of another person and publishing sensitive personal data of others without their consent, a forum has been established by the Central Government (India) in accordance with the provisions contained under Section 48(1) of the Information Technology Act, 2000. What is the name of that forum?

A. Internet Crime Complaint Center

B. National Cybercrime Reporting Station

C. Cyber Appellate Tribunal

D. Cybercrime Reporting Tribunal

Q7 Part A

How does retrofitting an old building with energy-efficient windows impact energy consumption?

A. It decreases the building's heating and cooling costs.

B. It causes a rise in indoor temperatures.

C. It has no effect on energy consumption.

D. It increases the need for artificial lighting.



Q8 Part A

Two sets of numbers are given below. In each set of numbers, certain mathematical operation(s) on the first number results in the second number. Similarly, certain mathematical operation(s) on the second number results in the third number and so on. Which of the given options follows the same set of operations as in the given sets?

(NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into their constituent digits. E.g. 13 – Operations on 13 such as adding/subtracting/multiplying to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

988 – 494 – 444 – 534; 894 – 447 – 397 – 487

A. 682 – 341 – 291 – 381



B. 226 – 113 – 144 – 268

C. 586 – 293 – 244 – 328

D. 138 – 69 – 14 – 98

Q9 Part A

Which of the following statements is correct?

A. All metals are poor conductors of heat.

B. Plastic and wood allow heat to pass through them easily.

C. Copper and aluminium are good conductors of heat.



D. Dry air is a good conductor of heat.

Q10 Part A

Which term is used to describe the closeness of the measured value to the standard or true value?

A. Precision

B. Approximate

C. Accuracy



D. Mean

Q11 Part A

In a certain code language, 'BOAT' is coded as '8654' and 'AIDS' is coded as '3517'. What is the code for 'A' in the given code language?

A. 5



B. 3

C. 6

D. 8

Q12 Part A

Among three partners A, B and C in a business. The capital of B is equal to half the difference between thrice the capital of C and twice the capital of A. If at the end of the year, they received a profit of ₹25,415, what is the share of C (in ₹)?

A. 9,166

B. 8,666

C. 11,666

D. 10,166

**Q13 Part A**

The potential energy of an object is equivalent to the _____.

A. energy transferred



B. change in velocity

C. energy lost

D. change in speed

Q14 Part A

A man rides a bicycle from Point A to Point B in 10 minutes and comes back to Point B along the same path in 10 minutes. If the distance between Points A and B is 1 km, calculate his average velocity?

A. 0 m/s



B. 0.1 m/s

C. 3.3 m/s

D. 1.6 m/s

Q15 Part A

Three partners, A, B and C, shared the profit in a business in the proportion of 11 : 13 : 16. They invested their capitals for 7 months, 5 months and 12 months, respectively. What was the ratio of their capitals?

A. 96 : 135 : 101

B. 3 : 5 : 8

C. 21 : 35 : 44

D. 165 : 273 : 140



Q16 Part A

Under which Section of the Factories Act, of 1948, is the employment of women and children near cotton openers prohibited?

- A. Section 29
- B. Section 25
- C. Section 21
- D. Section 27

**Q17 Part A**

The speed of a bus is 6 metres/second. The distance (in kilometres) travelled by the bus in 8 hours and 20 minutes is:

- A. 180
- B. 184
- C. 175
- D. 185

**Q18 Part A**

Two trains are running in opposite directions at the same speed. The length of each train is 175 m. If they cross each other in 7 s, the speed of each train is:

- A. 80 km/hr
- B. 85 km/hr
- C. 90 km/hr
- D. 75 km/hr

**Q19 Part A**

A mass m is moving with a velocity v and its kinetic energy is K . What will be the new kinetic energy if the velocity is doubled?

- A. $4K$
- B. $2K$
- C. $K/2$
- D. K

**Q20 Part A**

Which of the following terms is used to describe the pollutants that originate from identifiable sources, such as factories or vehicles?

- A. Random Pollution
- B. Point Source Pollution
- C. Radicle Pollution
- D. Non-point Source Pollution

**Q21 Part A**

Which is the least number that must be subtracted from 5563 to make it exactly divisible by 18?

- A. 3
- B. 7
- C. 5
- D. 1

**Q22 Part A**

Which of the following features is unique to Telegram compared to WhatsApp and Facebook Messenger?

- A. Ability to create channels for broadcasting messages to large audiences
- B. Integration with Facebook for seamless sharing
- C. Voice and video calling capabilities
- D. End-to-end encryption for all messages

**Q23 Part A**

What is the first step to take in case of a power failure in a workshop?

- A. Check if emergency lighting and backup power are functional
- B. Continue working as usual
- C. Panic and leave the premises immediately
- D. Ignore the situation and wait for power to return

**Q24 Part A**

Which of the following is NOT an SI unit?

- A. Mole
- B. Hour
- C. Metre
- D. Kilogram

**Q25 Part A**

Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which letter-cluster pair DOES NOT belong to that group?

(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster pair)

- A. KF – HM
- B. DY – AG
- C. QL – NT
- D. BW – YE



Q26 Part A

Which of the following statements is INCORRECT?

- A. In solids, heat transfer is typically carried out through conduction.
- B. Burning of feet on hot sand is an example of heat transfer by conduction.
- C. Conduction is the process of heat transfer from hotter body to colder body.
- D. Conduction is the process of heat transfer that does not require any medium to transfer heat. ✓

Q27 Part A

What is the primary purpose of netiquette in online communication?

- A. To increase the number of followers on social media
- B. To improve typing speed
- C. To enhance internet connection speed
- D. To ensure polite and respectful interactions ✓

Q28 Part A

Select the pair which follows the same pattern as that followed by the two sets of pairs given below. Both pairs follow the same pattern.

ARF : YTH
WVJ : UXL

- A. MEL : HZN
- B. KXF : HZH
- C. SZN : QBP ✓
- D. QEB : NBD

Q29 Part A

A shopkeeper allows a discount of 18% on the marked price of an article and sells it for ₹2,870. Find the marked price of the article.

- A. ₹3,460
- B. ₹3,500 ✓
- C. ₹3,350
- D. ₹3,200

Q30 Part A

A, B, C, D, E and F live on six different floors of the same building. The lowermost floor in the building is numbered 1, the floor above it is numbered 2 and so on till the topmost floor is numbered 6. E lives on an even-numbered floor but not 4. The sum of floors on which E and B live is 9. Only three people live between A and C. The sum of floors on which F and C live is 3. What is the sum of floors on which B and F live?

- A. 6
- B. 5 ✓
- C. 7
- D. 4

Q31 Part A

A refrigerator seller offers a discount of 10% on its listed price of ₹57,500 and still earns a profit of 15%. The cost price of the refrigerator is:

- A. ₹42,000
- B. ₹45,000 ✓
- C. ₹48,000
- D. ₹40,000

Q32 Part A

Which of the following is generally the temperature range in a laboratory thermometer?

- A. -10°C to 110°C ✓
- B. -100°C to 130°C
- C. -10°C to 150°C
- D. 35°C to 42°C

Q33 Part A

Find the minimum value of $2x^2 - 5x - 3$ and also find x.

- A. 6.125 and $x = 1.2$
- B. -6.125 and $x = 0.25$
- C. 6.125 and $x = 1.25$
- D. -6.125 and $x = 1.25$ ✓



Q34 Part A

Which of the following is the correct statement of Ohm's Law?

- A. The potential difference across the ends of a conductor is inversely proportional to the current flowing through it.
- B. The potential difference across the ends of a conductor is directly proportional to the current flowing through it. ✓
- C. If the potential difference across the two ends of a conductor is 1 V and the current through it is 1A, then the resistance of the conductor is 2Ω .
- D. Current through a resistor is directly proportional to its resistance.

Q35 Part A

Which of the following is NOT a good heat conductor?

- A. Aluminum
- B. Copper
- C. Fur ✓
- D. Iron

Q36 Part A

What is the SI unit for solid angle?

- A. Metre
- B. Candela
- C. Steradian ✓
- D. Radian

Q37 Part A

Calculate the resistance of the bulb filament if it draws 200 mA current from 220 V source.

- A. 44Ω
- B. 220Ω
- C. 1100Ω ✓
- D. 0Ω

Q38 Part A

What is the ratio of the areas of two successive format sheet sizes created by either halving along the length or doubling along the width?

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

Q39 Part A

E, F, G, H, P, Q, and R, are sitting around a circular table facing the centre. F sits third to the left of H. Only two people sit between H and G when counted from the right of H. Q is an immediate neighbor of G. P is NOT an immediate neighbour of H. E is an immediate neighbour of Q. Who sits second to the left of E?

- A. P
- B. H
- C. G
- D. R ✓

Q40 Part A

Which of the following actions involves scientific work?

- A. Climbing up the stairs ✓
- B. Spending time conversing with friends
- C. Watching a film
- D. Holding a large load on one's head while standing motionless

Q41 Part A

Which of the following processes causes accumulation of heavy metals such as lead and mercury in soil?

- A. Improper disposal of industrial wastes ✓
- B. Natural soil formation
- C. Ozone layer depletion
- D. Water evaporation

Q42 Part A

In a certain code language, 'GOES' is coded as '8624' and 'SNYC' is coded as '3817'. What is the code for 'S' in the given code language?

- A. 8 ✓
- B. 2
- C. 4
- D. 3



Q43 Part A

Given below are two sets of numbers. Both the sets are formed using the same mathematical equations or follow a common pattern. Which of the given options follows the same set of mathematical equations or patterns as the sets given in the question?

1333 – 1730 – 2199 – 2746 – 3377
218 – 345 – 514 – 731 – 1002

A. 3 – 10 – 29 – 66 – 127



B. 3 – 6 – 11 – 18 – 27

C. 38 – 51 – 66 – 83 – 102

D. 123 – 146 – 171 – 198 – 227

Q44 Part A

What is the kinetic energy possessed by an object having mass 25 kg and moving with a uniform velocity of 2 m s^{-1} ?

A. 50 J



B. 100 J

C. 120 J

D. 80 J

Q45 Part A

Why does a combination of two thin blankets keep you warmer in the winter than a single thick blanket?

A. Two thin blankets absorb more heat from the surroundings than one thick blanket.

B. Two thin blankets allow more heat to escape, keeping you warmer.

C. Two thin blankets generate more heat than one thick blanket.

D. Two blankets create an additional insulating layer of air, reducing heat loss.

**Q46 Part A**

What should come in place of the question mark (?) in the given series?

WU5, SQ7, NL11, ?

A. HE15

B. HF13



C. HF17

D. GE17

Q47 Part A

In a certain code language, 'WIDE' is coded as '8694' and 'INKS' is coded as '3917'. What is the code for 'I' in the given code language?

A. 9



B. 7

C. 3

D. 6

Q48 Part A

Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusion(s) logically follow(s) from the statements.

Statements:

- I. All books are pencils.
- II. All pencils are cardboards.
- III. All cardboards are notebooks.

Conclusions:

- I. Some notebooks are pencils.
- II. Some cardboards are books.
- III. Some notebooks are books.

A. All conclusions I, II and III follow.



B. Only conclusions I and II follow.

C. Only conclusions II and III follow.

D. Only conclusions I and III follow.

Q49 Part A

Which of the following is NOT correct about Joule's law of heating?

A. Heat produced in a resistor is directly proportional to the resistance for a given current.

B. Heat produced in a resistor is directly proportional to the time for which the current flows through the resistor.

C. Heat produced in a resistor is inversely proportional to the square of the current for a given resistance.



D. Heat produced in a resistor is directly proportional to the square of the current for a given resistance.



Q50 Part A

The weights (in kg) of 20 students of a class have been recorded as 35, 42, 56, 44, 55, 44, 36, 44, 49, 48, 55, 35, 44, 47, 49, 48, 56, 44, 37 and 35. The modal weight (in kg) of the class is:

- A. 45
- B. 47
- C. 37
- D. 44

**Q51 Part A**

The marked price of an article was ₹27,500. The shopkeeper gave two successive discounts; the first discount was 20%, and the second was at a rate of 30% of the first discount. What is the selling price (in ₹) of the article?

- A. 20,860
- B. 26,080
- C. 20,086
- D. 20,680

**Q52 Part A**

If $21.6 : x :: x : 29.4$, and $x > 0$, then find the value of x .

- A. 23.9
- B. 25.4
- C. 25.2
- D. 23.3

**Q53 Part A**

If 24 joules of work is done in moving a charge of 2 coulombs across two points, then what will be the correct voltage across these two points?

- A. 12 V
- B. 24 V
- C. 2 V
- D. 48 V

**Q54 Part A**

What is necessary for a circuit to have electric current flowing through it?

- A. Only bulb
- B. Only wire
- C. A closed conducting path with a voltage source
- D. Only switch

**Q55 Part A**

Which of the following keyboard shortcuts on a Windows 10 home screen opens the item's properties?

- A. Insert + Alt
- B. F2 + Alt
- C. Tab + Del
- D. Alt + Enter

**Q56 Part A**

A force of 6 N is exerted on an object, resulting in its displacement of 2 m in the direction of the force. If the force is constant during the displacement, what is the work done in this case?

- A. 25 J
- B. 12 J
- C. 10 J
- D. 3 J

**Q57 Part A**

Which of the following letter-number clusters will replace the question mark (?) in the given series to make it logically complete?

AD8, FI16, KN24, ?

- A. PS35
- B. PS32
- C. OS32
- D. OR35

**Q58 Part A**

Which of the following statements is NOT true?

- A. Clinical and laboratory thermometers are the same.
- B. The range of clinical thermometer is 35 to 42°C.
- C. Laboratory thermometer cannot be used to measure body temperature.
- D. Clinical thermometer should not be used to measure the temperature of boiling water.



Q59 Part A

What should come in place of the question mark (?) in the given alpha-numeric series?

Q16, O14, M12, K10, I8, ?

A. H6

B. G6

C. G4

D. J6

Q60 Part A

What should come in place of the question mark (?) in the given alpha-numeric series?

Y13, F11, L9, Q7, U5, X3, ?

A. A1

B. Z2

C. Z1

D. Y1

Q61 Part A

Four chairs and a table set up cost ₹22,000. Determine the table's cost, if it is ₹2,000 more expensive than the chair.

A. ₹5,000

B. ₹6,000

C. ₹4,000

D. ₹6,500

Q62 Part A

Which of the following options is NOT a necessary characteristic of a kite?

A. The pairs of opposite angles are bisected by the corresponding diagonals.

B. At least one diagonal is bisected by the other diagonal.

C. At least one pair of opposite angles is congruent.

D. The diagonals are perpendicular to each other.

Q63 Part A

Which of the following is a main greenhouse gas that is responsible for global warming?

A. Carbon Dioxide

B. Nitrogen

C. Oxygen

D. Helium

Q64 Part A

A person saves 50% of his income. If his expenditure is ₹440, then his income (in ₹) is:

A. 560

B. 600

C. 880

D. 920

Q65 Part A

If the length, the breadth, and the height of a cuboid are 5 m, 2 m, and 50 cm, respectively, then find its volume.

A. 50 m^3

B. 500 m^3

C. 5 m^3

D. 20 m^3

Q66 Part A

The thickness of a thread is measured by a student using a microscope of magnification 100. After making 30 observations, he finds the average width of the thread is 5.7 mm. What is the estimated thickness of the thread?

A. 0.057 mm

B. 171 mm

C. 0.57 mm

D. 0.09 mm



Q67 Part A

ABC Association meeting is to be held on the 2nd Sunday of next month. The cost of the registration is ₹50 per person. Lunch will be provided to the participants at an additional cost of ₹24. If the number of participants who paid for lunch was 100 more than the members who did not, and if the total receipts for registrations and lunch is ₹69,400, how many people registered and how many lunches are to be prepared, respectively?

A. 1100 and 500

B. 500 and 600

C. 1100 and 1100

D. 1100 and 600

**Q68 Part A**

Given below are two sets of numbers. Both the sets are formed using the same mathematical equations or follow a common pattern. Which of the given options follows the same set of mathematical equations or patterns as the sets given in the question?

4 – 9 – 25 – 64 – 169; 16 – 49 – 121 – 324 – 841

A. 16 – 36 – 64 – 100 – 144

B. 64 – 225 – 529 – 1444 – 3721



C. 64 – 100 – 144 – 196 – 256

D. 4 – 16 – 36 – 64 – 100

Q69 Part A

Eight people are sitting in two parallel rows containing 4 people each in such a way that there is equal distance between adjacent persons. In row 1 – A, B, C and D are seated and all of them are facing south. In row 2 – P, Q, R and S are seated and all of them are facing north. Thus each person faces another person from the other row. No one sits to the left of B. R faces the person who sits second to the right of D. C faces the person who is the immediate neighbour of Q and R, B does not face S. Who amongst the following faces P?

A. D

B. B



C. A

D. C

Q70 Part A

Read the given statement and conclusions carefully. Assuming that the information given in the statement is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusion(s) logically follow(s) from the statement.

Statement:

Over the past year, there has been a noticeable increase in respiratory diseases in City W. According to a public health study, this increase is related to an increase in the number of cars on the road, which has raised air pollution levels.

Conclusions:

I. Increased vehicular traffic contributes to higher levels of air pollution.

II. Improving public transportation would reduce respiratory illnesses in City W.

A. Only conclusion II follows.

B. Neither conclusion I nor II follows.

C. Both conclusions I and II follow.



D. Only conclusion I follows.

Q71 Part A

What is the value of 100 g in SI units?

A. 100 kg

B. 10 kg

C. 0.1 kg



D. 1 kg

Q72 Part A

If 'A' stands for '÷', 'B' stands for '×', 'C' stands for '+' and 'D' stands for '–', then what will come in place of the question mark (?) in the following equation?

47 D 25 A 5 C 2 B 9 = ?

A. 60



B. 58

C. 56

D. 62

Q73 Part A

The two sides CB and BA of triangle ABC are produced to CE and BD, respectively, in such a way that $\angle DAC = 110^\circ$ and $\angle ABE = 130^\circ$. Which of the following options is true?

A. $BC < AC < AB$ B. $AB < AC < BC$ C. $AC < AB < BC$ D. $BC < AB < AC$ 

Q74 Part A

T-Square is used to _____ in engineering drawings.

- A. transfer dimensions and dividing lines into a number of equal parts
- B. draw horizontal lines, parallel lines and to guide/hold the setsquares ✓
- C. draw curved lines on drawing sheets
- D. support the drawing paper/tracing paper for making drawings

Q75 Part A

What is the dimensional equation of mass density (ρ) ?

- A. $[M L^{-3} T^0]$ ✓
- B. $[M L^{-2} T^0]$
- C. $[M^0 L^3 T^0]$
- D. $[M L^{-3} T^{-2}]$

Q76 Part A

Which of the following tools is commonly used to support the 'Standardize' step in the 5S methodology?

- A. Job cycle charts ✓
- B. Labels and signs
- C. Floor markings
- D. Cleaning supplies

Q77 Part A

Based on the English alphabetical order, three of the following four letter-clusters are alike in a certain way and thus form a group. Which letter-cluster DOES NOT belong to that group?

(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)

- A. JNEL
- B. UYPW
- C. CGXF ✓
- D. QULS

Q78 Part A

When reporting a fire in an emergency, what is the most critical information to provide to emergency services?

- A. The likely cause of the fire and the building owner's name
- B. The weather conditions at the time of the fire
- C. How the fire started and if someone is injured or missing ✓
- D. The colour of the smoke and the direction it is moving

Q79 Part A

An electric heater of resistance 50Ω uses a current of 3 A. Determine the heat generated in 20 seconds.

- A. 5000 J
- B. 9000 J ✓
- C. 1000 J
- D. 60 J

Q80 Part A

A porter lifts a 10 kg luggage from the ground and places it on his head, 2.5 m above the ground. Calculate the work done by him on the luggage. (Take $g = 10 \text{ ms}^{-2}$.)

- A. 200 J
- B. 250 N
- C. 250 J ✓
- D. 100 J

Q81 Part A

What should come in place of the question mark (?) in the given series?

62 73 87 104 124 ?

- A. 142
- B. 134
- C. 147 ✓
- D. 153

Q82 Part A

How is a voltmeter connected in a circuit to measure potential difference?

- A. Neither in series nor in parallel
- B. Directly to the power source only
- C. In series with the circuit
- D. In parallel across the points where potential difference is to be measured ✓



Q83 Part A

What should come in place of the question mark (?) in the given series?

179 171 163 ? 147 139

A. 153

B. 151

C. 157

D. 155

**Q84 Part A**

The speed of a train is 144 km/hr. The distance covered by the train in 12 seconds is:

A. 78 m

B. 480 m



C. 518 m

D. 103 m

Q85 Part A

Which of the following is NOT correct?

A. The motion of satellite around Earth in a circular orbit is uniform circular motion.

B. The distance-time graph of an object moving with uniform speed is not a straight line.



C. A person jogging in the park is not an example of uniform circular motion.

D. An object moving with a constant velocity represents uniform motion.

Q86 Part A

Which of the following is the primary reason for adopting scientifically designed methods for safely disposing of toxic waste from automobiles?

A. To improve vehicle lifespan by minimising mechanical wear

B. To reduce fuel consumption and improve overall efficiency

C. To protect human health from harmful fumes and dust in the air



D. To increase vehicle performance by optimising engine efficiency

Q87 Part A

Which of the following letter-clusters should replace # and % so that the pattern and relationship followed between the letter-cluster pair on the left side of :: is the same as that on the right side of ::?

: KHM :: OLQ : %

A. # = LIN, % = NLP

B. # = LIM, % = NKP

C. # = LIN, % = NKP



D. # = LIN, % = NKO

Q88 Part A

Why is regular maintenance of HVAC systems considered a medium ECO?

A. It prevents overheating of the system.

B. It decreases the system's energy consumption.



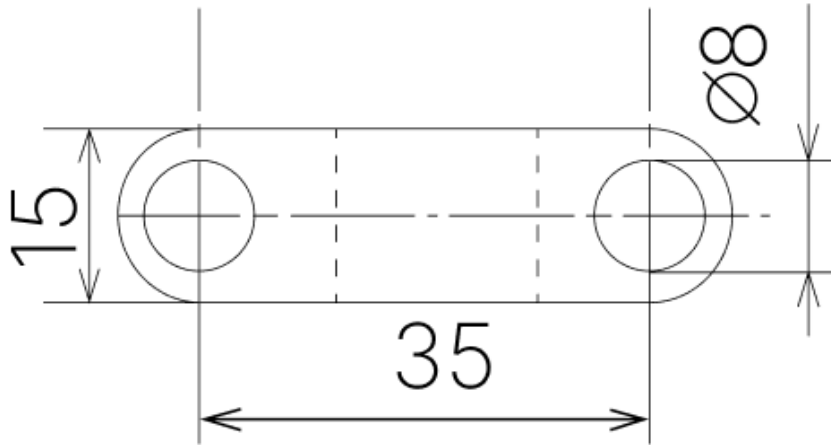
C. It speeds up system breakdowns.

D. It increases the cost of energy.



Q89 Part A

What type of view is represented of the given machine component?



- A. Isometric view
- B. Oblique view
- C. Orthographic view
- D. Perspective view

**Q90 Part A**

Pipes A and B can fill a rectangular tank in 40 minutes and 120 minutes, respectively. Pipe C can empty the completely filled same tank in 240 minutes. If pipes A, B and C are opened at the same time, then how many minutes will it take to fill the tank?

- A. $32\frac{2}{7}$
- B. $34\frac{3}{7}$
- C. $34\frac{2}{7}$
- D. $34\frac{2}{8}$

**Q91 Part A**

A shopkeeper sells sugar at ₹30 per kg, which he has bought at ₹24 per kg. Being dishonest, he also gives only y gm of sugar instead of 1000 gm that is mentioned on the weight. In this way, the shopkeeper manages to make an overall profit of $66\frac{2}{3}\%$.

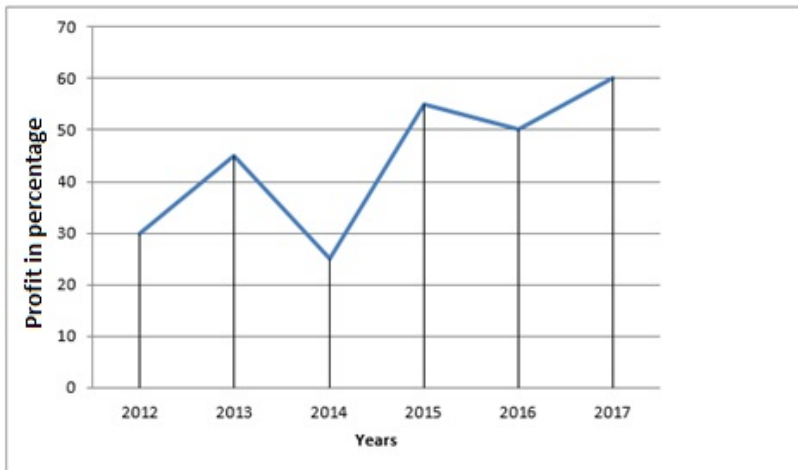
What is the value of y ?

- A. 720
- B. 750
- C. 600
- D. 800



Q92 Part A

Study the given graph and answer the question that follows.



What is the average profit percentage of the given years?

- A. 43.4%
- B. 45%
- C. 44%
- D. 44.1%

**Q93** Part A

If $x + y + z = 0$, then find the value of $\frac{x^2}{2yz} + \frac{y^2}{2xz} + \frac{z^2}{2xy}$.

- A. $\frac{3}{5}$
- B. $\frac{2}{5}$
- C. $\frac{3}{2}$
- D. $\frac{2}{3}$

**Q94** Part A

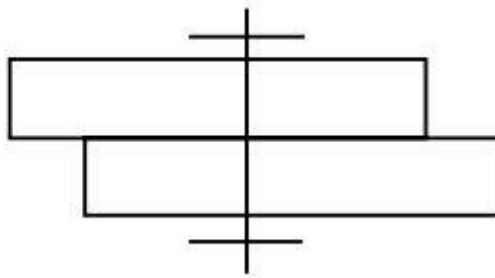
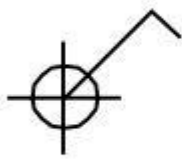
The cost of painting a spherical ball at the rate of ₹2.50 per cm^2 is ₹13,860. What is the diameter of the ball (use $\pi = (\frac{22}{7})$)?

- A. 48 cm
- B. 21 cm
- C. 42 cm
- D. 40 cm



Q95 Part A

Examine the symbolic representation of the hole and rivet provided below. According to BIS SP 46-2003, what does this symbol represent?

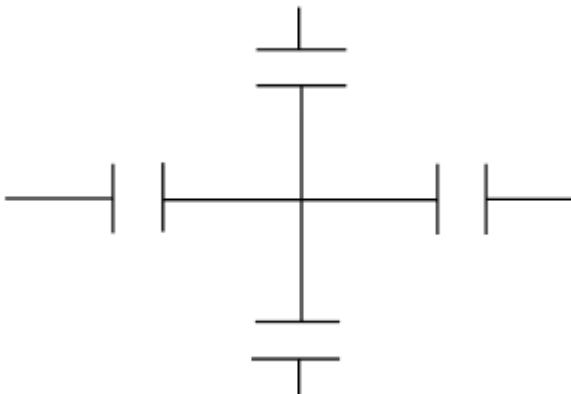


- A. Drilled on-site
- B. Fitted in the workshop
- C. Drilled in the workshop
- D. Drilled and fitted on-site



Q96 Part A

Identify the orthographic symbol of a pipe fitting shown in the figure.



- A. Bend
- B. Union
- C. Tee
- D. Cross



Q97 Part A

Study the given table carefully and answer the question that follows.

	Number of students who	
	Appeared for the exam	Passed the exam
Class IX	104	89
Class X	63	47

What was the total number of students who failed the exam from classes IX and X?

A. 28

B. 33

C. 21

D. 31

**Q98** Part A

In an electrical circuit, 'n' number of $1\ \Omega$ resistors are connected in parallel. When one of the resistors is eliminated, the overall resistance of the circuit is _____.

A. $\frac{1}{(n - 1)}$



B. Zero

C. $\frac{1}{n^2}$

D. $\frac{1}{n}$

Q99 Part A

$$\frac{r}{10}\%$$

A. $\frac{r^4}{10}$



B. $10r^4$

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

D. $\frac{r^4}{20}$

Q100 Part A

By how much is 60% of 50 greater than $\frac{4}{5}$ of 35?

A. 4

B. 1

C. 3

D. 2



Q101 Part B (Millwright Maintenance Mechanic)

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

Q102 Part B (Millwright Maintenance Mechanic)

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

Q103 Part B (Millwright Maintenance Mechanic)

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.**

Q104 Part B (Millwright Maintenance Mechanic)

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

Q105 Part B (Millwright Maintenance Mechanic)

The SI unit of temperature is/are _____.

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

Q106 Part B (Millwright Maintenance Mechanic)

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

Q107 Part B (Millwright Maintenance Mechanic)

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

Q108 Part B (Millwright Maintenance Mechanic)

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

Q109 Part B (Millwright Maintenance Mechanic)

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

Q110 Part B (Millwright Maintenance Mechanic)

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.**



Q111 Part B (Millwright Maintenance Mechanic)

Which part of the shaping tool is sharpened during grinding?

- ☒ A. Cutting edge
- ☐ B. Worktable
- ☐ C. Tool handle
- ☐ D. Machine bed

Q112 Part B (Millwright Maintenance Mechanic)

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

Q113 Part B (Millwright Maintenance Mechanic)

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

Q114 Part B (Millwright Maintenance Mechanic)

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

Q115 Part B (Millwright Maintenance Mechanic)

As we know from the graduation of micrometer, if we give one full round to thimble, its spindle moves $\frac{1}{2}$ mm forward or backward. Therefore, one part of the thimble is its _____.

- ☐ A. Pitch
- ☒ B. Least count
- ☐ C. MSR
- ☐ D. Lead

Q116 Part B (Millwright Maintenance Mechanic)

Which of the following metals has the lowest melting point?

- ☒ A. Mercury
- ☐ B. Iron
- ☐ C. Lead
- ☐ D. Gold

Q117 Part B (Millwright Maintenance Mechanic)

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

Q118 Part B (Millwright Maintenance Mechanic)

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

- ☐ A. 125 cm²
- ☐ B. 150 cm²
- ☐ C. 200 cm²
- ☒ D. 100 cm²

Q119 Part B (Millwright Maintenance Mechanic)

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

Q120 Part B (Millwright Maintenance Mechanic)

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



Q121 Part B (Millwright Maintenance Mechanic)

_____ 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

Q122 Part B (Millwright Maintenance Mechanic)

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

Q123 Part B (Millwright Maintenance Mechanic)

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** ✓

Q124 Part B (Millwright Maintenance Mechanic)

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

Q125 Part B (Millwright Maintenance Mechanic)

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

Q126 Part B (Millwright Maintenance Mechanic)

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** ✓

Q127 Part B (Millwright Maintenance Mechanic)

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

Q128 Part B (Millwright Maintenance Mechanic)

Convert 8.5% into a decimal.

- A. 0.85
- B. 8.5
- C. 0.085** ✓
- D. 85

Q129 Part B (Millwright Maintenance Mechanic)

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

Q130 Part B (Millwright Maintenance Mechanic)

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



Q131 Part B (Millwright Maintenance Mechanic)

_____ 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

Q132 Part B (Millwright Maintenance Mechanic)

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°

Q133 Part B (Millwright Maintenance Mechanic)

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 ✓

Q134 Part B (Millwright Maintenance Mechanic)

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.

Q135 Part B (Millwright Maintenance Mechanic)

Which of the following is NOT a part of the micrometer?

- A. Spindle
- B. Anvil
- C. Jam ✓
- D. Frame

Q136 Part B (Millwright Maintenance Mechanic)

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

Q137 Part B (Millwright Maintenance Mechanic)

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

Q138 Part B (Millwright Maintenance Mechanic)

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) ✓

Q139 Part B (Millwright Maintenance Mechanic)

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

Q140 Part B (Millwright Maintenance Mechanic)

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



Q141 Part B (Millwright Maintenance Mechanic)

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 ✓

Q142 Part B (Millwright Maintenance Mechanic)

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 ✓

Q143 Part B (Millwright Maintenance Mechanic)

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

Q144 Part B (Millwright Maintenance Mechanic)

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.

Q145 Part B (Millwright Maintenance Mechanic)

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

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

Q146 Part B (Millwright Maintenance Mechanic)

_____ 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

Q147 Part B (Millwright Maintenance Mechanic)

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** ✓

Q148 Part B (Millwright Maintenance Mechanic)

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.



Q149 Part B (Millwright Maintenance Mechanic)

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

Q150 Part B (Millwright Maintenance Mechanic)

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

Q151 Part B (Millwright Maintenance Mechanic)

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

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

Q152 Part B (Millwright Maintenance Mechanic)

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

Q153 Part B (Millwright Maintenance Mechanic)

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

Q154 Part B (Millwright Maintenance Mechanic)

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

Q155 Part B (Millwright Maintenance Mechanic)

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.

Q156 Part B (Millwright Maintenance Mechanic)

The type of feed primarily used for grooving operations on a lathe is ____ feed.

- A. cross ✓
- B. angular
- C. rotary
- D. longitudinal

Q157 Part B (Millwright Maintenance Mechanic)

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



Q158 Part B (Millwright Maintenance Mechanic)

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. ✓

Q159 Part B (Millwright Maintenance Mechanic)

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

Q160 Part B (Millwright Maintenance Mechanic)

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 ✓

Q161 Part B (Millwright Maintenance Mechanic)

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. $t = D / d$

Q162 Part B (Millwright Maintenance Mechanic)

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

Q163 Part B (Millwright Maintenance Mechanic)

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 ✓

Q164 Part B (Millwright Maintenance Mechanic)

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

Q165 Part B (Millwright Maintenance Mechanic)

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 ✓

Q166 Part B (Millwright Maintenance Mechanic)

As we know from the graduation of micrometer, if we give one full round to thimble, its spindle moves $\frac{1}{2}$ 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



Q167 Part B (Millwright Maintenance Mechanic)

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.

Q168 Part B (Millwright Maintenance Mechanic)

What is the SI unit of 'volume'?

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

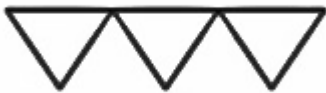
Q169 Part B (Millwright Maintenance Mechanic)

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

Q170 Part B (Millwright Maintenance Mechanic)

Observe the given roughness grade symbol and identify the corresponding roughness grade number whose corresponding roughness value is $0.2\text{ }\mu\text{m}$.



- A. N1
- B. N3
- C. N4 ✓
- D. N2

Q171 Part B (Millwright Maintenance Mechanic)

Identify the below tool used on the Lathe.

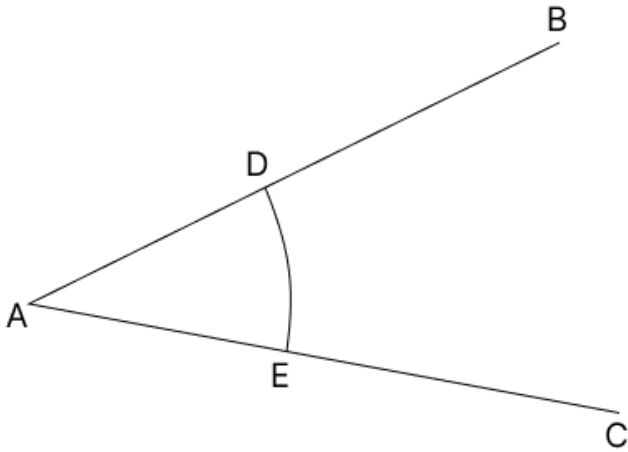


- A. Threading tool ✓
- B. Knurling tool
- C. Parting tool
- D. Boring tool



Q172 Part B (Millwright Maintenance Mechanic)

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

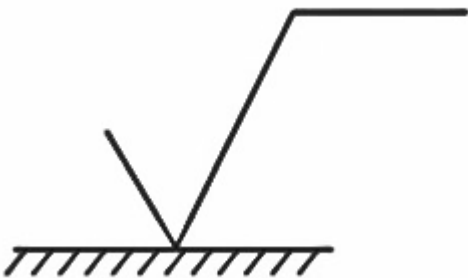


- A. To find midpoint AB
- B. To mark equal lengths
- C. To intersect line AC
- D. To intersect above A



Q173 Part B (Millwright Maintenance Mechanic)

What does the surface finish symbol shown in the given figure represent?

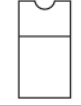


- A. A specific surface texture requirement is indicated.
- B. The surface must be left in its cast or forged state.
- C. The surface should be coated without material removal.
- D. No machining is required on this surface.



Q174 Part B (Millwright Maintenance Mechanic)

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

Q175 Part B (Millwright Maintenance Mechanic)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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