



रेल भर्ती बोर्ड / RAILWAY RECRUITMENT BOARDS

सी ई एन - ०१/२०२५ - CEN - 01/2025

सहायक लोको पायलट की भर्ती/ Recruitment of Assistant Loco Pilot

Test Date	28/07/2026
Test Time	2:30 PM - 5:00 PM
Subject	ALP Stage 2 Wiremen

* Note

Correct Answer will carry 1 mark per Question.

Incorrect Answer will carry 1/3 Negative mark per Question.

1. Options shown in green color with a tick icon are correct.

2. Chosen option on the right of the question indicates the option selected by the candidate.

Section : PART-A

Q.1 Why is a room thermometer generally mounted vertically on a wall?

- Ans**
- ☒ A. It ensures accurate reading by keeping the bulb exposed to room air.
 - ☐ B. It prevents the liquid from freezing inside the thermometer.
 - ☐ C. It helps the thermometer measure body temperature faster.
 - ☐ D. It protects the thermometer from breaking easily.

Q.2 An engineer is updating a schematic for a control panel and needs to indicate a normally closed push button. Which approach best ensures the symbol is universally understood among engineers referring to standard engineering drawings?

- Ans**
- ☒ A. Use the standardized symbol for a normally closed push button as per conventions
 - ☐ B. Substitute the normally closed push button symbol with a general switch symbol
 - ☐ C. Draw a hand made representation of the push button with a note explaining function
 - ☐ D. Describe the normally closed push button in words within the schematic diagram clearly

Q.3 Which type of personal protective equipment is most suitable for tasks involving airborne chemical particles in confined spaces?

- Ans**
- ☐ A. Hand protection using chemical-resistant gloves
 - ☒ B. Respiratory protection devices such as half-face masks
 - ☐ C. Head protection with industrial-grade hard hats
 - ☐ D. Body protection with flame-retardant suits

Q.4 A car travels from point A to point B in a zigzag path, covering a total distance of 200 meters. If the shortest straight-line distance between A and B is 120 meters, which statement best describes the car's distance and displacement?

- Ans**
- ☐ A. The distance is 120 meters; the displacement is 120 meters
 - ☐ B. The distance is 120 meters; the displacement is 200 meters
 - ☒ C. The distance is 200 meters; the displacement is 120 meters
 - ☐ D. The distance is 200 meters; the displacement is 200 meters

Q.5 Pipes A and B can fill an entire tank in 8 hours and 12 hours, respectively. The water tank is one-fourth full. If both the pipes are opened together, then how long will it take to fill the remaining part of the tank?

- Ans**
- ☐ A. 3 hours 26 minutes
 - ☒ B. 3 hours 36 minutes
 - ☐ C. 3 hours 6 minutes
 - ☐ D. 3 hours 16 minutes

Q.6 A dealer buys a table for ₹2,750. He first marks it up by 28%, then allows a 12% discount to a customer. If the customer also pays 5% GST on the selling price, find the profit percentage (excluding GST) made by the dealer.

- Ans**
- ✓ A. 12.64%
 - ✗ B. 13.81%
 - ✗ C. 10.36%
 - ✗ D. 15.12%

Q.7 What information does a kilometer stone provide to travelers on a road?

- Ans**
- ✗ A. Time taken to reach destination
 - ✗ B. Speed of the vehicle
 - ✗ C. Direction of travel
 - ✓ D. Distance from a reference point

Q.8 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.)

- Ans**
- ✗ A. SJ – TK
 - ✗ B. DG – EH
 - ✗ C. KE – LF
 - ✓ D. IT – KV

Q.9 If $3x - 2y + 3z = 8$, $4x - 3y + 2z = 4$ and $2x + y - z = 1$, then find x, y and z, respectively.

- Ans**
- ✗ A. 2, 3 and 1
 - ✗ B. 3, 1 and 2
 - ✗ C. 2, 1 and 3
 - ✓ D. 1, 2 and 3

Q.10 Which of the following letter-number clusters will replace the question mark (?) in the given series to make it logically complete?

GXM 5, JVN 11, MTO 24, PRP 51, ?

- Ans**
- ✗ A. SPQ 107
 - ✗ B. TPQ 106
 - ✗ C. TPQ 107
 - ✓ D. SPQ 106

Q.11 Which of the following correctly states the full form of CD and the technology used to store data on it?

- Ans**
- ✗ A. Compact Disc, Magnetic Storage
 - ✗ B. Compact Drive, Optical Storage
 - ✓ C. Compact Disc, Optical Storage
 - ✗ D. Compact Drive, Magnetic Storage

Q.12 If the height of an object is doubled while its mass remains constant, its gravitational potential energy will be:

- Ans**
- ✗ A. unchanged
 - ✓ B. doubled
 - ✗ C. decreased to one-fourth
 - ✗ D. halved

Q.13 G is the mother of Y. Y is the sister of V. S is the father of L. L is the son of V. How is G related to L?

- Ans**
- ☐ A. Mother
 - ☐ B. Sister
 - ☐ C. Mother's sister
 - ☒ D. Mother's mother

Q.14 Which intervention most effectively reduces ground-level pollutant concentrations during a winter temperature inversion?

- Ans**
- ☐ A. Increasing surface temperatures near emission sources
 - ☐ B. Reducing local wind speed to minimize horizontal dispersion
 - ☒ C. Enhancing vertical air mixing through artificial turbulence
 - ☐ D. Elevating emission sources above inversion layers

Q.15 Which of the following is the best example of municipal solid waste?

- Ans**
- ☐ A. Industrial process waste
 - ☐ B. Hospital biomedical waste
 - ☐ C. Mining tailings
 - ☒ D. Household kitchen garbage

Q.16 What should come in place of '?' in the given series?
11, 22, 44, 88, 176, ?

- Ans**
- ☐ A. 358
 - ☐ B. 342
 - ☐ C. 356
 - ☒ D. 352

Q.17 Which of the following pairs of numbers is co-prime?

- Ans**
- ☐ A. (14, 28)
 - ☐ B. (21, 33)
 - ☒ C. (17, 54)
 - ☐ D. (28, 49)

Q.18 Refer to the given letter series and answer the question that follows.

(Left) A X T N K R Q K C P S I D F J U D O R G Z M B E L (Right)

How many letters are there in the English alphabetical series between the letter that is fourth from the right end and the letter that is third from the left end of the series?

- Ans**
- ☒ A. 6
 - ☐ B. 5
 - ☐ C. 4
 - ☐ D. 3

Q.19 SANZ is related to YUTT in a certain way based on the English alphabetical order. In the same way, MTHM is related to SNNG. To which of the following is LJRE related to following the same logic?

- Ans**
- ☐ A. QEYZ
 - ☐ B. REXZ
 - ☒ C. RDX Y
 - ☐ D. QDYY

Q.20 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 to/subtracting from/multiplying with 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

6 – 16 – 23 – 32; 7 – 19 – 26 – 35

- Ans**
- ☐ A. 4 – 14 – 21 – 30
 - ☒ B. 12 – 34 – 41 – 50
 - ☐ C. 8 – 22 – 15 – 24
 - ☐ D. 11 – 31 – 38 – 29

Q.21 Which combination best describes the main environmental challenges associated with plastic waste management?

- Ans**
- ☒ A. Persistence in the environment and microplastic formation
 - ☐ B. Thermal pollution and effective composting
 - ☐ C. Rapid biodegradation and chemical leaching
 - ☐ D. Neutralization and easy recycling

Q.22 Why does restricting certain chemical refrigerants effectively reduce damage to the ozone layer?

- Ans**
- ☐ A. Refrigerants emit greenhouse gases that warm the stratosphere.
 - ☐ B. Refrigerants contain particles that absorb harmful UV light.
 - ☒ C. Refrigerants release substances that catalyze ozone breakdown.
 - ☐ D. Refrigerants increase oxygen production, supporting ozone recovery.

Q.23 Sohan covers a total distance of 760 km to reach his home, traveling partly by train and partly by car. He takes 8 hours when he travels 160 km by train and the rest by car. If he travels 240 km by train and the remaining distance by car, his journey takes 12 minutes longer. Find the difference between the speeds of the train and the car.

- Ans**
- ☐ A. 21 km/h
 - ☐ B. 27 km/h
 - ☐ C. 23 km/h
 - ☒ D. 20 km/h

Q.24 A laboratory thermometer has a range from -10 degrees Celsius to 110 degrees Celsius and 120 equal divisions. What is the smallest value that this thermometer can read?

- Ans**
- ☐ A. 10 degrees Celsius
 - ☐ B. 2 degrees Celsius
 - ☒ C. 1 degree Celsius
 - ☐ D. 0.5 degrees Celsius

Q.25 A ramp is used to lift a box to a platform 2 m high. To reduce the effort required, the ramp length is increased from 4 m to 8 m. Assuming negligible friction, what remains unchanged?

- Ans**
- ☐ A. The distance moved along the ramp
 - ☐ B. The mechanical advantage
 - ☐ C. The force required
 - ☒ D. The work done in raising the box

Q.26 A sum of money invested at simple interest amounts to ₹21,500 in 5 years and ₹26,000 in 8 years. Find the principal amount (in ₹).

- Ans**
- ☐ A. 15,500
 - ☐ B. 12,000
 - ☐ C. 7,500
 - ☒ D. 14,000

Q.27 A plane parallel to the base divides a cone of height 40 cm into two parts. If the volume of the upper smaller cone formed is $\frac{1}{64}$ of the volume of the original cone, calculate the height of the plane from the base of the cone.

- Ans**
- ☐ A. 40 cm
 - ☐ B. 10 cm
 - ☐ C. 20 cm
 - ☒ D. 30 cm

Q.28 Five students, N, O, R, S and T, have different heights. T is taller than N. R is taller than S but shorter than O. S is taller than N. More than two people are taller than T. How many people are shorter than R?

- Ans**
- ☒ A. Three
 - ☐ B. One
 - ☐ C. None
 - ☐ D. Two

Q.29 The first shopkeeper allows two successive discounts of 3% and 7%, while a second shopkeeper allows two successive discounts of 2% and 8%. A third shopkeeper allows 10% discount on the same item. From which shopkeeper should a customer buy if the marked price is the same at the three shops?

- Ans**
- ☐ A. Buy from the first or the second shopkeeper as both are the same.
 - ☐ B. Buy from the second shopkeeper
 - ☐ C. Buy from the first shopkeeper
 - ☒ D. Buy from the third shopkeeper

Q.30 The cost of a diamond varies directly with the square of its weight. A diamond broke into four pieces with weights in the ratio 2:4:1:3. If it had been broken into four equal pieces, the loss would have been ₹60,000. What was the original cost of the diamond?

- Ans**
- ☐ A. ₹78,000
 - ☐ B. ₹75,000
 - ☒ C. ₹80,000
 - ☐ D. ₹82,000

Q.31 A cyclist travels 120 km in 3 hours, rests for 1 hour, and then travels another 80 km in 2 hours. To determine the cyclist's average speed for the entire journey, which of the following quantities should be used?

- Ans**
- ☐ A. Distance travelled in a particular direction divided by time
 - ☒ B. Total distance travelled divided by the total time taken
 - ☐ C. Total displacement divided by total time taken
 - ☐ D. Change in velocity divided by total time taken

Q.32 A crane lifts a 200 kg load to a height of 15 meters in 10 seconds. Assuming acceleration due to gravity is 10 m/s^2 and energy loss is negligible, what is the power output of the crane during this operation?

- Ans**
- ☐ A. 1500 W
 - ☒ B. 3000 W
 - ☐ C. 2000 W
 - ☐ D. 1000 W

Q.33 A ladder is leaning against a wall and makes an angle of 60° with the ground. If the length of the ladder is 24 m, find the distance of the foot of the ladder from the wall.

- Ans**
- ☒ A. 12 m
 - ☐ B. 18 m
 - ☐ C. 9 m
 - ☐ D. 15 m

Q.34 Find the compound interest on ₹5,70,000 for 1.5 years at 10% per annum compounded half-yearly.

- Ans**
- ☒ A. ₹89,846.25
 - ☐ B. ₹89,946.25
 - ☐ C. ₹88,846.25
 - ☐ D. ₹92,846.25

Q.35 A pump can fill a tank in 3 hours. Due to a leak in the tank, it takes 4.5 hours to fill the tank. In how much time can the leak empty the full tank if no other entry or exit routes are open?

- Ans**
- ☒ A. 9 hours
 - ☐ B. 6 hours
 - ☐ C. 8 hours
 - ☐ D. 7 hours

Q.36 A, B, C, D and E have different heights. E is taller than C but shorter than A. Only one person is taller than A. D is shorter than C. Who amongst them is the third tallest?

- Ans**
- ☐ A. C
 - ☐ B. B
 - ☒ C. E
 - ☐ D. A

Q.37 Seven boxes S, T, U, V, W, X, and Y are kept one over the other but not necessarily in the same order. U is kept exactly third from the top. Only one box is kept between U and T. W is kept immediately above T. Only three boxes are kept between X and S. V is kept on one of the positions below Y. Only two boxes are kept between U and S. Which box is kept second from the top?

- Ans**
- ☐ A. U
 - ☐ B. T
 - ☐ C. V
 - ☒ D. X

Q.38 What does the term 'HAZOP' stand for in occupational safety?

- Ans**
- ☐ A. Hazardous Operation Standard
 - ☐ B. Handling and Organizing Safety
 - ☒ C. Hazard and Operability Study
 - ☐ D. Hazardous Operations Safety

Q.39 If a rectangular field is measured to be 120 meters long and 75 meters wide, what is its area in SI units?

- Ans**
- ☐ A. 1800 square meters
 - ☐ B. 19500 square meters
 - ☒ C. 9000 square meters
 - ☐ D. 15000 square meters

Q.40 A cyclist travels from the kilometer stone marked 52 to the stone marked 79. How far has the cyclist traveled?

- Ans**
- ✓ A. 27 kilometers
 - ✗ B. 52 kilometers
 - ✗ C. 131 kilometers
 - ✗ D. 31 kilometers

Q.41 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 Satish related to Mayank if 'Satish + Deep × Piyush – Hitesh % Mayank'?

- Ans**
- ✗ A. Father's brother's wife's sister
 - ✗ B. Mother's brother's wife's sister
 - ✗ C. Mother's brother's wife's mother
 - ✓ D. Father's brother's wife's mother

Q.42 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.)

- Ans**
- ✗ A. PJ-QK
 - ✗ B. HB-IC
 - ✗ C. FZ-GA
 - ✓ D. RL-SN

Q.43 The average of five numbers is 30. If four of the numbers are 25, 35, 28 and 32, then what is the fifth number?

- Ans**
- ✓ A. 30
 - ✗ B. 35
 - ✗ C. 28
 - ✗ D. 32

Q.44 What does CPU stand for in computing?

- Ans**
- ✓ A. Central Processing Unit
 - ✗ B. Core Processing Unit
 - ✗ C. Control Processing Unit
 - ✗ D. Computer Processing Unit

Q.45 A 42-litre solution has sugar and water in the ratio 2 : 5. If, due to evaporation, the volume is reduced by 35%, and only water evaporates, what is the new ratio of sugar to water?

- Ans**
- ✗ A. 31 : 50
 - ✗ B. 51 : 42
 - ✓ C. 40 : 51
 - ✗ D. 40 : 41

Q.46 A question is followed by two statements numbered (I) and (II). You have to decide whether the data provided in the statements are sufficient to answer the question. Read both the statements and decide the appropriate answer.

Among 5 sticks, B, U, N, M and D, each having a different height, which stick is the shortest?

(I) D is shorter than U. M is shorter than B.

(II) M is taller than D.

- Ans**
- ☒ A. Both statements I and II together are NOT sufficient to answer the question
 - ☐ B. Data in statement II alone is sufficient to answer the question while data in statement I is not
 - ☐ C. Data in statement I alone is sufficient to answer the question while data in statement II is not
 - ☐ D. Both statements I and II together (and not statement I alone or statement II alone) are sufficient to answer the question

Q.47 What should come in place of the question mark (?) in the given series based on the English alphabetical order?

MDB PHE SLH VPK ?

- Ans**
- ☐ A. ZTM
 - ☒ B. YTN
 - ☐ C. ZUO
 - ☐ D. XSM

Q.48 Refer to the following letter series and answer the question that follows. (Counting to be done from left to right only.)

(Left) Q K Q N X K G G V M L A W T W K N G V (Right)

How many such consonants are there each of which is immediately preceded by a vowel and also immediately followed by a consonant?

- Ans**
- ☐ A. Two
 - ☐ B. None
 - ☒ C. One
 - ☐ D. Three

Q.49 Select the pair which follows the same pattern as that followed by the two pairs given below. Both pairs follow the same pattern.

ZOT - TLP

NIL - HFH

- Ans**
- ☒ A. BCD - VZZ
 - ☐ B. VZZ - BCD
 - ☐ C. BOC - VZT
 - ☐ D. ABD - VZZ

Q.50 What should come in place of the question mark (?) in the given series?

1 2 7 20 61 ?

- Ans**
- ☒ A. 182
 - ☐ B. 183
 - ☐ C. 181
 - ☐ D. 185

Q.51 The price of sugar is increased by 20%. Manoj can increase his expenditure on sugar by only 15% from his income. In order to balance his expenditure, by what percentage should he reduce the quantity of sugar consumed?

- Ans**
- ☒ A. $4\frac{1}{6}\%$
 - ☐ B. 6.5%
 - ☐ C. $5\frac{1}{3}\%$
 - ☐ D. 5%

Q.52 Simplify the following expression.

$$11 \text{ of } 7 + 125 \div 5 + 99 \div 11 \times 7 - 17 \text{ of } 7 + 7 \times 6 - (91 \div 7 + 7 \times 5)$$

- Ans**
- ☐ A. 48
 - ☐ B. 44
 - ☒ C. 40
 - ☐ D. 36

Q.53 An astronaut weighs 600 N on Earth. During a moon mission, she performs an experiment to measure her weight on the moon. Which value is closest to her expected weight on the moon, and why?

- Ans**
- ☒ A. 100 N, because the Moon's gravity is about one-sixth of Earth's.
 - ☐ B. 600 N, because a person's weight remains unchanged on the Moon.
 - ☐ C. 200 N, because the Moon's gravity is about one-third of Earth's.
 - ☐ D. 300 N, because the Moon's gravity is about one-half of Earth's.

Q.54 What is a key feature of single stroke lettering in technical drawings?

- Ans**
- ☐ A. Each character is made with several parallel lines.
 - ☐ B. Each character is outlined and then filled.
 - ☒ C. Each character is made with one continuous stroke.
 - ☐ D. Each character is shaded after drawing.

Q.55 If 2 is subtracted from each odd digit and 2 is added to each even digit in the number 235234796423, what will be the sum of the digits that are third from the left and third from the right?

- Ans**
- ☐ A. 8
 - ☒ B. 9
 - ☐ C. 7
 - ☐ D. 6

Q.56 A solid right circular cone is 7 cm high, and the radius of its base is 22.2 cm. It is melted and recast into a right circular cone with radius of its base 3.7 cm. Then the height (in cm) of the cone is _____.

- Ans**
- ☒ A. 252
 - ☐ B. 159
 - ☐ C. 185
 - ☐ D. 267

Q.57 A question is followed by two statements numbered (I) and (II). You have to decide whether the data provided in the statements are sufficient to answer the question. Read both the statements and select the most appropriate answer.

Question:

Among five trees N, O, R, S, and T, each having a different height, which tree is the tallest?

Statements:

(I) T is taller than R. N is taller than T.

(II) R is shorter than O but taller than S.

- Ans**
- ☒ A. Data in Statement I alone is sufficient to answer the question while data in statement II is not
 - ☒ B. Data in Statement II alone is sufficient to answer the question while data in statement I is not
 - ☒ C. Both statements I and II together are NOT sufficient to answer the question
 - ☒ D. Both statements I and II together (and not statement I alone or statement II alone) are sufficient to answer the question

Q.58 P, Q and R are three batsmen. The ratios of runs scored by them in a certain match were as follows:

P : Q = 5 : 7 and Q : R = 2 : 3.

If they scored a total of 765 runs, then find the number of runs scored by R.

- Ans**
- ☒ A. 378
 - ☒ B. 350
 - ☒ C. 357
 - ☒ D. 336

Q.59 Two trains are moving in opposite directions. The first train is 120 m long and runs at 54 km/h. The second train is 180 m long and runs at 72 km/h. How much time will they take to cross each other completely? (Rounded up to two decimal places)

- Ans**
- ☒ A. 8.43 seconds
 - ☒ B. 7.57 seconds
 - ☒ C. 8.57 seconds
 - ☒ D. 9.25 seconds

Q.60 If $x + \frac{1}{x} = 5$, then $\frac{x^3 - 5x^2 + 5x}{x^2 + 1}$ is equal to:

- Ans**
- ☒ A. $\frac{3}{5}$
 - ☒ B. $\frac{4}{5}$
 - ☒ C. $\frac{1}{5}$
 - ☒ D. $\frac{2}{5}$

Q.61 What is the primary purpose of a Local Area Network (LAN)?

- Ans**
- ☒ A. To connect global networks
 - ☒ B. To connect social media accounts
 - ☒ C. To connect computers within a small geographical area
 - ☒ D. To link wireless devices only

Q.62 Let C be a circle, and AB and DE be two chords on C such that AB = BE. In the quadrilateral ABED, let AE and BD intersect at F, $\angle DBE = 55^\circ$ and $\angle BAE = 40^\circ$. Find $\angle FED$.

- Ans**
- ☒ A. 45°
 - ☐ B. 55°
 - ☐ C. 110°
 - ☐ D. 60°

Q.63 When a cutting plane line passes through a hole and a rib, which feature should be sectioned in the resulting view according to standard conventions?

- Ans**
- ☒ A. The hole is sectioned but the rib is shown unsectioned
 - ☐ B. The rib is sectioned but the hole is left unsectioned
 - ☐ C. Both the hole and the rib are shown sectioned
 - ☐ D. Both the hole and the rib are shown unsectioned

Q.64 Which scenario best demonstrates proactive workplace safety behavior?

- Ans**
- ☐ A. Discussing only past safety problems in meetings
 - ☒ B. Identifying and correcting hazards before accidents occur
 - ☐ C. Waiting for a supervisor to notice hazards
 - ☐ D. Reporting hazards after incidents happen

Q.65 Why does biomedical waste require special handling compared to general municipal waste?

- Ans**
- ☒ A. It may contain infectious agents that pose health risks.
 - ☐ B. It is more likely to be recycled than other types of waste.
 - ☐ C. It has higher chemical content and is always toxic.
 - ☐ D. It is always radioactive and requires heavy shielding.

Q.66 When drawing repeated 67° angles on an engineering sheet, which practice best helps minimize cumulative alignment errors?

- Ans**
- ☐ A. Marking all angles lightly with a pencil before finalizing
 - ☐ B. Drawing all angles continuously without intermediate verification
 - ☒ C. Using the same reference line for all repeated angles
 - ☐ D. Relying solely on the initial protractor alignment for all angles

Q.67 What will come in place of the question mark (?) in the following equation if '+' and '-' are interchanged and 'x' and '÷' are interchanged?
 $42 \times 6 \div 7 - 35 + 19 = ?$

- Ans**
- ☒ A. 65
 - ☐ B. 69
 - ☐ C. 67
 - ☐ D. 63

Q.68 What is the primary role of the Central Processing Unit (CPU) in a computer system?

- Ans**
- ☐ A. To display output on the screen
 - ☒ B. To execute program instructions
 - ☐ C. To store long-term data
 - ☐ D. To manage network connections

Q.69 Which statement best describes the side view in engineering drawing?

- Ans**
- ☒ A. It shows a combination of all views of the object
 - ☒ B. It shows the object as seen from left or right side
 - ☒ C. It shows the object as seen clearly from the front
 - ☒ D. It shows the object as seen from above or below

Q.70 The mean of 11 numbers is 10.9. If the mean of the first 6 numbers is 10.5 and the mean of the last 6 numbers is 11.4, then find the 6th number.

- Ans**
- ☒ A. 11.5
 - ☒ B. 10
 - ☒ C. 11
 - ☒ D. 10.5

Q.71 An article is bought for ₹300 and its price is increased by 5.5%. The resulting price is then reduced by 8%. Find the final selling price.

- Ans**
- ☒ A. ₹288.24
 - ☒ B. ₹296.46
 - ☒ C. ₹291.18
 - ☒ D. ₹284.45

Q.72 Which factor increases the amount of heat produced in a wire when an electric current flows through it for a fixed time?

- Ans**
- ☒ A. Decreasing the length of the wire
 - ☒ B. Increasing the resistance of the wire
 - ☒ C. Reducing the current in the wire
 - ☒ D. Making the wire thicker

Q.73 A hiker lifts a backpack from the ground to a ledge 2 meters above the ground. Which situation would result in the greatest increase in the backpack's gravitational potential energy?

- Ans**
- ☒ A. Lifting a lighter backpack to the same 2-meter ledge
 - ☒ B. Carrying the same backpack horizontally for 2 meters
 - ☒ C. Lifting a heavier backpack to the same 2-meter ledge
 - ☒ D. Lifting the same backpack to a 1-meter ledge

Q.74 Srinu starts from his home and drives 2 km towards the south, then takes a right turn and drives 5 km. He then takes a right turn and drives 6 km before taking a right turn again and driving 4 km further. Srinu finally takes a right turn and drives 4 km before stopping at his office. In which direction should Srinu drive to reach his home again? (All turns are 90-degree turns only unless specified.)

- Ans**
- ☒ A. East
 - ☒ B. West
 - ☒ C. North
 - ☒ D. South

Q.75 Which of the following statements best describes a triangle as used in engineering drawing?

- Ans**
- ☒ A. A triangle must always have all sides of equal length.
 - ☒ B. A triangle is a polygon with three straight sides and three angles.
 - ☒ C. A triangle is a polygon having three curved sides.
 - ☒ D. A triangle is a polygon with four straight sides and four angles.

Q.76 Refer to the given letter series and answer the question that follows. Counting to be done from left to right only.

(Left) H S A N D D I A D F P A J O S K I O Z O T X (Right)

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

- Ans**
- ☒ A. Six
 - ☒ B. Four
 - ☒ C. Five
 - ☒ D. Three

Q.77 What is the primary color used in warning signs to alert workers of potential hazards?

- Ans**
- ☒ A. Blue with white symbol or text
 - ☒ B. Yellow with black symbol or text
 - ☒ C. Red with white symbol or text
 - ☒ D. Green with white symbol or text

Q.78 Seven boxes, P, Q, S, T, U, V, and W, are kept one over the other, but not necessarily in the same order. There are exactly two boxes between T and P. Only Q is kept above U. No box is kept below P. S is kept somewhere below W but above V. Based on the given information, which box is kept third above V?

- Ans**
- ☒ A. S
 - ☒ B. T
 - ☒ C. W
 - ☒ D. P

Q.79 Why are electric wires in household appliances usually covered with plastic or rubber coating?

- Ans**
- ☒ A. To prevent electric shocks by insulation
 - ☒ B. To produce more heat
 - ☒ C. To make the wires heavier
 - ☒ D. To increase the flow of current

Q.80 A boy uses a wheelbarrow to carry sand. The wheel acts as the pivot, the sand is placed in the tray, and the boy lifts the handles. In this arrangement, the sand represents _____.

- Ans**
- ☒ A. Load
 - ☒ B. Arm
 - ☒ C. Effort
 - ☒ D. Fulcrum

Q.81 Which one of the following statements correctly describes a characteristic of WANs?

- Ans**
- ☒ A. WANs typically use only wireless media to connect distant LANs.
 - ☒ B. WANs can be built by connecting multiple LANs via wired or wireless links.
 - ☒ C. WANs are always public networks managed solely by Internet Service Providers (ISPs).
 - ☒ D. WANs are limited to connecting devices within a radius of 1 to 2 km.

Q.82 Which statement best describes the front view in an engineering drawing?

- Ans**
- ☒ A. It shows only one dimension of the object
 - ☒ B. It shows only the object's bottom or right side
 - ☒ C. It shows the object's height and width as seen from the front
 - ☒ D. It shows the object's depth and height as seen from the side

Q.83 In a certain code language, 'SOIL' is coded as '1547' and 'COIL' is coded as '7124'. What is the code for 'C' in the given code language?

- Ans**
- ☐ A. 1
 - ☒ B. 2
 - ☐ C. 7
 - ☐ D. 4

Q.84 A cyclist rides 60 meters north, then 80 meters south, and finally 70 meters north. What is the total distance the cyclist has traveled?

- Ans**
- ☐ A. 150 meters
 - ☐ B. 60 meters
 - ☐ C. 10 meters
 - ☒ D. 210 meters

Q.85 Read the given statement(s) 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 statement(s).

Statements:
Some rugs are fans.
No fan is a car.

Conclusion (I) : Some rugs are cars.
Conclusion (II) : Some fans are rugs.

- Ans**
- ☒ A. Only conclusion (II) follows
 - ☐ B. Both conclusions (I) and (II) follow
 - ☐ C. Neither conclusion (I) nor (II) follows
 - ☐ D. Only conclusion (I) follows

Q.86 Which of the following statements best describes a cuboid as used in engineering drawing?

- Ans**
- ☐ A. A cuboid has all faces as squares of equal size.
 - ☐ B. A cuboid is a solid where all faces are parallelograms but not necessarily rectangles.
 - ☐ C. A cuboid has all sides and angles equal, making it similar to a cube.
 - ☒ D. A cuboid is a solid with six rectangular faces, and opposite faces are equal.

Q.87 A technician needs to select a fuse wire for a room heater. Which property should be considered most important for safety based on the heating effect of electric current?

- Ans**
- ☒ A. The fuse wire must have a low melting point to break the circuit during excess current.
 - ☐ B. The fuse wire must have a shiny surface for efficient cooling.
 - ☐ C. The fuse wire must have a high melting point for durability.
 - ☐ D. The fuse wire must have high resistance and be thick to prevent melting.

Q.88 A, B, C, D, X, Y and Z are sitting around a circular table facing the centre of the table.
Only two people sit between Y and C when counted from the left of C. D sits third to the left of B. A sits to the immediate right of B. A sits second to the left of Y. Z is not an immediate neighbor of D.
Who sits third to the right of X?

- Ans**
- ☐ A. Y
 - ☐ B. D
 - ☒ C. A
 - ☐ D. C

Q.89 An engineering firm is tasked with creating a set of technical drawings for a large-scale project. The client specifies that all components must fit on a single sheet without reducing the drawing scale, and the total drawing area required is approximately 1 square meter. Based on standard drawing sheet sizes, which sheet should the firm select to best meet these requirements?

- Ans**
- ☐ A. A3 size sheet
 - ☐ B. A2 size sheet
 - ☒ C. A0 size sheet
 - ☐ D. A1 size sheet

Q.90 If the mean of the following data is 45, then what is the value of x?

Class	10-20	20-30	30-40	40-50	50-60
Frequency	23	30	31	45	X

- Ans**
- ☐ A. 162
 - ☒ B. 160
 - ☐ C. 188
 - ☐ D. 180

Q.91 12 is related to 1730 following a certain logic. Following the same logic, 13 is related to 2199. To which of the given options is 11 related, following the same logic? (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 etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

- Ans**
- ☒ A. 1333
 - ☐ B. 1433
 - ☐ C. 1443
 - ☐ D. 1543

Q.92 The salary of a person is increased by 10%, 20% and 25% successively in three consecutive years. Find the overall percentage increase in the salary at the end of the third year.

- Ans**
- ☒ A. 65%
 - ☐ B. 50%
 - ☐ C. 60%
 - ☐ D. 30%

Q.93 Which of the following best describes the function of a speedometer in a vehicle?

- Ans**
- ☒ A. It displays the current speed at which the vehicle is moving.
 - ☐ B. It shows the rate at which the vehicle's speed changes.
 - ☐ C. It measures the total distance the vehicle has traveled.
 - ☐ D. It calculates the average speed over a journey.

Q.94 Read the given statement(s) and conclusions carefully. Assuming that the information given in the statement(s) 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 statement(s).

Statements:

All chocolates are paneers.
No paneer is a milk.

Conclusions:

(I) No chocolate is a milk.

(II) Some milks are paneers.

- Ans**
- ☒ A. Neither conclusion (I) nor (II) follows.
 - ☒ B. Only conclusion (I) follows.
 - ☒ C. Only conclusion (II) follows.
 - ☒ D. Both conclusions (I) and (II) follow.

Q.95 Which symbol best represents a battery in an electric circuit diagram according to standard conventions?

- Ans**
- ☒ A. A single long line only
 - ☒ B. A pair of long and short parallel lines placed alternately
 - ☒ C. Two short lines placed together
 - ☒ D. Two circles connected in series

Q.96 What will come in the place of '?' in the following equation, if '+' and '-' are interchanged and 'x' and '÷' are interchanged?
 $5 \div 3 + 15 \times 5 - 3 = ?$

- Ans**
- ☒ A. 18
 - ☒ B. 12
 - ☒ C. 9
 - ☒ D. 15

Q.97 Which statement best describes how the mass and speed of an object affect its kinetic energy?

- Ans**
- ☒ A. An object with same mass but higher speed will have less kinetic energy.
 - ☒ B. An object with greater mass but lower speed will have more kinetic energy.
 - ☒ C. An object with less mass and lower speed will have more kinetic energy.
 - ☒ D. An object with greater mass and higher speed will have more kinetic energy.

Q.98 Which tool safety measure best prevents injuries when cleaning a workshop lathe after use?

- Ans**
- ☒ A. Using a brush to remove metal chips from the lathe
 - ☒ B. Blowing chips away with compressed air around the lathe
 - ☒ C. Wiping metal chips using bare hands directly
 - ☒ D. Using a rag to remove metal dust from the lathe

- Q.99** A group of numbers/symbols is coded using letter codes as per the codes given below and the conditions that follow. The correct combination of codes following the conditions is your answer.
Note: If none of the conditions follow, then the codes for the respective number/symbol are to be followed directly as given in the table.

Number/symbol	3	@	8	4	\$	&	2	%	#	1	+	9	7	5
Code	U	G	B	K	M	F	X	R	E	Q	S	C	V	T

Conditions –

- (i) If the first element is a symbol and the last element an odd number, the codes for these two (the first and the last elements) are to be interchanged.
(ii) If the first element is an odd number and the last an even number, the first and the last elements are to be coded as ©
(iii) If both second and third elements are perfect squares, the third element is to be coded as the code for the second element.

What will be the code for the following group?
& 8 \$ 9 5

- Ans** ☒ A. TBMCF
☐ B. TCMBF
☐ C. FBMCT
☐ D. FCBMT

- Q.100** Which color is universally associated with emergency exit signs in industrial workplaces under international standards?

- Ans** ☒ A. Green background with white text or symbols
☐ B. Yellow background with black text or symbols
☐ C. Blue background with white text or symbols
☐ D. Red background with white text or symbols

Section : PART-B

- Q.1** Which part of a Vacuum Circuit Breaker (VCB) helps to maintain insulation and protects the breaker from external environmental influences?

- Ans** ☐ A. Vacuum interrupter unit
☐ B. Trip coil assembly
☒ C. Insulating casing
☐ D. Drive rod assembly

- Q.2** A circuit contains three resistors connected in series with resistances of 2 Ω , 3 Ω , and 5 Ω across a 20 V DC power supply. According to Kirchhoff's Voltage Law, what is the voltage drop across the 3 Ω resistor?

- Ans** ☒ A. 6 V
☐ B. 8 V
☐ C. 2 V
☐ D. 10 V

- Q.3** If 5 workers, working at the same rate, complete a job in 12 days, how many days will 10 workers take to complete the same job?

- Ans** ☒ A. 6 days
☐ B. 5 days
☐ C. 12 days
☐ D. 10 days

Q.4 Why is it necessary to monitor isolation resistance in fuel cell electric vehicles?

- Ans**
- ☐ A. To improve the acceleration performance
 - ☐ B. To increase the driving range of the vehicle
 - ☐ C. To reduce the emission levels of the vehicle
 - ☒ D. To prevent potential electric shock to users and maintenance personnel

Q.5 What should a Process Hazard Analysis methodology be based on?

- Ans**
- ☐ A. The production schedule and operating time requirements
 - ☐ B. The size of the workforce involved in the process
 - ☒ C. The complexity of the process and associated hazards
 - ☐ D. A random selection of hazards and process conditions

Q.6 A control circuit uses a timer relay to switch ON a load after a set delay. If the load energizes immediately when the circuit is powered, what is most likely wrong?

- Ans**
- ☒ A. The timer relay is bypassed or its contacts are shorted
 - ☐ B. The load is faulty and not responding
 - ☐ C. The control transformer is incorrectly rated
 - ☐ D. The timer setting is longer than required

Q.7 Which part of a wattmeter connects in parallel with the load to measure voltage?

- Ans**
- ☐ A. Fixed coil
 - ☐ B. Current coil
 - ☒ C. Potential coil
 - ☐ D. Shunt capacitor

Q.8 A transformer is designed to operate with maximum efficiency near full-load conditions and is installed in a grid substation. It is classified as a/an:

- Ans**
- ☐ A. Isolation transformer
 - ☐ B. Instrument transformer
 - ☐ C. Distribution transformer
 - ☒ D. Power transformer

Q.9 What will happen if the secondary winding of a current transformer remains open while the transformer is energized?

- Ans**
- ☐ A. It will ensure accurate current measurement by reducing the current at the secondary
 - ☒ B. It will induce high voltage at secondary winding and cause equipment damage
 - ☐ C. It will prevent overheating of the conductors of the supply lines
 - ☐ D. It will protect the power system from the short circuited faults

Q.10 Why a cumulative compound DC motor is considered for heavy-duty machines with varying loads, such as rolling mills?

- Ans**
- ☐ A. It offers the fastest speed changes
 - ☐ B. It always runs at maximum efficiency
 - ☐ C. It prevents any speed drop under load
 - ☒ D. It combines good starting torque and stable speed

Q.11 If 5 identical components weigh 20 kg, what is the weight of one component?

- Ans**
- ☐ A. 2 kg
 - ☐ B. 5 kg
 - ☐ C. 10 kg
 - ☒ D. 4 kg

Q.12 What is the function of dilute sulfuric acid electrolyte in a lead-acid battery?

- Ans**
- ☐ A. Serves as the active material of the negative electrode plate
 - ☐ B. Acts as the separator and prevents direct contact between the electrodes
 - ☐ C. Functions as an insulator and prevents electrical conduction between the electrodes
 - ☒ D. Acts as the electrolyte and allows ionic conduction between the electrodes

Q.13 For a pure sinusoidal AC voltage, the RMS value is obtained by multiplying the peak value by _____.

- Ans**
- ☐ A. 1
 - ☐ B. $\sqrt{2}$
 - ☒ C. $\frac{1}{\sqrt{2}}$
 - ☐ D. $\frac{1}{2}$

Q.14 Which geometric shape is most commonly used for title blocks and object outlines in engineering drawings?

- Ans**
- ☐ A. Pentagon
 - ☐ B. Hexagon
 - ☒ C. Rectangle
 - ☐ D. Triangle

Q.15 Which component in a solar DC domestic system prevents overcharging of the battery?

- Ans**
- ☒ A. Charge controller
 - ☐ B. Solar panel
 - ☐ C. Inverter
 - ☐ D. Battery

Q.16 Which safety measure should be followed when replacing a CFL or LED lamp connected to a DC power supply?

- Ans**
- ☐ A. Wear gloves while replacing the lamp
 - ☐ B. Replace the lamp as quickly as possible
 - ☐ C. Use a wet cloth to hold the lamp
 - ☒ D. Turn off the power supply before handling the lamp

Q.17 Which standard grading is typically used for cables in a domestic three-phase supply system?

- Ans**
- ☐ A. Extra-high voltage cable insulation
 - ☐ B. Grade III insulation cable
 - ☐ C. Bare conductor without insulation
 - ☒ D. Grade I insulation cable

Q.18 When drawing a complex assembly with hidden details, which instrument is crucial for accurately representing hidden lines?

- Ans**
- ☐ A. Protractor
 - ☐ B. Scale
 - ☒ C. Mini-drafter
 - ☐ D. Eraser

Q.19 What is the effect on the synchronous speed of a three-phase induction motor when the supply frequency is increased while keeping the number of poles constant?

- Ans**
- ☐ A. The synchronous speed remains unchanged
 - ☐ B. The synchronous speed decreases
 - ☐ C. The synchronous speed reverses direction
 - ☒ D. The synchronous speed increases

Q.20 Which type of wire is recommended for heavy current carrying in main distribution boards?

- Ans**
- ☒ A. Single core wire
 - ☐ B. Twin flexible wire
 - ☐ C. Flexible wire
 - ☐ D. Multi-strand bell wire

Q.21 Which of the following describes the purpose of portable earthing during electrical maintenance?

- Ans**
- ☒ A. It provides a temporary path for fault current to flow safely to ground.
 - ☐ B. It prevents earth leakage from electrical panels.
 - ☐ C. It is used to test insulation resistance of conductors.
 - ☐ D. It disconnects equipment from the supply for repairs.

Q.22 During precision assembly, which caliper type is least likely to introduce parallax error?

- Ans**
- ☐ A. Spring caliper with pointed measuring legs
 - ☐ B. Transfer caliper for internal measurements
 - ☐ C. Steel rule used with inside calipers
 - ☒ D. Vernier caliper with clear scale markings

Q.23 A distributed winding is being designed for a stator core with 48 slots and 8 poles for a three-phase system. What will be the slots per pole per phase?

- Ans**
- ☐ A. 6
 - ☒ B. 2
 - ☐ C. 4
 - ☐ D. 3

Q.24 A theater manager is selecting lamps for stage lighting, aiming to minimize both heat generation and maintenance costs. Considering lamp disadvantages, which type of lamp should NOT be used to achieve these goals?

- Ans**
- ☐ A. LED lamp
 - ☐ B. Halogen lamp
 - ☒ C. Incandescent lamp
 - ☐ D. Fluorescent lamp

Q.25 What is the purpose of using earth connection in electrical appliances?

- Ans**
- ☐ A. To improve the overall performance of appliances
 - ☐ B. To decrease the electrical energy consumed daily
 - ☒ C. To enhance safety against electric shock hazards
 - ☐ D. To reduce the manufacturing cost of appliances

Q.26 A mercury tilt switch is mainly operated by _____.

- Ans**
- ☐ A. Magnetic force
 - ☒ B. Gravity action
 - ☐ C. Temperature change
 - ☐ D. Air pressure

Q.27 A motor stator requires six coils to be wound using concentric winding. If the smallest coil has 10 turns, and each subsequent layer increases by 2 turns, how many turns will the largest coil have?

- Ans**
- ☒ A. 20 turns
 - ☐ B. 14 turns
 - ☐ C. 16 turns
 - ☐ D. 22 turns

Q.28 A fan circuit's regulator has multiple resistance steps. What happens electrically when the knob is turned to a higher setting?

- Ans**
- ☐ A. Circuit resistance increases, decreasing fan current
 - ☒ B. Circuit resistance decreases, increasing voltage at fan
 - ☐ C. Fan motor receives less voltage, slowing speed
 - ☐ D. Fan is disconnected from supply temporarily

Q.29 An industrial plant in a region with frequent electrical storms wants to protect both its equipment and personnel from electrical faults. Which approach addresses safety and equipment protection based on the distinction between grounding and earthing?

- Ans**
- ☐ A. Connecting all equipment directly to ground without separate grounding for electronics
 - ☒ B. Connecting equipment frames to the earth to divert fault currents and using a separate grounding system for sensitive electronics
 - ☐ C. Isolating equipment from both ground and earth to avoid surges
 - ☐ D. Using only grounding to protect personnel without earth connection for equipment

Q.30 Which safety device is designed to detect cable electrical leakage and disconnect the circuit?

- Ans**
- ☒ A. Earth leakage circuit breaker
 - ☐ B. Relay
 - ☐ C. Fuse
 - ☐ D. Miniature circuit breaker

Q.31 Which of the following is NOT a purpose of using dividers in fitting operations?

- Ans**
- ☐ A. Transferring distances from a rule
 - ☒ B. Measuring the thickness of plates
 - ☐ C. Marking circles on a surface
 - ☐ D. Dividing a line into equal parts

Q.32 What is the purpose of a pre-molded joint in underground cables?

- Ans**
- ☐ A. To terminate the cable at equipment
 - ☐ B. To regulate the cable voltage
 - ☒ C. To securely connect two or more cables
 - ☐ D. To insulate the cable ends

Q.33 Which function is performed by turning the selector switch on a digital multimeter?

- Ans**
- ☐ A. Adjusting display brightness
 - ☒ B. Choosing measurement type
 - ☐ C. Resetting the instrument
 - ☐ D. Storing readings

Q.34 How many terminals are available for connection in a single-pole, two-way switch?

- Ans**
- ☒ A. Three terminals
 - ☐ B. Four terminals
 - ☐ C. Five terminals
 - ☐ D. Two terminals

Q.35 Which type of cell can be recharged by passing electric current in the reverse direction?

- Ans**
- ☐ A. Dry cell
 - ☒ B. Secondary cell
 - ☐ C. Primary cell
 - ☐ D. Fuel cell

Q.36 Which of the following steps helps prevent void formation during epoxy resin casting in underground cable joints?

- Ans**
- ☒ A. Slowly pour resin while tapping the joint body
 - ☐ B. Mix resin near the joint after sealing
 - ☐ C. Pour resin quickly to finish before hardening
 - ☐ D. Seal the joint body before pouring resin

Q.37 An electrical panel needs connections that resist corrosion in a coastal environment. Which wire type is best suited?

- Ans**
- ☐ A. Aluminum wire
 - ☐ B. PVC insulated copper wire
 - ☐ C. Bare copper wire
 - ☒ D. Tinned copper wire

Q.38 A panel has wires labeled with cable markers like 1A, 1B, 2A, 2B. What does this labeling system most likely indicate?

- Ans**
- ☐ A. The labels show only the wire size and insulation type.
 - ☒ B. Each wire is paired according to circuit numbers and phase identifiers.
 - ☐ C. It indicates the manufacturer and batch number of the wire.
 - ☐ D. It is a color code for distinguishing between wire colors.

Q.39 An industrial workshop requires 300 lux of uniform illumination on workbenches. The area to be illuminated is 120 square meters. If the utilization factor is 0.7 and the maintenance factor is 0.8, what should be the total luminous flux provided by the lighting installation?

- Ans**
- ☐ A. 54000 lumens
 - ☐ B. 42800 lumens
 - ☐ C. 37500 lumens
 - ☒ D. 64286 lumens

Q.40 Which component in the wind power generating station ensures that the wind turbine faces the wind direction for maximum efficiency?

- Ans**
- ☐ A. Tower
 - ☒ B. Yaw mechanism
 - ☐ C. Brake system
 - ☐ D. Gearbox

Q.41 Which parameter must be regulated by a charge controller to prevent battery overcharging in a solar plant?

- Ans**
- ☒ A. Voltage applied to battery terminals
 - ☐ B. Tilt angle of the solar panel
 - ☐ C. Solar irradiance level
 - ☐ D. AC output frequency of inverter

Q.42 Four resistors of $5\ \Omega$ each are connected in series. What is the equivalent resistance of the circuit?

- Ans**
- ☒ A. $20\ \Omega$
 - ☐ B. $10\ \Omega$
 - ☐ C. $5\ \Omega$
 - ☐ D. $15\ \Omega$

Q.43 A technician receives a mild shock when touching a faulty machine but does not lose consciousness. What is the most likely effect of the electric current in this scenario?

- Ans**
- ☐ A. Immediate cardiac arrest leading to complete unconsciousness
 - ☐ B. Sudden respiratory paralysis resulting in a prolonged coma
 - ☐ C. Widespread internal tissue destruction and severe skin burns
 - ☒ D. Involuntary muscle contraction and a sharp tingling sensation

Q.44 Which symbol is commonly used in wiring diagrams to represent a single-pole switch?

- Ans**
- ☐ A. A continuous zigzag layout featuring multiple sharp alternating bends
 - ☐ B. A plain rectangle layout featuring two horizontal internal detail lines
 - ☐ C. A small circle layout featuring a centered dot and no attached lines
 - ☒ D. A straight line layout featuring a center break and a diagonal lever

Q.45 Which part of a die ensures the alignment of the die with the workpiece during threading?

- Ans**
- ☐ A. The central hole
 - ☐ B. The adjusting screw
 - ☒ C. The lead-in chamfer
 - ☐ D. The split slot

Q.46 In a control panel, why is it necessary to select a contactor with a higher making capacity than the running current of the connected load?

- Ans**
- ☐ A. To reduce the overall cost of the control panel
 - ☐ B. To ensure the contactor has a higher voltage rating
 - ☒ C. To withstand inrush currents during circuit switching
 - ☐ D. To provide overload protection for the main circuit

Q.47 What best describes a short circuit in an electrical system?

- Ans**
- ☐ A. A connection with unusually high resistance
 - ☐ B. A connection where no current flows due to a break
 - ☒ C. An unintended path with zero or very low resistance
 - ☐ D. An intended path with normal resistance

Q.48 Which factors determine the synchronous speed of the rotating magnetic field in a three-phase induction motor?

- Ans**
- ☐ A. Rotor resistance and load torque
 - ☐ B. Stator voltage and power factor
 - ☒ C. Supply frequency and number of poles
 - ☐ D. Rotor current and motor slip

Q.49 A raceway is used in electrical and control panel installations. What is the primary purpose of using a raceway in wiring systems?

- Ans**
- ☐ A. To convert AC supply into DC supply for control circuits
 - ☒ B. To carry and organize wires neatly between components
 - ☐ C. To reduce the resistance of conductors during operation
 - ☐ D. To increase the voltage capacity of electrical wires

Q.50 A rod of length 2 m is cut into 1/4m pieces. How many pieces are obtained?

- Ans**
- ☐ A. 10
 - ☐ B. 6
 - ☒ C. 8
 - ☐ D. 4

Q.51 According to Indian Electricity (IE) safety practices, what is the first mandatory action before performing maintenance on a commercial electrical wiring installation?

- Ans**
- ☐ A. Increase the supply voltage to check load condition
 - ☐ B. Connect all exposed conductors together before inspection
 - ☐ C. Tighten all terminal connections in the distribution board
 - ☒ D. Isolate and switch OFF the main electrical supply

Q.52 Which type of commercial wiring system uses low-resistance copper conductors of suitable current-carrying capacity to distribute electrical power to lighting circuits and socket outlets?

- Ans**
- ☐ A. Communication wiring
 - ☒ B. Power wiring
 - ☐ C. Entertainment wiring
 - ☐ D. Control wiring

Q.53 What is a critical step before distributing PPE to workers in a new manufacturing plant?

- Ans**
- ☐ A. Schedule regular inspections and maintenance of all PPE
 - ☐ B. Purchase sufficient quantities of PPE for all workers
 - ☒ C. Assess workplace hazards and select appropriate PPE
 - ☐ D. Provide orientation on workplace rules and procedures

Q.54 What will be the impact on solar panel performance if a high-latitude installation uses the same tilt angle as an equatorial installation?

- Ans**
- ☒ A. Solar panels capture less sunlight in winter months
 - ☐ B. Solar panels overheat throughout the year
 - ☐ C. Solar panels degrade rapidly in high temperatures
 - ☐ D. Solar panels experience frequent wiring faults

Q.55 What is the effect of using a conductor with insufficient current-carrying capacity in a low-voltage (LV) distribution system?

- Ans**
- ☐ A. It improves system efficiency by reducing conductor resistance
 - ☐ B. It increases the transmission capacity of the feeder
 - ☒ C. It causes overheating, voltage drop, and increased power losses
 - ☐ D. It maintains stable voltage regardless of load conditions

Q.56 An industrial panel uses a cartridge fuse rated at 250V, 32A. If a technician replaces it with a 16A fuse of the same voltage rating, what is the likely outcome during normal operation at 28A?

- Ans**
- ☒ A. The fuse will blow even during normal load conditions.
 - ☐ B. The fuse will allow equipment to run at a higher current safely.
 - ☐ C. The fuse will offer improved protection from overloads without any drawback.
 - ☐ D. The fuse voltage rating will cause insulation breakdown in the circuit.

Q.57 Which type of MCB tripping curve is most appropriate for protecting standard domestic lighting circuits?

- Ans**
- ☐ A. Type A MCB
 - ☒ B. Type B MCB
 - ☐ C. Type D MCB
 - ☐ D. Type C MCB

Q.58 A technician is using the Murray loop test to locate a ground fault in a two-core cable. Which essential component must be connected to complete the test setup?

- Ans**
- ☒ A. A known resistance bridge circuit
 - ☐ B. A digital voltmeter
 - ☐ C. A clamp meter or tong tester
 - ☐ D. An earth leakage relay

Q.59 A drawing specifies a hole with 12.00 +0.02/-0.00 mm. What is the minimum permissible diameter of the hole?

- Ans**
- ☐ A. 12.01 mm
 - ☒ B. 12.00 mm
 - ☐ C. 12.02 mm
 - ☐ D. 12.20 mm

Q.60 Which factor is important when selecting a location for a distribution board in domestic wiring?

- Ans**
- ☒ A. Proximity to the load centre.
 - ☐ B. Brand of the distribution board.
 - ☐ C. Type of wiring used.
 - ☐ D. Number of rooms in the building.

Q.61 If a lightly loaded DC shunt generator experiences a continuous increase in its external load, how will its efficiency behave?

- Ans**
- ☐ A. Efficiency will increase at a constant rate with load.
 - ☐ B. Efficiency will remain constant at all load levels.
 - ☐ C. Efficiency will decrease steadily as load increases.
 - ☒ D. Efficiency will initially increase then decrease after a certain point.

Q.62 A house has a three-phase supply, but only single-phase loads are connected. How should the distribution board be configured?

- Ans**
- ☐ A. Install a single-phase distribution board
 - ☐ B. Use only one phase for all circuits
 - ☐ C. Connect all loads to a single phase busbar
 - ☒ D. Distribute single-phase loads evenly across all three phases

Q.63 When testing a three-phase motor feeder, the insulation resistance readings between phase conductors are as follows: L1-L2: 60 MΩ, L2-L3: 58 MΩ, L1-L3: 61 MΩ. What does this indicate about the wiring?

- Ans**
- ☐ A. The feeder has an open circuit in one of the phases
 - ☐ B. There is an inter-turn short circuit in the motor windings
 - ☐ C. Immediate replacement of the cable is required
 - ☒ D. The insulation between phase conductors is satisfactory

Q.64 During the short circuit test of a single-phase transformer, the wattmeter reading indicates which type of loss in a transformer?

- Ans**
- ☒ A. Copper loss at rated-current operating condition
 - ☐ B. Dielectric loss inside transformer insulation oil
 - ☐ C. Hysteresis loss under no-load operating condition
 - ☐ D. Core eddy current loss at rated magnetic flux

Q.65 Which of the following best describes the primary function of control wiring in appliance circuits?

- Ans**
- ☐ A. To provide direct power supply to appliances
 - ☐ B. To ground the electrical system for safety
 - ☐ C. To connect only protective devices
 - ☒ D. To transmit commands between control devices and lighting

Q.66 What is the power factor of a purely resistive AC circuit?

- Ans**
- ☐ A. It is less than 1
 - ☐ B. It is equal to 0
 - ☐ C. It is greater than 1
 - ☒ D. It is equal to 1

Q.67 A project manager is preparing a cost estimate for a new wiring installation. The estimate accounts for materials, labor, overhead, and profit. Which method best ensures the project stays financially secure if unexpected price increases or additional work occur?

- Ans**
- ☒ A. Including an appropriate contingency allowance in the estimate
 - ☐ B. Excluding the contingency from the estimate
 - ☐ C. Relying solely on historical cost data
 - ☐ D. Ignoring potential risks in the estimate

Q.68 If a differential compound generator is used in variable load applications, what will be the effect on terminal voltage?

- Ans**
- ☐ A. Terminal voltage remains unchanged with increasing load
 - ☒ B. Terminal voltage decreases with increase in load current
 - ☐ C. Terminal voltage fluctuates randomly
 - ☐ D. Terminal voltage increases with increasing load

Q.69 Which device is commonly used to measure voltage in a circuit with a digital display?

- Ans**
- ☒ A. Digital voltmeter
 - ☐ B. Digital ohmmeter
 - ☐ C. Digital ammeter
 - ☐ D. Digital wattmeter

Q.70 In an electric vehicle, which approach ensures both physical and visual safety when accessing high voltage components during maintenance?

- Ans**
- ☐ A. Marking high voltage areas with non-standard symbols
 - ☐ B. Using enclosures without any color coding
 - ☐ C. Applying only color coding without physical barriers
 - ☒ D. Using enclosures with electrical protection barriers and standardized high voltage color coding

Q.71 Which part of an electric iron controls the temperature by switching the current on or off?

- Ans**
- ☐ A. Heating coil
 - ☐ B. Soleplate
 - ☒ C. Thermostat
 - ☐ D. Indicator lamp

Q.72 A technician needs to maximize the lifespan of a lead-acid battery used in a solar backup system. Which charging and discharging practice should they strictly avoid to prevent weakening of the battery's plate structure?

- Ans**
- ☐ A. Charging the battery at a moderate rate over long periods
 - ☐ B. Discharging the battery under light loads
 - ☐ C. Maintaining the battery at constant voltage during use
 - ☒ D. Charging and discharging the battery rapidly

Q.73 Which of the following statements describes a difference between incandescent lamps and fluorescent lamps used in illumination?

- Ans**
- ☐ A. Incandescent lamps are mainly used for decorative lighting, while fluorescent lamps are only for commercial use.
 - ☐ B. Incandescent lamps are always tube-shaped, while fluorescent lamps are always round-shaped.
 - ☒ C. Incandescent lamps produce light by heating a filament, while fluorescent lamps use a gas discharge process.
 - ☐ D. Incandescent lamps are found only in table lamps, while fluorescent lamps are used only in ceiling fixtures.

Q.74 Which action causes the failure of voltage buildup in a self-excited DC generator?

- Ans**
- ☐ A. Maintaining proper residual magnetism
 - ☐ B. Connecting the load after voltage builds up
 - ☐ C. Running the generator at rated speed
 - ☒ D. Increasing the field resistance beyond the critical resistance

Q.75 Which of the following is an example of equipment that uses mercury cells?

- Ans**
- ☐ A. Kitchen ovens
 - ☐ B. Televisions
 - ☐ C. Ceiling fans
 - ☒ D. Calculators