



रेल भर्ती बोर्ड / RAILWAY RECRUITMENT BOARDS
सी ई एन - ०१/२०२५ - CEN - 01/2025
सहायक लोको पायलट की भर्ती/ Recruitment of Assistant Loco Pilot



RRB ALP 2025 CBT 2

Assistant Loco Pilot | CEN 01/2025 | CBT 2 | Wireman

ENGLISH ANSWER KEY

Official Answer Key

All 2 Shifts · 28-07-2026 to 28-07-2026

Questions	175 (Part A 100 + Part B 75)
Marking	+1 correct / -1/3 wrong
Duration	2 hours 30 minutes (Part A 90 min + Part B 60 min)
Sections	Part A 100 (Maths, Reasoning, Basic Sci & Engg) · Part B 75 (trade)

Every paper is set from the saved RRB question paper, with the official correct answer marked.

HOW TO USE THIS BOOK

- 1 Open the INDEX on the next page.
- 2 Click any row to jump straight to that date and shift.
- 3 Correct options are ticked in green, wrong ones crossed in red.

Check your marks, normalized score and zone-wise rank free at
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Blackbook

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Compiled 28 October 2026

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RRB ALP 2025 CBT 2 (Wireman) (English) · 2 shifts

DAY	DATE	SHIFT	TIME	PAGE
Day 1	28-07-2026	Shift 1	09:30 - 12:00	3
Day 1	28-07-2026	Shift 2	14:30 - 17:00	24



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Exam	RRB ALP 2025 CBT 2 (CEN 01/2025)
Paper	Wireman
Test Date	28 Jul 2026
Test Time	9:30 AM - 12:00 PM
Language	English

*** Note**

Correct answer carries 1 mark; each incorrect answer carries a negative mark of 1/3.

1. The option shown in green with a tick is the correct answer as per the official answer key.

2. RRB shuffles question order for every candidate inside each Part; this paper follows the order of one real response sheet.

Section : Part A

Q.1 If Rohan's income increases by 20% and his expenditure increases by 10%, then his savings increase by ₹1,200. If his original income was ₹12,000, what was his original expenditure? (Assume that savings = income – expenditure.)

- Ans
- ☒ 1. ₹10,000
 - ☒ 2. ₹11,000
 - ☒ 3. ₹12,000
 - ☒ 4. ₹9,000

Q.2 Which feature is a requirement of the BIS drawing standard in engineering drawings?

- Ans
- ☒ 1. Freehand sketches without scale
 - ☒ 2. Margin lines of random width
 - ☒ 3. Title block with specific information
 - ☒ 4. Use of colored pencils for clarity

Q.3 What should come in place of the question mark (?) in the given series?

98, 104, 116, 134, 158, ?

- Ans
- ☒ 1. 184
 - ☒ 2. 186
 - ☒ 3. 188
 - ☒ 4. 190

Q.4 If the mean of the following data is 40, then what is the value of x?

Class	10-20	20-30	30-40	40-50	50-60
Frequency	30	27	44	29	X

- Ans
- ☒ 1. 82
 - ☒ 2. 98
 - ☒ 3. 99
 - ☒ 4. 93

Q.5 Which property of a fuse wire ensures it melts quickly when excess current flows?

- Ans
- ☒ 1. High electrical resistance
 - ☒ 2. High melting point
 - ☒ 3. Thick wire
 - ☒ 4. Low melting point

- Q.6 There are two types of silver–copper alloys. The first alloy contains $93\frac{1}{3}\%$ silver, while the second alloy contains $86\frac{2}{3}\%$ silver. Find the amount of the first alloy that should be mixed with some quantity of the second alloy to obtain a 100 kg mixture containing 90% silver.
- Ans ☒ 1. 48 kg
☒ 2. 52 kg
☒ 3. 50 kg
☒ 4. 45 kg
-
- Q.7 A trader buys 187 pens at ₹23 each. During transportation, 7 pens get damaged and cannot be sold. He sells the remaining pens at ₹27 each. Find his profit percentage. (rounded off to one decimal place)
- Ans ☒ 1. 13.7%
☒ 2. 14.1%
☒ 3. 13.0%
☒ 4. 12.6%
-
- Q.8 A car travels on a highway, and its odometer records a reading of 180 km at 8:00 am and 240 km at 9:30 am. Based on this information, which statement best describes the car's average speed during this interval?
- Ans ☒ 1. The car's average speed is 240 km per hour since that was the odometer reading at 9:30 am.
☒ 2. The car's average speed is 60 km per hour based only on the change in odometer readings.
☒ 3. The car's average speed is 40 km per hour as calculated from the odometer readings and time interval.
☒ 4. The car's average speed is 180 km per hour since that was the odometer reading at 8:00 am.
-
- Q.9 A cyclist covers 120 meters in 16 seconds on a straight road, then immediately covers 180 meters in 24 seconds on a similar road segment. What is the average speed of the cyclist during the entire journey?
- Ans ☒ 1. 7.5 meters per second
☒ 2. 7.0 meters per second
☒ 3. 6.5 meters per second
☒ 4. 8.0 meters per second
-
- Q.10 What do touch gestures in Microsoft Windows allow users to do?
- Ans ☒ 1. Type faster on the keyboard
☒ 2. Connect external devices
☒ 3. Perform actions using finger movements
☒ 4. Increase screen brightness
-
- Q.11 Which of the following is both, an input and output device?
- Ans ☒ 1. Keyboard
☒ 2. Touchscreen monitor
☒ 3. Projector
☒ 4. Printer
-
- Q.12 In third angle projection, where is the object placed relative to the plane of projection?
- Ans ☒ 1. The object is placed in the third quadrant
☒ 2. The object is placed in the second quadrant
☒ 3. The object is placed in the first quadrant
☒ 4. The object is placed in the fourth quadrant
-
- Q.13 An engineer uses fault tree analysis to assess a machine-related injury in a factory. Which step should be taken first according to standard procedure?
- Ans ☒ 1. Establish preventive measures to control risks
☒ 2. List all possible causes of failures
☒ 3. Validate the analysis using workplace data
☒ 4. Define the top event representing the injury
-

Q.14 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 Shreya related to Mahak if 'Shreya + Dev – Taran × Harshit % Mahak'?

- Ans
- ☐ 1. Father's sister
 - ☐ 2. Mother's sister
 - ☐ 3. Father's mother
 - ☒ 4. Mother's mother

Q.15 Which of the following scenarios best demonstrates the conversion of chemical energy to mechanical energy?

- Ans
- ☐ 1. A flashlight turns on after inserting new batteries
 - ☐ 2. A stone falls off a table to the ground
 - ☐ 3. A stretched rubber band snaps back to its original shape
 - ☒ 4. A runner uses stored energy from food to sprint forward

Q.16 A shopkeeper marks a product 75% above cost price and offers two successive discounts of 30% and 40%. What is the profit or loss percentage?

- Ans
- ☐ 1. 15.7% profit
 - ☐ 2. 20.9% profit
 - ☒ 3. 26.5% loss
 - ☐ 4. 22.6% profit

Q.17 Refer to the following letter series and answer the question that follows. Counting to be done from left to right only.

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

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

- Ans
- ☒ 1. 3
 - ☐ 2. 1
 - ☐ 3. 2
 - ☐ 4. 0

Q.18 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
- ☐ 1. DJ – GM
 - ☐ 2. AF – DI
 - ☒ 3. CH – EK
 - ☐ 4. BG – EJ

Q.19 Refer to the given letter series and answer the question that follows. Counting to be done from left to right.

(Left) B F O P P S Q A L M K A W X S N U Q J O M Y (Right)

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

- Ans
- ☐ 1. 6
 - ☐ 2. 4
 - ☐ 3. 7
 - ☒ 4. 5

Q.20 What is the primary function of a fire hydrant in a workplace safety system?

- Ans
- ☐ 1. Removing hazardous fumes from the area
 - ☐ 2. Detecting smoke and warning employees
 - ☒ 3. Supplying large quantities of water to fight fires
 - ☐ 4. Activating fire alarms automatically in emergencies

Q.21 Which approach most effectively reduces both nitrogen and phosphorus concentrations during wastewater treatment?

- Ans
- ☒ 1. Biological and chemical nutrient removal
 - ☐ 2. Primary sedimentation with extended aeration
 - ☐ 3. UV disinfection following secondary treatment
 - ☐ 4. Surface-flow constructed wetlands

Q.22 Which of the following letter-number clusters will replace the question mark (?) in the given series to make it logically complete?

QOI 5, OMG 10, MKE 15, KIC 20, ?

- Ans ☒ 1. IGA 25
☐ 2. IHS 23
☐ 3. HIZ 30
☐ 4. JHZ 24

Q.23 Refer to the following letter and symbol series and answer the question that follows. Counting to be done from left to right.

(Left) Z @ B R J # D * Q A M S % P L V O U S N T W Z (Right)

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

- Ans ☐ 1. None
☒ 2. Four
☐ 3. Three
☐ 4. Two

Q.24 A sum of ₹420 is divided among A, B, C, and D such that: $A : B = 4 : x$, $B : C = x : 7$, $C : D = 6 : (x - 3)$. If B and C together get ₹210, find the value of x.

- Ans ☐ 1. 42
☐ 2. 27
☒ 3. 39
☐ 4. 53

Q.25 Three pipes A, B and C can fill a tank in 12 hours, 18 hours and 24 hours, respectively. A leak at the bottom can empty the full tank in 36 hours. If all the pipes are opened together, in how many hours will the tank be filled? (Round off your answer to two decimal places.)

- Ans ☐ 1. 3.33 hours
☐ 2. 5.56 hours
☒ 3. 6.55 hours
☐ 4. 9.45 hours

Q.26 A pendulum takes 60 seconds to complete 24 oscillations. If its length is increased and it now takes 72 seconds for the same number of oscillations, what has happened to its time period?

- Ans ☒ 1. It has increased to 3.0 seconds
☐ 2. It has decreased to 1.5 seconds
☐ 3. It remains at 2.5 seconds
☐ 4. It has decreased to 2.0 seconds

Q.27 An engineer is tasked with creating the front view of a mechanical part. The part has a rectangular base with a vertical circular hole passing through it and a triangular prism attached on top. Which of the following best describes what will be visible in the front view?

- Ans ☐ 1. Only the rectangular base outline will be visible in the front view drawing
☒ 2. The outline of rectangular base and triangular prism will be visible but hole is not shown
☐ 3. The outline of triangular prism and circular hole will be visible in front view only
☐ 4. Only the triangular prism will be clearly visible in the front view drawing

Q.28 An engineering student is tasked with creating a detailed side view of a complex machine part for an assembly drawing. Which approach will most accurately represent all features visible from the side while avoiding hidden overlaps or misinterpretations?

- Ans ☒ 1. Project all visible elements from the side and omit hidden features unless needed
☐ 2. Use only hidden lines for representing features on the far side in the view
☐ 3. Sketch the side view freely without using projections from the main view
☐ 4. Include all features even those not visible from the selected side view

Q.29 If $\left(x + \frac{1}{x}\right) = 3$, find the value of $\left(x^3 + \frac{1}{x^3}\right)$.

- Ans ☐ 1. 20
☐ 2. 16
☒ 3. 18
☐ 4. 15

Q.30 A sample of water is heated from 15 degrees Celsius to 35 degrees Celsius. What is the temperature change in Kelvin?

- Ans ☒ 1. The temperature change is 20 K.
☐ 2. The temperature change is 30 K.
☐ 3. The temperature change is 50 K.
☐ 4. The temperature change is 15 K.

Q.31 In a certain code language, 'KING' is coded as '9713' and 'ITCH' is coded as '2945'. What is the code for 'I' in the given code language?

- Ans ☐ 1. 2
☒ 2. 9
☐ 3. 7
☐ 4. 4

Q.32 Simplify: $60 - \{(-8) \times (-16 - 19 - 2)\} \div [5 \times \{2 + (-1) \times (-1)\}]$

- Ans ☐ 1. $\frac{594}{15}$
☐ 2. $\frac{614}{15}$
☐ 3. $\frac{608}{15}$
☒ 4. $\frac{604}{15}$

Q.33 A worker's hand is at risk of injury from a mechanical shearing action. Which situation best describes a shearing hazard?

- Ans ☐ 1. A hand touching a hot metallic machine surface during maintenance activity
☒ 2. A hand caught between a moving blade and a fixed machine surface during operation
☐ 3. A hand sliding repeatedly across a rough abrasive machine surface during work
☐ 4. A hand becoming entangled in a rotating machine shaft during operation

Q.34 What should come in place of the question mark (?) in the given series based on the English alphabetical order?

UMD ZQG EUJ JYM ?

- Ans ☐ 1. PDP
☐ 2. NBQ
☐ 3. NDO
☒ 4. OCP

Q.35 If a scooter travels at a constant speed of 25 km per hour, how far will it travel in 4 hours?

- Ans ☐ 1. 120 km
☒ 2. 100 km
☐ 3. 75 km
☐ 4. 80 km

Q.36 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: All girls are hens. No hen is a cat.

Conclusion (I): No girl is a cat.

Conclusion (II): Some cats are hens.

- Ans ☐ 1. Neither conclusion (I) nor (II) follows
☐ 2. Both conclusions (I) and (II) follow
☒ 3. Only conclusion (I) follows
☐ 4. Only conclusion (II) follows

Q.37 What is the simplified value of the expression $\left[\frac{\cos A}{(1 - \tan A)} \right] + \left[\frac{\sin A}{(1 - \cot A)} \right]$?

- Ans ☒ 1. $\cos A + \sin A$
☐ 2. $\sin A - \cos A$
☐ 3. 1
☐ 4. 0

Q.38 Which of the following best describes a key environmental concern associated with improper disposal of e-waste?

- Ans ☒ 1. Release of toxic metals into soil and water
☐ 2. Enhanced biodegradation of plastics
☐ 3. Increased recycling rates of precious metals
☐ 4. Release of greenhouse gases from decomposition

Q.39 Solve the system of equations:

$$-3x + 2y - z = -1, 6x - 6y + 7z = -7, 3x - 4y + 4z = -6$$

- Ans ☐ 1. $x=1, y=2, z=2$
☒ 2. $x=2, y=2, z=-1$
☐ 3. $x=2, y=1, z=-3$
☐ 4. $x=-2, y=2, z=11$

Q.40 In this question, 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 the five poles—I, N, C, H, and L—each having a different height, which pole is the tallest?

(I) I is shorter than N but taller than C. C is taller than only one pole.

(II) H is taller than L.

- Ans ☐ 1. Both statements I and II together (and not statement I alone or statement II alone) are sufficient to answer the question
☐ 2. Data in statement I alone is sufficient to answer the question while data in statement II is not
☒ 3. Both statements I and II together are NOT sufficient to answer the question
☐ 4. Data in statement II alone is sufficient to answer the question while data in statement I is not

Q.41 In this question, a group of numbers/symbols is coded using letter codes as per the codes given below and the conditions which follow. The correct combination of codes following the conditions is your answer. 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	6	1	&	3	%	8	+	4	#	7	@	5	2	\$
Code	R	V	G	D	S	C	T	L	F	W	H	U	Y	N

Conditions:

- (i) If the first element is a symbol and the last element is 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 last elements are to be coded as @.
(iii) If both the 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?

+ 6 \$ 2 7

- Ans ☐ 1. STMWV
☐ 2. WSNYT
☒ 3. WRNYT
☐ 4. TSNWW

Q.42 A boat sails 40 km downstream and then 40 km upstream in a river. The boat's speed in still water is 12 km/hr and the speed of the stream is 4 km/hr. How much time does the boat take to cover the entire distance (both upstream and downstream)?

- Ans ☐ 1. 8 hours
☒ 2. 7.5 hours
☐ 3. 10 hours
☐ 4. 6 hours

Q.43 Which of the following statements correctly reflects the characteristics of a Local Area Network (LAN) and the role of Ethernet within it?

- Ans ☐ 1. Ethernet in a LAN provides low-speed data transfer and connects users over public Internet infrastructure.
☐ 2. A LAN always requires Gigabit Ethernet to function and is insecure because it allows open access to all network devices.
☐ 3. LANs are designed for long-distance communication and use Ethernet primarily for wireless data exchange.
☒ 4. Ethernet is a standard that governs how devices in a LAN communicate via wired connections, supporting speeds from 10 Mbps to 1000 Mbps.

Q.44 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 glasses are spoons.
All spoons are forks.

Conclusions:

- (I) Some glasses are forks.
(II) All forks are spoons.

Ans ☒ 1. Only conclusion (II) follows
☒ 2. Neither conclusion (I) nor (II) follows
☒ 3. Only conclusion (I) follows
☒ 4. Both conclusions (I) and (II) follow

Q.45 Seven boxes, P, Q, S, T, U, V, and W, are kept one over the other, but not necessarily in the same order. Only three boxes are kept above S. Exactly one box is kept between T and S. Exactly three boxes are kept between T and U, and U is kept somewhere above S. V is kept immediately below U. W is kept at one of the places above P. Q is not kept immediately above or below T. Based on the given information, which box is kept at the lowermost position?

Ans ☒ 1. V
☒ 2. S
☒ 3. P
☒ 4. Q

Q.46 A diamond ring costs ₹85,000. Its price is reduced first by 11% and then by 4% on the reduced price. Find the final price of the ring after both discounts.

Ans ☒ 1. ₹72,624
☒ 2. ₹74,624
☒ 3. ₹72,604
☒ 4. ₹73,624

Q.47 Which is the most important safety check before operating any machine in a workshop?

Ans ☒ 1. Ensure the machine area is properly illuminated
☒ 2. Wipe the machine with a dry cloth before use
☒ 3. Check if the machine is plugged in properly
☒ 4. Inspect the machine for loose or damaged parts

Q.48 What is the best description of the purpose of multi-view drawing in engineering drawing?

Ans ☒ 1. To show different colors of an object for better visual appearance
☒ 2. To view an object from only one direction
☒ 3. To represent different sides of an object clearly on a flat surface
☒ 4. To present the object in a single three-dimensional visual form only

Q.49 An engineer is tasked with creating a hollow cone for a machine part, where the wall thickness must be consistent and the slant height is critical for assembly. Which factor is most important to ensure the cone will fit correctly in the final design?

Ans ☒ 1. Matching only the overall height of the cone
☒ 2. Prioritizing uniform wall thickness over all other features
☒ 3. Focusing only on base diameter for precise fit
☒ 4. Ensuring the slant height matches the assembly requirement

Q.50 Which of the following statements correctly describes average velocity and its SI unit?

Ans ☒ 1. Average velocity is the total displacement divided by total time, and its unit is meter per second.
☒ 2. Average velocity is the total distance divided by total time, and its unit is meter per second.
☒ 3. Average velocity is the total distance divided by total time, and its unit is kilometer per hour.
☒ 4. Average velocity is the total displacement divided by total time, and its unit is kilometer per hour.

Q.51 Find the LCM of 72, 78, and 90.

Ans ☒ 1. 4250
☒ 2. 4680
☒ 3. 4280
☒ 4. 4120

Q.52 If 'A' stands for '+', 'B' stands for '-', 'C' stands for 'x' and 'D' stands for '÷', then what will come in place of the question mark (?) in the following equation?

28 A 16 C 3 B 12 D 4 = ?

- Ans ☐ 1. 72
☒ 2. 73
☐ 3. 70
☐ 4. 71

Q.53 A mechanical engineer must design a flange joint where two pipes are to be connected at a 45-degree angle. Which method should the engineer use to accurately represent the intersection line on a technical drawing of the two cylindrical pipes?

- Ans ☒ 1. Draw the true shape of the intersection using auxiliary projection
☐ 2. Represent the intersection as a straight line in the side view
☐ 3. Use only standard orthographic projection without auxiliary views
☐ 4. Draw a simple circle at the junction in the top view

Q.54 Which line symbol is commonly used in engineering drawings to represent a hidden edge that is not directly visible?

- Ans ☐ 1. Solid thick line
☐ 2. Chain thin line
☐ 3. Zigzag line
☒ 4. Dashed line

Q.55 A roller coaster at the top of its track has maximum potential energy. As it descends and speeds up, what principle explains why the sum of its kinetic and potential energies remains constant if we ignore friction and air resistance?

- Ans ☐ 1. Law of inertia
☐ 2. Principle of inertia
☒ 3. Law of conservation of energy
☐ 4. Principle of superposition

Q.56 A tangent PQ at a point P of a circle of radius 5 cm meets a line through the center O at a point Q such that OQ = 12 cm. What is the length of PQ?

- Ans ☐ 1. $\sqrt{117}$ cm
☒ 2. $\sqrt{119}$ cm
☐ 3. $\sqrt{97}$ cm
☐ 4. $\sqrt{107}$ cm

Q.57 G is the mother of Y. Y is the sister of V. S is the father of L. L is the husband of V. How is G related to S?

- Ans ☐ 1. Mother's mother
☐ 2. Son's wife
☐ 3. Son's wife's sister
☒ 4. Son's wife's mother

Q.58 In this question, 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.

Q. Among five people – A, B, C, D, and E – who is the tallest?

(I) A is taller than B. B is taller than C.

(II) D is taller than E.

- Ans ☒ 1. Both statements I and II together are NOT sufficient to answer the question.
☐ 2. Both statements I and II together (and not statement I alone or statement II alone) are sufficient to answer the question
☐ 3. Data in statement II alone is sufficient to answer the question while data in statement I is not
☐ 4. Data in statement I alone is sufficient to answer the question while data in statement II is not

Q.59 If 'A' stands for '÷', 'B' stands for 'x', 'C' stands for '+' and 'D' stands for '-', what will come in place of the question mark '?' in the following equation?

14 A 30 B 45 C 15 D 9 = ?

- Ans ☒ 1. 27
☐ 2. 29
☐ 3. 25
☐ 4. 28

Q.60 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 ☒ 1. QK-VA
☐ 2. EY-KO
☐ 3. TN-ZD
☐ 4. WQ-CG

Q.61 A conical tent has a base radius of 14 m and a height of 48 m. How many cubic meters of air can it hold? (Use $\pi = \frac{22}{7}$)

- Ans ☐ 1. 8956
☒ 2. 9856
☐ 3. 9865
☐ 4. 9568

Q.62 Namia is facing the west. She turns left and walks 15 m. She turns left and walks 25 m. She again turns left and walks 40 m. She finally turns left and walks 40 m to reach home. In which direction is her home with respect to the starting point?

- Ans ☐ 1. South-East
☐ 2. South-West
☐ 3. North-East
☒ 4. North-West

Q.63 A trader marks an article 25% above its cost price. He allows a discount of 10% on the marked price. After giving the discount, he makes a profit of ₹180 on the article. What is the cost price of the article?

- Ans ☐ 1. ₹1,260
☐ 2. ₹1,200
☐ 3. ₹1,380
☒ 4. ₹1,440

Q.64 Three workers, X, Y, and Z, can complete a certain job in 10 days, 12 days, and 15 days, respectively. Determine the number of days required for them to complete the job when they work together.

- Ans ☐ 1. 8 days
☐ 2. 6 days
☐ 3. 5 days
☒ 4. 4 days

Q.65 What is an email used for?

- Ans ☐ 1. File storage
☐ 2. Creating documents
☒ 3. Sending messages
☐ 4. Data processing

Q.66 Which integrated strategy best addresses soil pollution, falling crop yields, and low microbial activity near an industrial zone?

- Ans ☐ 1. Expand urban areas into farmland.
☒ 2. Control industrial waste for sustainability.
☐ 3. Reforestation in nearby urban centers.
☐ 4. Ban all regional chemical fertilizers.

Q.67 A train X crosses a man who is sitting in another train Y, which is moving in the opposite direction, in 8 seconds. However, when both trains are moving in the same direction, train X takes 20 seconds to pass the same man. If the length of train X is 360 meters and the length of train Y (in which the man is sitting) is 240 meters, what is the speed of train Y?

- Ans ☒ 1. 48.6 km/h
☐ 2. 46.5 km/h
☐ 3. 45.3 km/h
☐ 4. 45.8 km/h

Q.68 The circumference of the base of a solid right circular cylinder is 88 cm and its height is 150 cm. What is the volume (in cm^3) of the cylinder?

(Take $\pi = \frac{22}{7}$)

- Ans ☒ 1. 92550
☒ 2. 92500
☒ 3. 92450
☒ 4. 92400

Q.69 In how many years will a sum of ₹16,000 at 10% per annum compounded semi-annually become ₹18,522?

- Ans ☒ 1. 2.5 years
☒ 2. 2 years
☒ 3. 1 year
☒ 4. 1.5 years

Q.70 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 X and Z when counted from the right of X. Only two people sit between Z and D. Only three people sit between X and B. A sits to the immediate left of C. Who sits third to the left of Y?

- Ans ☒ 1. X
☒ 2. C
☒ 3. Z
☒ 4. A

Q.71 E, F, G, H, L and M live on six different floors of the same building. The lowermost floor in the building is numbered 1, the floor above it, number 2 and so on, till the topmost floor is numbered 6. Only three people live above G. Only two people live between L and E. Only two people live between M and G. E lives below G but above F. How many people live below H?

- Ans ☒ 1. One
☒ 2. Four
☒ 3. Two
☒ 4. Three

Q.72 16 is related to 260 following a certain logic. Following the same logic, 25 is related to 630. To which of the following is 9 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 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.)

- Ans ☒ 1. 732
☒ 2. 84
☒ 3. 729
☒ 4. 78

Q.73 Which statement best describes a 'point' in engineering drawing?

- Ans ☒ 1. A point is a short line segment used to mark measurements.
☒ 2. A point is the intersection of two lines and always has measurable length.
☒ 3. A point represents a small area with both length and width.
☒ 4. A point indicates a precise location but has no size, length, or width.

Q.74 The average of 8 numbers is 45. If one number, 59, is removed, what will the new average be?

- Ans ☒ 1. 42.5
☒ 2. 42
☒ 3. 43
☒ 4. 41.5

Q.75 If 'A' stands for '+', 'B' stands for '-', 'C' stands for 'x' and 'D' stands for '÷', then what will come in place of the question mark (?) in the following equation?

31 B 35 D 7 A 9 C 2 = ?

- Ans ☒ 1. 46
☒ 2. 48
☒ 3. 44
☒ 4. 42

Q.76 An object has a mass of 10 kilograms. How does its weight on the Moon compare to its weight on Earth?

- Ans
- ☐ 1. The object weighs more on the Moon than on Earth
 - ☐ 2. The object weighs the same on both the Moon and Earth
 - ☐ 3. The object weighs zero on the Moon
 - ☒ 4. The object weighs less on the Moon than on Earth

Q.77 When using a hand file during fitting operations, which action demonstrates adherence to tool safety protocols?

- Ans
- ☐ 1. Applying excessive downward force when filing
 - ☐ 2. Filing above shoulder height for better leverage
 - ☒ 3. Fitting a proper handle securely to the tang
 - ☐ 4. Holding the file near its tang during filing work

Q.78 Below are given two sets of numbers. 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.)

10 - 100 - 50 - 25; 2 - 4 - 2 - 1

- Ans
- ☐ 1. 12 - 144 - 62 - 31
 - ☒ 2. 4 - 16 - 8 - 4
 - ☐ 3. 8 - 64 - 32 - 14
 - ☐ 4. 5 - 25 - 15 - 7

Q.79 A thermometer shows a reading of 37 degrees Celsius. What is the corresponding temperature in Kelvin?

- Ans
- ☒ 1. 310 K
 - ☐ 2. 320 K
 - ☐ 3. 300 K
 - ☐ 4. 270 K

Q.80 The median of the following data is :

25, 15, 23, 25, 17, 27, 20, 18, 24, 30, 19, 28, 35, 10, 31, 40

- Ans
- ☐ 1. 20.5
 - ☒ 2. 24.5
 - ☐ 3. 25
 - ☐ 4. 23.5

Q.81 A runner completes one lap of a 200 meter circular track in 50 seconds. What is the average speed of the runner?

- Ans
- ☐ 1. 3 meter per second
 - ☒ 2. 4 meter per second
 - ☐ 3. 3.5 meter per second
 - ☐ 4. 4.5 meter per second

Q.82 P, Q, R, S and T have different ages. T is elder than only one person. S is elder than P but younger than Q. R is elder than Q. Who is the youngest?

- Ans
- ☒ 1. P
 - ☐ 2. R
 - ☐ 3. Q
 - ☐ 4. S

Q.83 Which of the following best defines 'work' in physics?

- Ans
- ☐ 1. Work is done if a force acts at any angle to the motion.
 - ☒ 2. Work is done when a force moves an object in the direction of the force.
 - ☐ 3. Work is done when energy is stored in an object.
 - ☐ 4. Work is done whenever a force is applied, regardless of movement.

Q.84 O, P, Q, U and V have different heights. Only three people have heights between V and Q. P is taller than U but shorter than O. V is taller than Q.

How many people are shorter than P?

- Ans
- ☐ 1. Four
 - ☐ 2. One
 - ☐ 3. Three
 - ☒ 4. Two

Q.85 The simple interest earned on a certain sum of money for 3 years at 15% per annum is ₹2,700. Find the sum.

- Ans ☐ 1. ₹5,000
☐ 2. ₹9,000
☒ 3. ₹6,000
☐ 4. ₹8,000

Q.86 Select the pair which follows the same pattern as that followed by the two pairs given below. Both pairs follow the same pattern.

BIP : EMU
GNU : JRZ

- Ans ☐ 1. XDE : PON
☐ 2. CGW : NHT
☒ 3. FMT : IQY
☐ 4. VCD : GRD

Q.87 Which component makes up the largest proportion of Earth's atmosphere by volume?

- Ans ☐ 1. Oxygen
☐ 2. Argon
☐ 3. Carbon dioxide
☒ 4. Nitrogen

Q.88 Which situation best describes an entanglement hazard in a mechanical workshop?

- Ans ☒ 1. Loose clothing caught in a rotating shaft
☐ 2. Gloves worn near hot surfaces
☐ 3. Hand pinched between gears
☐ 4. Finger cut by a sharp edge

Q.89 A car travels 60 km north in 2 hours, then 40 km south in the next 1 hour. What is the car's average velocity over the entire trip?

- Ans ☐ 1. 20 km/h south
☒ 2. 6.7 km/h north
☐ 3. 33.3 km/h north
☐ 4. 0 km/h

Q.90 PJAE is related to JOWH in a certain way based on the English alphabetical order. In the same way, OIVC is related to INRF. To which of the following is NEZF related to following the same logic?

- Ans ☐ 1. IKUH
☐ 2. IJVJ
☒ 3. HJVI
☐ 4. HKVJ

Q.91 What should come in place of the question mark (?) in the given series?

74, 83, 101, 128, ?, 209

- Ans ☐ 1. 176
☒ 2. 164
☐ 3. 155
☐ 4. 146

Q.92 In a spreadsheet application, a user selects a range of cells and presses Ctrl + C, followed by Ctrl + V in a different worksheet. What happens to the data?

- Ans ☐ 1. The selected cells are deleted from the original worksheet.
☐ 2. The selected cells are saved to a new file.
☒ 3. The selected cells are copied to the new worksheet.
☐ 4. The selected cells are moved to the new worksheet.

Q.93 What is the typical temperature range covered by a laboratory thermometer used in school experiments?

- Ans ☐ 1. Minus fifty to fifty degrees Celsius
☐ 2. Thirty five to forty two degrees Celsius
☒ 3. Minus ten to one hundred and ten degrees Celsius
☐ 4. Zero to two hundred degrees Celsius

Q.94 A father distributed two different amounts among his sons P, Q, R and S. First amount was distributed in the ratio 5 : 4 : 3 : 2 and the second amount was distributed in the ratio 6 : 7 : 8 : 9. If the second amount is thrice the first amount, then which son will get the maximum amount?

- Ans ☒ 1. S
☐ 2. R
☐ 3. Q
☐ 4. P

Q.95 A car travels 90 km east and then 30 km west along the same straight road. If the entire journey takes 3 hours, what is the average velocity of the car?

- Ans ☐ 1. 40 km/h east
☐ 2. 50 km/h north
☐ 3. 30 km/h east
☒ 4. 20 km/h east

Q.96 A laboratory record shows a distance of 0.004 kilometers between two points. How should this be written in SI units of length for a scientific report?

- Ans ☐ 1. 400 cm
☒ 2. 4 m
☐ 3. 4000 mm
☐ 4. 0.4 m

Q.97 When a moving car suddenly applies brakes, its kinetic energy is transformed mainly into which form of energy?

- Ans ☐ 1. Light energy
☐ 2. Sound energy
☐ 3. Potential energy
☒ 4. Heat energy

Q.98 A car of mass 1200 kg accelerates from rest to a speed of 20 m/s on a straight road. If the kinetic energy gained by the car is completely due to the work done by the engine, which of the following best represents the total kinetic energy acquired by the car at this speed?

- Ans ☐ 1. 480,000 joules
☐ 2. 12,000 joules
☐ 3. 24,000 joules
☒ 4. 240,000 joules

Q.99 What is the main purpose of ambient air quality standards?

- Ans ☐ 1. To require all industries to reduce emissions by the exact same percentage.
☒ 2. To set legally permissible limits for specific pollutants to protect public health.
☐ 3. To focus exclusively on industrial operations while ignoring other sectors.
☐ 4. To ensure air is routinely sampled to map historical pollution trends.

Q.100 Two students move identical boxes through a distance of 10 m. Student A applies a force of 50 N, while Student B applies a force of 100 N. What is the difference in the work done by the two students?

- Ans ☐ 1. 50 J
☐ 2. 1000 J
☒ 3. 500 J
☐ 4. 0 J

Section : Part B (Wireman)

Q.101 The price of a tool increased from ₹400 to ₹500. Calculate the percentage increase based on the original price.

- Ans ☐ 1. 20%
☐ 2. 30%
☒ 3. 25%
☐ 4. 35%

Q.102 In a climate-controlled laboratory where aesthetics and minimal electromagnetic interference are priorities, which wiring system is most appropriate?

- Ans ☐ 1. Casing-capping wiring with plastic covers
☐ 2. Batten wiring with wooden battens
☐ 3. Cleat wiring with ceramic cleats
☒ 4. Concealed conduit wiring with non-magnetic pipes

Q.103 Why is Relay Ladder Logic (RLL) represented in a graphical form similar to relay control circuits in programmable logic controllers (PLCs)?

- Ans
- ☐ 1. To increase the memory capacity of programmable logic controllers
 - ☐ 2. To reduce the operating voltage required by PLC hardware
 - ☒ 3. To make PLC programming easier for technicians familiar with relay logic troubleshooting
 - ☐ 4. To replace all electrical wiring connections inside industrial machines

Q.104 A control panel design requires cable markers to be both flame-retardant and resistant to abrasion. Which material is best suited for this requirement?

- Ans
- ☐ 1. Vinyl electrical tapes
 - ☒ 2. Polyolefin heat-shrink sleeves
 - ☐ 3. Self-adhesive paper labels
 - ☐ 4. Clip-on plastic tags

Q.105 Find the circumference of a circle having radius 7 cm. Use $\pi=22/7$.

- Ans
- ☐ 1. 66 cm
 - ☐ 2. 22 cm
 - ☐ 3. 88 cm
 - ☒ 4. 44 cm

Q.106 Before measuring current with an analog multimeter, how should the meter be connected in a circuit?

- Ans
- ☐ 1. Across the power supply
 - ☐ 2. To earth ground
 - ☐ 3. In parallel with the load
 - ☒ 4. In series with the load

Q.107 Which type of lamp is suitable for street lighting due to its high efficiency and long life?

- Ans
- ☐ 1. Fluorescent lamp
 - ☐ 2. Mercury vapor lamp
 - ☐ 3. Incandescent lamp
 - ☒ 4. Sodium vapor lamp

Q.108 If three light bulbs are connected in a series circuit and one bulb burns out (opens), what happens to the remaining bulbs?

- Ans
- ☒ 1. The other bulbs stop glowing
 - ☐ 2. The other bulbs continue glowing normally
 - ☐ 3. The other bulbs glow brighter
 - ☐ 4. The other bulbs glow dimmer

Q.109 According to the laws of electrolysis, what happens to the mass of substance deposited at an electrode if the quantity of electricity passed through the electrolyte is increased?

- Ans
- ☐ 1. The mass deposited remains constant
 - ☒ 2. The mass deposited increases
 - ☐ 3. The mass deposited decreases
 - ☐ 4. The mass deposited changes unpredictably

Q.110 Which step is most crucial for enabling the collection of electric current in a silicon-based solar cell?

- Ans
- ☐ 1. Doping wafers with impurities
 - ☐ 2. Sandwiching doped and undoped wafers
 - ☒ 3. Attaching metallic strips to the extreme layers
 - ☐ 4. Cutting silicon into thin wafers

Q.111 Which condition must be met for a DC shunt generator to successfully charge a battery bank?

- Ans
- ☐ 1. The generator field resistance must be minimum.
 - ☐ 2. The generator terminal voltage must be equal to the battery voltage.
 - ☐ 3. The armature resistance must be maximum.
 - ☒ 4. The generator terminal voltage must be higher than the battery voltage.

Q.112 In which situation is DC transmission preferred over AC transmission in power networks?

- Ans
- ☐ 1. For distribution in city networks
 - ☐ 2. For local substation connections
 - ☐ 3. For rural short transmission lines
 - ☒ 4. For very long-distance underwater cables

Q.113 A factory is being constructed in an area with frequent electrical storms. The engineers must design an earthing system. Which factor is critical to prioritize in their design to ensure safety and equipment protection?

- Ans
- ☐ 1. Using a single GI pipe for earthing
 - ☐ 2. Using the thickest possible earthing cable
 - ☒ 3. Increasing the number of earthing rods
 - ☐ 4. Placing earthing rods close together

Q.114 If a lighting circuit is designed for 230 V supply and one lamp is rated for 110 V, what will happen if the lamp is connected directly in parallel with other 230 V lamps?

- Ans
- ☐ 1. The 110 V lamp will operate at normal brightness
 - ☐ 2. The 110 V lamp will be operate much brighter than others and continue to do so.
 - ☒ 3. The 110 V lamp will fail quickly due to overvoltage
 - ☐ 4. The 110 V lamp will be dimmer than others

Q.115 What is the purpose of using symbolic representation in engineering drawing?

- Ans
- ☒ 1. To communicate information using standardized symbols
 - ☐ 2. To introduce unnecessary complexity into drawings
 - ☐ 3. To decorate drawings using additional geometric shapes
 - ☐ 4. To improve the decorative appearance of drawings

Q.116 The property of a material by which it regains its original shape and size after removal of the deforming force is called:

- Ans
- ☐ 1. Brittleness
 - ☒ 2. Elasticity
 - ☐ 3. Plasticity
 - ☐ 4. Hardness

Q.117 A universal motor is brought into the workshop with the complaint of excessive sparking at the commutator under load. Which is the most likely cause to check first?

- Ans
- ☐ 1. Damaged field winding
 - ☒ 2. Worn out carbon brushes
 - ☐ 3. Shorted commutator bar
 - ☐ 4. Faulty armature windings

Q.118 A technician needs to select a wire for connecting a 230V control circuit inside a panel. Which specification is most important for this application?

- Ans
- ☒ 1. Voltage rating and insulation quality
 - ☐ 2. Color code for identification
 - ☐ 3. Current carrying capacity alone
 - ☐ 4. Flexibility for ease of routing

Q.119 What does the BIS code 2330 primarily indicate?

- Ans
- ☒ 1. It indicates a nickel steel with high nickel content
 - ☐ 2. It identifies a free cutting steel grade type
 - ☐ 3. It represents a plain carbon steel grade material
 - ☐ 4. It denotes a chromium steel used in engineering

Q.120 Which type of substation would be strategically installed on a high-voltage transmission line to improve network reliability by isolating faults without changing voltage levels?

- Ans
- ☐ 1. Step-down transformer substation
 - ☒ 2. Switching substation
 - ☐ 3. Step-up transformer substation
 - ☐ 4. Traction substation

Q.121 An industrial electrician uses an insulation resistance tester on a three-core cable. The measured resistance between core and earth is 900 megaohms. What does this value indicate about the cable's insulation condition?

- Ans
- ☐ 1. The cable is unsuitable for industrial environments due to low strength.
 - ☒ 2. The insulation is in good condition and safe for operation.
 - ☐ 3. The cable has severe moisture ingress and needs drying.
 - ☐ 4. The insulation has broken down and needs immediate replacement.

Q.122 A three-phase synchronous motor is connected to an AC supply. If the field excitation is decreased below the value required for unity power factor operation, what is the expected effect on the motor power factor?

- Ans ☐ 1. The power factor becomes leading
☒ 2. The power factor becomes lagging
☐ 3. The power factor remains unity
☐ 4. The motor power factor becomes zero

Q.123 Which type of centrally monitored fire detection and alarm system is used in large commercial public buildings for fire safety?

- Ans ☐ 1. Conventional heat detector alarm system
☐ 2. Standalone residential smoke detector units
☐ 3. Manual fire alarm call point system only
☒ 4. Addressable fire detection and alarm system

Q.124 In a series DC circuit, what happens if one component fails or becomes open-circuit?

- Ans ☐ 1. Current bypasses the failed component
☒ 2. The entire circuit stops working
☐ 3. Current flows only through working components
☐ 4. Current flows in reverse direction

Q.125 An electrician is planning the wiring for a two-room house. Each room requires one ceiling light and two socket outlets. Which of the following wiring layouts provides the most efficient use of wire while maintaining safety?

- Ans ☐ 1. Using a single radial circuit for all loads
☐ 2. Combining sockets and lights on one ring circuit
☒ 3. Using a ring circuit for sockets and a radial circuit for lights
☐ 4. Using two separate ring circuits for each room

Q.126 What is the function of the charging controller in an AC charging system for electric vehicles?

- Ans ☐ 1. To control the speed of the electric vehicle
☒ 2. To manage charging communication of vehicles
☐ 3. To provide direct power to the vehicle's motor
☐ 4. To select the type of charging cable used

Q.127 A thread gauge is best suited for which of the following tasks in an ITI fitting shop?

- Ans ☐ 1. Cleaning the debris off a thread
☒ 2. Checking the pitch of a thread
☐ 3. Tightening the nut of a bolt
☐ 4. Measuring the diameter of a rod

Q.128 If the current in a coil lags the voltage by 60°, what is the circuit's power factor?

- Ans ☐ 1. 0.5 leading
☐ 2. $\frac{\sqrt{3}}{2}$ leading
☐ 3. $\frac{\sqrt{3}}{2}$ lagging
☒ 4. 0.5 lagging

Q.129 In a delta-connected three-phase system, what is the relationship between line voltage and phase voltage?

- Ans ☐ 1. Line voltage is zero
☐ 2. Line voltage is twice phase voltage
☒ 3. Line voltage equals phase voltage
☐ 4. Line voltage is less than phase voltage

Q.130 Which device is commonly used as a source of electromotive force in a simple electric circuit?

- Ans ☒ 1. Electric battery
☐ 2. Fixed resistor
☐ 3. Electric motor
☐ 4. Incandescent lamp

Q.131 Which safety feature in domestic appliances helps prevent electric shock by providing a path for leakage current to the ground?

- Ans
- ☐ 1. Neutral wire
 - ☐ 2. Fuse
 - ☐ 3. Insulation
 - ☒ 4. Earthing connection

Q.132 A DC shunt motor is running at full load. Which action will increase its speed beyond its rated value?

- Ans
- ☐ 1. Increasing armature resistance
 - ☐ 2. Increasing load on the motor
 - ☒ 3. Decreasing field winding current
 - ☐ 4. Decreasing supply voltage

Q.133 Why are external resistances connected to the rotor circuit of a slip ring induction motor during starting?

- Ans
- ☒ 1. To significantly increase the starting torque
 - ☐ 2. To intentionally decrease the supply voltage
 - ☐ 3. To proportionally reduce the stator frequency
 - ☐ 4. To completely eliminate the iron core losses

Q.134 Which of the following parameters must be tested according to quality standards before commissioning a solar power plant?

- Ans
- ☐ 1. Module cleaning schedule
 - ☒ 2. Insulation resistance measurement
 - ☐ 3. Cable color coding
 - ☐ 4. Grid voltage setting

Q.135 If the resistance of an earth electrode is measured to be 6 ohms, what should be done according to IEE regulations?

- Ans
- ☒ 1. Improve the earthing by adding more rods or pouring water
 - ☐ 2. Increase the supply voltage to the circuit
 - ☐ 3. Use a thinner earth wire
 - ☐ 4. Leave the installation as it is

Q.136 Solar cells are also known as the building blocks of which devices?

- Ans
- ☐ 1. Electrical wires
 - ☐ 2. Transformers
 - ☒ 3. Photovoltaic modules
 - ☐ 4. Batteries

Q.137 What is the purpose of the Cable Sheath Continuity Test in underground cables?

- Ans
- ☐ 1. To measure the cable insulation resistance
 - ☐ 2. To check the cable conductor resistance
 - ☐ 3. To determine the total cable length
 - ☒ 4. To check if the metallic sheath or armor is continuous

Q.138 Which symbol is used in engineering drawing to show a spot face?

- Ans
- ☐ 1. A plain rectangle with no center marks
 - ☐ 2. A circle with a horizontal line under it
 - ☒ 3. A plain circle with no internal marks
 - ☐ 4. A small circle with an internal cross

Q.139 A domestic MCCB is marked 25A, 6 kA, 230V AC. Which fault current will this MCCB safely interrupt?

- Ans
- ☐ 1. Any overload up to 25 A
 - ☐ 2. Any current at 230 V AC
 - ☒ 3. Any fault current up to 6,000 A
 - ☐ 4. Any short-circuit above 25A

Q.140 A voltmeter is connected across an open switch in a DC circuit. One side of the switch is connected to the supply voltage, while the other side is connected to the opposite terminal of the supply through a load. Assuming an ideal voltmeter and no current flow, what voltage will the meter read?

- Ans
- ☐ 1. The voltmeter will show a fluctuating value
 - ☐ 2. The voltmeter will read zero volts
 - ☒ 3. The voltmeter will read the full supply voltage
 - ☐ 4. The voltmeter will read half the supply voltage

Q.141 Choose the correct sequence of steps needed when calculating the inclination angle for a solar power plant installation.

- Ans
- ☐ 1. Set panel angle, determine latitude, account for seasonal changes, assess shading
 - ☒ 2. Determine latitude, assess shading, account for seasonal changes, set panel angle
 - ☐ 3. Account for seasonal changes, set panel angle, assess shading, determine latitude
 - ☐ 4. Assess shading, set panel angle, determine latitude, account for seasonal changes

Q.142 What role do designated storage areas play in factory safety and cleanliness?

- Ans
- ☐ 1. They reduce the need for routine cleaning activities
 - ☐ 2. They improve the speed of machine operations daily
 - ☒ 3. They help prevent clutter and maintain workplace order
 - ☐ 4. They monitor employee tasks and work performance

Q.143 A theater lighting designer must ensure that each part of the stage receives the same amount of illumination from overhead lights. If the distance between the lights and the stage is doubled, which action will maintain equal illumination across all areas, according to the laws of illumination?

- Ans
- ☐ 1. Use half the number of lights but keep the same intensity
 - ☒ 2. Increase the luminous intensity of each light source by a factor of four
 - ☐ 3. Increase the angle of incidence of the lights
 - ☐ 4. Double the luminous intensity of each light source

Q.144 What is a primary advantage of the Bureau of Indian Standards (BIS) codification system for steels?

- Ans
- ☐ 1. It provides information limited to historical steel records
 - ☒ 2. It relates steel grades to important material properties
 - ☐ 3. It relies mainly on visual methods for steel identification
 - ☐ 4. It is accepted uniformly by every country worldwide

Q.145 In an industrial wiring project, you must select an enclosure for outdoor use exposed to rain. Which IP code meets this requirement most appropriately?

- Ans
- ☒ 1. IP55
 - ☐ 2. IP20
 - ☐ 3. IP41
 - ☐ 4. IP30

Q.146 While selecting an institute for training a licensed wireman, which factor should be prioritized to ensure eligibility for the wireman permit?

- Ans
- ☐ 1. Opting for the lowest tuition fee
 - ☐ 2. Selecting the institute closest to home
 - ☐ 3. Choosing the shortest training program available
 - ☒ 4. Selecting an accredited institute recognized by the government authority

Q.147 Why is it important to estimate the voltage drop when determining cable size in industrial installations?

- Ans
- ☐ 1. To select the insulation color
 - ☐ 2. To reduce installation cost only
 - ☐ 3. To determine maximum current rating
 - ☒ 4. To ensure equipment receives sufficient voltage

Q.148 Which wiring system is technically unsuitable for permanent commercial electrical installations due to its temporary mechanical support arrangement and low durability?

- Ans
- ☐ 1. Conduit wiring system
 - ☐ 2. Casing and capping wiring system
 - ☒ 3. Cleat wiring system
 - ☐ 4. Trunking wiring system

Q.149 In context to a cumulatively compounded DC generator, which one statement stated below defines the purpose of the series field winding?

- Ans
- ☐ 1. It reduces the mechanical friction of the rotor shaft during high-speed operation.
 - ☐ 2. It provides the initial residual magnetism required to start the voltage buildup process.
 - ☒ 3. It compensates for internal voltage drops by increasing the magnetic flux as the load current increases.
 - ☐ 4. It converts the alternating current induced in the armature into direct current at the terminals.

Q.150 While repairing overhead transmission lines, which type of wire joint is most suitable for joining two stranded conductors with high current carrying requirements?

- Ans ☐ 1. Britannia joint
☐ 2. Knotted tap joint
☐ 3. Western Union joint
☒ 4. Married joint

Q.151 Which of the following scenarios demonstrates a real-life consequence of ignoring longitude effects in solar power plant design?

- Ans ☐ 1. Solar panels neglect weather monitoring input
☐ 2. Solar panels are installed at incorrect latitude
☐ 3. Solar panels use unsuitable materials for region
☒ 4. Solar panels receive suboptimal sunlight due to misaligned tracking schedules

Q.152 In a Delta-star connected three-phase transformer, the phase shift between primary and secondary voltages is _____.

- Ans ☐ 1. 60°
☒ 2. 30°
☐ 3. 0°
☐ 4. 90°

Q.153 A technician receives a residential electrical installation plan and must prepare a material and cost estimate for both lighting and heating circuits. Which process should be followed according to standard electrical estimation practice?

- Ans ☐ 1. Exclude minor accessories from the estimate to simplify cost calculation.
☐ 2. Estimate costs using approximate quantities for commonly used materials only.
☒ 3. Prepare separate material lists and calculate the total cost for each circuit individually.
☐ 4. Prepare a single combined material list and estimate the total cost together.

Q.154 An industrial PLC control panel requires compliance with electromagnetic compatibility (EMC) standards. Which design change best enhances EMC performance?

- Ans ☒ 1. Installing metallic cable glands and proper grounding for all entry cables
☐ 2. Increasing the insulation grade of all panel cables
☐ 3. Minimizing the variation in cable insulation color
☐ 4. Using plastic cable glands for all wiring entries

Q.155 Which part of a twist drill removes chips from the hole during drilling?

- Ans ☐ 1. The shank
☒ 2. The flutes
☐ 3. The point
☐ 4. The web

Q.156 If an ELCB in a domestic installation trips occasionally without any apparent fault, what could be a probable reason?

- Ans ☐ 1. Increase in total load beyond ELCB rating
☐ 2. Phase and neutral lines are reversed
☐ 3. Sudden voltage surges from the supply
☒ 4. Small leakage currents from cumulative appliance insulation deterioration

Q.157 Which of the following methods is used to detect an oil leak in an underground oil filled cable joint without excavation?

- Ans ☒ 1. Monitor pressure drop in the oil system
☐ 2. Use a thermal imaging camera
☐ 3. Visually inspect the joint enclosure
☐ 4. Listen for unusual cable sounds

Q.158 Why is hazard communication critical in construction environments?

- Ans ☐ 1. It allows workers to perform tasks without protective equipment
☒ 2. It helps workers understand hazards and safety precautions
☐ 3. It focuses mainly on reporting workplace accidents and incidents
☐ 4. It removes all potential hazards from the construction site

Q.159 Which component in a wiring diagram is specifically used to protect against overcurrent?

- Ans ☐ 1. Pushbutton symbol
☒ 2. Fuse symbol
☐ 3. Lamp symbol
☐ 4. Relay symbol

Q.160 Why is the control circuit typically wired separately from the power circuit in electrical schematic drawings?

- Ans
- ☒ 1. To combine power and control circuits
 - ☒ 2. To increase the current carrying capacity
 - ☒ 3. To facilitate easy maintenance and identification
 - ☒ 4. To reduce the cost of conductors

Q.161 When an electric vehicle is connected to a charging station, which process ensures that only authorized users can access charging services securely and efficiently?

- Ans
- ☒ 1. Collecting charging-related data through EVSE-CMS
 - ☒ 2. Managing billing information through EVSE-CMS
 - ☒ 3. Grid monitoring through EVSE-CMS
 - ☒ 4. User authorization through EVSE-CMS

Q.162 During the open circuit test, transformer core loss depends on ____.

- Ans
- ☒ 1. Winding resistance only
 - ☒ 2. Secondary load current
 - ☒ 3. Leakage reactance
 - ☒ 4. Maximum core flux density

Q.163 While planning lighting for a machine assembly area, an engineer calculates the required number of luminaires. If the area is 60 square meters and the recommended illumination level is 300 lux, what is the total luminous flux required for the area?

- Ans
- ☒ 1. 12000 lumens
 - ☒ 2. 21000 lumens
 - ☒ 3. 9000 lumens
 - ☒ 4. 18000 lumens

Q.164 Select the relay type that compares currents at two points to detect faults within a protected zone.

- Ans
- ☒ 1. Distance relay
 - ☒ 2. Differential relay
 - ☒ 3. Instantaneous overcurrent relay
 - ☒ 4. Inverse time overcurrent relay

Q.165 If a universal motor runs smoothly at low speed but emits a high-pitched noise at high speed, what is the probable cause?

- Ans
- ☒ 1. Incorrect brush angle
 - ☒ 2. Loose lamination stack
 - ☒ 3. Open field winding
 - ☒ 4. Faulty centrifugal switch

Q.166 Choose the correct sequence for erecting an overhead transmission line.

1. Foundation work
2. Tower erection
3. Conductor stringing
4. Insulator installation

- Ans
- ☒ 1. Foundation work, Conductor stringing, Tower erection, Insulator installation
 - ☒ 2. Foundation work, Tower erection, Insulator installation, Conductor stringing
 - ☒ 3. Tower erection, Foundation work, Conductor stringing, Insulator installation
 - ☒ 4. Insulator installation, Foundation work, Tower erection, Conductor stringing

Q.167 Which statement best describes an isolating switch?

- Ans
- ☒ 1. It is an automatic electronic switch
 - ☒ 2. It is a programmable digital switch
 - ☒ 3. It is a manually operated mechanical switch
 - ☒ 4. It is a remote-controlled hydraulic switch

Q.168 Which property of a resistor determines how much it opposes the flow of electric current in a DC circuit?

- Ans
- ☒ 1. Color code
 - ☒ 2. Resistance value
 - ☒ 3. Physical size
 - ☒ 4. Power rating

Q.169 Which of the following equipment provides surge protection in substations?

- Ans
- ☒ 1. Main busbar
 - ☒ 2. Lightning arrester
 - ☒ 3. Overcurrent relay
 - ☒ 4. Line isolator

Q.170 Which of the following is NOT a characteristic of a block diagram?

- Ans
- ☒ 1. It highlights the functional relationships between the main system components
 - ☒ 2. It displays the overall system functions without showing complex connection paths
 - ☒ 3. It includes the detailed internal construction details of individual components
 - ☒ 4. It utilizes simple geometric blocks to represent individual critical subsystems
-

Q.171 If copper wire is replaced with aluminum wire in a joint, which electrical property is most significantly affected?

- Ans
- ☒ 1. Electrical resistance of the joint
 - ☒ 2. Magnetic susceptibility of the joint
 - ☒ 3. Magnetic permeability of the wire
 - ☒ 4. Insulation strength of the conductor
-

Q.172 What does it mean when the galvanometer in a Wheatstone bridge shows zero deflection?

- Ans
- ☒ 1. The power supply is disconnected completely
 - ☒ 2. The bridge contains a short-circuited path
 - ☒ 3. Exactly three out of four resistances are identical
 - ☒ 4. The bridge has reached a balanced condition
-

Q.173 Which generator type is least suitable for constant voltage applications?

- Ans
- ☒ 1. Series DC Generator
 - ☒ 2. Separately Excited DC Generator
 - ☒ 3. Compound DC Generator
 - ☒ 4. Shunt DC Generator
-

Q.174 Which component in a lead acid cell is specifically made by repeated charging and discharging?

- Ans
- ☒ 1. Container
 - ☒ 2. Separators
 - ☒ 3. Electrolyte
 - ☒ 4. Plante plates
-

Q.175 For fitting operations on thin sheet metal, which cutting tool offers the best control and precision?

- Ans
- ☒ 1. Standard hacksaw
 - ☒ 2. Hand snips
 - ☒ 3. Cold chisel
 - ☒ 4. Flat hand file
-



रेल भर्ती बोर्ड / RAILWAY RECRUITMENT BOARDS

सी ई एन - ०१/२०२५ - CEN - 01/2025

सहायक लोको पायलट की भर्ती/ Recruitment of Assistant Loco Pilot



Exam	RRB ALP 2025 CBT 2 (CEN 01/2025)
Paper	Wireman
Test Date	28 Jul 2026
Test Time	2:30 PM - 5:00 PM
Language	English

* Note

Correct answer carries 1 mark; each incorrect answer carries a negative mark of 1/3.

1. The option shown in green with a tick is the correct answer as per the official answer key.

2. RRB shuffles question order for every candidate inside each Part; this paper follows the order of one real response sheet.

Section : Part A

Q.1 Which of the following correctly states the full form of CD and the technology used to store data on it?

- Ans ☒ 1. Compact Disc, Optical Storage
☒ 2. Compact Drive, Optical Storage
☒ 3. Compact Disc, Magnetic Storage
☒ 4. Compact Drive, Magnetic Storage

Q.2 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 ☒ 1. The mechanical advantage
☒ 2. The work done in raising the box
☒ 3. The force required
☒ 4. The distance moved along the ramp

Q.3 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 ☒ 1. The distance is 120 meters; the displacement is 200 meters
☒ 2. The distance is 200 meters; the displacement is 200 meters
☒ 3. The distance is 200 meters; the displacement is 120 meters
☒ 4. The distance is 120 meters; the displacement is 120 meters

Q.4 Which statement best describes how the mass and speed of an object affect its kinetic energy?

- Ans ☒ 1. An object with less mass and lower speed will have more kinetic energy.
☒ 2. An object with greater mass and higher speed will have more kinetic energy.
☒ 3. An object with same mass but higher speed will have less kinetic energy.
☒ 4. An object with greater mass but lower speed will have more kinetic energy.

Q.5 What is a key feature of single stroke lettering in technical drawings?

- Ans ☒ 1. Each character is made with several parallel lines.
☒ 2. Each character is made with one continuous stroke.
☒ 3. Each character is outlined and then filled.
☒ 4. Each character is shaded after drawing.

Q.6 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 ☒ 1. 7.57 seconds
☒ 2. 8.43 seconds
☒ 3. 8.57 seconds
☒ 4. 9.25 seconds

Q.7 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 ☒ 1. Six
☒ 2. Five
☒ 3. Three
☒ 4. Four

Q.8 What information does a kilometer stone provide to travelers on a road?

- Ans ☒ 1. Direction of travel
☒ 2. Distance from a reference point
☒ 3. Time taken to reach destination
☒ 4. Speed of the vehicle

Q.9 Which of the following is the best example of municipal solid waste?

- Ans ☒ 1. Hospital biomedical waste
☒ 2. Mining tailings
☒ 3. Industrial process waste
☒ 4. Household kitchen garbage

Q.10 Which tool safety measure best prevents injuries when cleaning a workshop lathe after use?

- Ans ☒ 1. Using a rag to remove metal dust from the lathe
☒ 2. Wiping metal chips using bare hands directly
☒ 3. Using a brush to remove metal chips from the lathe
☒ 4. Blowing chips away with compressed air around the lathe

Q.11 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 ☒ 1. 378
☒ 2. 350
☒ 3. 357
☒ 4. 336

Q.12 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 ☒ 1. 7,500
☒ 2. 15,500
☒ 3. 12,000
☒ 4. 14,000

Q.13 A cyclist travels from the kilometer stone marked 52 to the stone marked 79. How far has the cyclist traveled?

- Ans ☒ 1. 27 kilometers
☒ 2. 31 kilometers
☒ 3. 52 kilometers
☒ 4. 131 kilometers

Q.14 What is the primary role of the Central Processing Unit (CPU) in a computer system?

- Ans ☒ 1. To store long-term data
☒ 2. To execute program instructions
☒ 3. To manage network connections
☒ 4. To display output on the screen

Q.15 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 ☒ 1. Two
☒ 2. None
☒ 3. One
☒ 4. Three

Q.16 Why are electric wires in household appliances usually covered with plastic or rubber coating?

- Ans ☒ 1. To prevent electric shocks by insulation
☒ 2. To produce more heat
☒ 3. To make the wires heavier
☒ 4. To increase the flow of current

Q.17 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 ☒ 1. Carrying the same backpack horizontally for 2 meters
☒ 2. Lifting a heavier backpack to the same 2-meter ledge
☒ 3. Lifting the same backpack to a 1-meter ledge
☒ 4. Lifting a lighter backpack to the same 2-meter ledge

Q.18 When drawing repeated 67° angles on an engineering sheet, which practice best helps minimize cumulative alignment errors?

- Ans
- ☒ 1. Drawing all angles continuously without intermediate verification
 - ☐ 2. Using the same reference line for all repeated angles
 - ☐ 3. Relying solely on the initial protractor alignment for all angles
 - ☐ 4. Marking all angles lightly with a pencil before finalizing

Q.19 Why does biomedical waste require special handling compared to general municipal waste?

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

Q.20 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
- ☐ 1. 3
 - ☐ 2. 4
 - ☒ 3. 6
 - ☐ 4. 5

Q.21 If $x + \frac{1}{x} = 5$, then $\frac{x^3 - 5x^2 + 5x}{x^2 + 1}$ is equal to:

- Ans
- ☐ 1. $\frac{1}{5}$
 - ☒ 2. $\frac{4}{5}$
 - ☐ 3. $\frac{2}{5}$
 - ☐ 4. $\frac{3}{5}$

Q.22 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
- ☒ 1. ₹80,000
 - ☐ 2. ₹78,000
 - ☐ 3. ₹75,000
 - ☐ 4. ₹82,000

Q.23 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
- ☐ 1. C
 - ☐ 2. A
 - ☒ 3. E
 - ☐ 4. B

Q.24 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
- ☐ 1. 48
 - ☐ 2. 36
 - ☒ 3. 40
 - ☐ 4. 44

Q.25 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
- ☐ 1. Mother
 - ☐ 2. Sister
 - ☒ 3. Mother's mother
 - ☐ 4. Mother's sister

Q.26 Which symbol best represents a battery in an electric circuit diagram according to standard conventions?

- Ans
- ☐ 1. Two short lines placed together
 - ☐ 2. A single long line only
 - ☐ 3. Two circles connected in series
 - ☒ 4. A pair of long and short parallel lines placed alternately

Q.27 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 ☒ 1. 200 N, because the Moon's gravity is about one-third of Earth's.
☒ 2. 100 N, because the Moon's gravity is about one-sixth of Earth's.
☒ 3. 600 N, because a person's weight remains unchanged on the Moon.
☒ 4. 300 N, because the Moon's gravity is about one-half of Earth's.

Q.28 If the height of an object is doubled while its mass remains constant, its gravitational potential energy will be:

- Ans ☒ 1. unchanged
☒ 2. decreased to one-fourth
☒ 3. halved
☒ 4. doubled

Q.29 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 ☒ 1. 7 hours
☒ 2. 9 hours
☒ 3. 8 hours
☒ 4. 6 hours

Q.30 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 ☒ 1. QEYZ
☒ 2. REXZ
☒ 3. QDYY
☒ 4. RDXY

Q.31 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 ☒ 1. 9
☒ 2. 6
☒ 3. 8
☒ 4. 7

Q.32 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 ☒ 1. 3 hours 26 minutes
☒ 2. 3 hours 6 minutes
☒ 3. 3 hours 16 minutes
☒ 4. 3 hours 36 minutes

Q.33 If a rectangular field is measured to be 120 meters long and 75 meters wide, what is its area in SI units?

- Ans ☒ 1. 19500 square meters
☒ 2. 15000 square meters
☒ 3. 1800 square meters
☒ 4. 9000 square meters

Q.34 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 ☒ 1. None
☒ 2. Two
☒ 3. Three
☒ 4. One

Q.35 What should come in place of the question mark (?) in the given series based on the English alphabetical order?

MDB PHE SLH VPK ?

- Ans ☒ 1. YTN
☒ 2. ZTM
☒ 3. XSM
☒ 4. ZUO

Q.36 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 ☒ 1. 35
☒ 2. 28
☒ 3. 30
☒ 4. 32

Q.37 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 ☒ 1. A0 size sheet
☒ 2. A2 size sheet
☒ 3. A3 size sheet
☒ 4. A1 size sheet

Q.38 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 ☒ 1. Both statements I and II together are NOT sufficient to answer the question
☒ 2. Data in Statement I alone is sufficient to answer the question while data in statement II is not
☒ 3. Both statements I and II together (and not statement I alone or statement II alone) are sufficient to answer the question
☒ 4. Data in Statement II alone is sufficient to answer the question while data in statement I is not

Q.39 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 ☒ 1. 10 degrees Celsius
☒ 2. 1 degree Celsius
☒ 3. 0.5 degrees Celsius
☒ 4. 2 degrees Celsius

Q.40 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 ☒ 1. A
☒ 2. C
☒ 3. Y
☒ 4. D

Q.41 Which intervention most effectively reduces ground-level pollutant concentrations during a winter temperature inversion?

- Ans ☒ 1. Reducing local wind speed to minimize horizontal dispersion
☒ 2. Increasing surface temperatures near emission sources
☒ 3. Elevating emission sources above inversion layers
☒ 4. Enhancing vertical air mixing through artificial turbulence

Q.42 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 ☒ 1. SPQ 107
☒ 2. SPQ 106
☒ 3. TPQ 106
☒ 4. TPQ 107

Q.43 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 ☒ 1. 160
☒ 2. 188
☒ 3. 180
☒ 4. 162

Q.44 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 ☒ 1. PJ-QK
☒ 2. HB-IC
☒ 3. FZ-GA
☒ 4. RL-SN

Q.45 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 ☒ 1. Both conclusions (I) and (II) follow.
☒ 2. Neither conclusion (I) nor (II) follows.
☒ 3. Only conclusion (II) follows.
☒ 4. Only conclusion (I) follows.

Q.46 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 ☒ 1. 23 km/h
☒ 2. 21 km/h
☒ 3. 20 km/h
☒ 4. 27 km/h

Q.47 Which scenario best demonstrates proactive workplace safety behavior?

- Ans ☒ 1. Identifying and correcting hazards before accidents occur
☒ 2. Discussing only past safety problems in meetings
☒ 3. Reporting hazards after incidents happen
☒ 4. Waiting for a supervisor to notice hazards

Q.48 Which combination best describes the main environmental challenges associated with plastic waste management?

- Ans ☒ 1. Persistence in the environment and microplastic formation
☒ 2. Thermal pollution and effective composting
☒ 3. Neutralization and easy recycling
☒ 4. Rapid biodegradation and chemical leaching

Q.49 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 ☒ 1. Effort
☒ 2. Fulcrum
☒ 3. Load
☒ 4. Arm

Q.50 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 ☒ 1. 10
☒ 2. 10.5
☒ 3. 11.5
☒ 4. 11

Q.51 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 ☒ 1. East
☒ 2. West
☒ 3. North
☒ 4. South

Q.52 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 ☒ 1. The hole is sectioned but the rib is shown unsectioned
☐ 2. Both the hole and the rib are shown unsectioned
☐ 3. Both the hole and the rib are shown sectioned
☐ 4. The rib is sectioned but the hole is left unsectioned

Q.53 If $3x - 2y + 3z = 8$, $4x - 3y + 2z = 4$ and $2x + y - z = 1$, then find x, y and z, respectively.

- Ans ☒ 1. 1, 2 and 3
☐ 2. 2, 1 and 3
☐ 3. 3, 1 and 2
☐ 4. 2, 3 and 1

Q.54 Which statement best describes the side view in engineering drawing?

- Ans ☐ 1. It shows the object as seen clearly from the front
☒ 2. It shows the object as seen from left or right side
☐ 3. It shows a combination of all views of the object
☐ 4. It shows the object as seen from above or below

Q.55 Which of the following statements best describes a cuboid as used in engineering drawing?

- Ans ☐ 1. A cuboid has all sides and angles equal, making it similar to a cube.
☐ 2. A cuboid is a solid where all faces are parallelograms but not necessarily rectangles.
☒ 3. A cuboid is a solid with six rectangular faces, and opposite faces are equal.
☐ 4. A cuboid has all faces as squares of equal size.

Q.56 What is the primary purpose of a Local Area Network (LAN)?

- Ans ☒ 1. To connect computers within a small geographical area
☐ 2. To connect global networks
☐ 3. To connect social media accounts
☐ 4. To link wireless devices only

Q.57 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 ☐ 1. FCBMT
☐ 2. FBMCT
☒ 3. TBMCF
☐ 4. TCMBF

Q.58 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 ☒ 1. 15
☐ 2. 9
☐ 3. 18
☐ 4. 12

Q.59 Why is a room thermometer generally mounted vertically on a wall?

- Ans ☐ 1. It prevents the liquid from freezing inside the thermometer.
☐ 2. It helps the thermometer measure body temperature faster.
☒ 3. It ensures accurate reading by keeping the bulb exposed to room air.
☐ 4. It protects the thermometer from breaking easily.

Q.60 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 ☐ 1. Substitute the normally closed push button symbol with a general switch symbol
☐ 2. Describe the normally closed push button in words within the schematic diagram clearly
☐ 3. Draw a hand made representation of the push button with a note explaining function
☒ 4. Use the standardized symbol for a normally closed push button as per conventions

- Q.61** 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 ☒ 1. 69
☒ 2. 65
☒ 3. 67
☒ 4. 63
-
- Q.62** 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 ☒ 1. Buy from the first shopkeeper
☒ 2. Buy from the first or the second shopkeeper as both are the same.
☒ 3. Buy from the second shopkeeper
☒ 4. Buy from the third shopkeeper
-
- Q.63** 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 ☒ 1. 9 m
☒ 2. 12 m
☒ 3. 15 m
☒ 4. 18 m
-
- Q.64** 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 ☒ 1. 7
☒ 2. 2
☒ 3. 1
☒ 4. 4
-
- Q.65** 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 ☒ 1. Change in velocity divided by total time taken
☒ 2. Total displacement divided by total time taken
☒ 3. Total distance travelled divided by the total time taken
☒ 4. Distance travelled in a particular direction divided by time
-
- Q.66** 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 ☒ 1. 10 cm
☒ 2. 30 cm
☒ 3. 20 cm
☒ 4. 40 cm
-
- Q.67** Which color is universally associated with emergency exit signs in industrial workplaces under international standards?
Ans ☒ 1. Red background with white text or symbols
☒ 2. Yellow background with black text or symbols
☒ 3. Green background with white text or symbols
☒ 4. Blue background with white text or symbols
-
- Q.68** 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 ☒ 1. Data in statement I alone is sufficient to answer the question while data in statement II is not
☒ 2. Both statements I and II together (and not statement I alone or statement II alone) are sufficient to answer the question
☒ 3. Both statements I and II together are NOT sufficient to answer the question
☒ 4. Data in statement II alone is sufficient to answer the question while data in statement I is not
-
- Q.69** 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 ☒ 1. $5\frac{1}{3}\%$
☒ 2. $4\frac{1}{6}\%$
☒ 3. 5%
☒ 4. 6.5%

- Q.70** 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 ☒ 1. 13.81%
☒ 2. 12.64%
☒ 3. 15.12%
☒ 4. 10.36%
-
- Q.71** Which of the following pairs of numbers is co-prime?
- Ans ☒ 1. (21, 33)
☒ 2. (14, 28)
☒ 3. (17, 54)
☒ 4. (28, 49)
-
- Q.72** 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 ☒ 1. 60 meters
☒ 2. 10 meters
☒ 3. 150 meters
☒ 4. 210 meters
-
- Q.73** 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 ☒ 1. 1443
☒ 2. 1543
☒ 3. 1433
☒ 4. 1333
-
- Q.74** 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 ☒ 1. Neither conclusion (I) nor (II) follows
☒ 2. Only conclusion (I) follows
☒ 3. Both conclusions (I) and (II) follow
☒ 4. Only conclusion (II) follows
-
- Q.75** Which of the following best describes the function of a speedometer in a vehicle?
- Ans ☒ 1. It displays the current speed at which the vehicle is moving.
☒ 2. It measures the total distance the vehicle has traveled.
☒ 3. It shows the rate at which the vehicle's speed changes.
☒ 4. It calculates the average speed over a journey.
-
- Q.76** Find the compound interest on ₹5,70,000 for 1.5 years at 10% per annum compounded half-yearly.
- Ans ☒ 1. ₹92,846.25
☒ 2. ₹88,846.25
☒ 3. ₹89,846.25
☒ 4. ₹89,946.25
-
- Q.77** 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 ☒ 1. T
☒ 2. U
☒ 3. X
☒ 4. V
-
- Q.78** What is the primary color used in warning signs to alert workers of potential hazards?
- Ans ☒ 1. Green with white symbol or text
☒ 2. Blue with white symbol or text
☒ 3. Red with white symbol or text
☒ 4. Yellow with black symbol or text

Q.79 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 ☒ 1. Mother's brother's wife's sister
☒ 2. Father's brother's wife's sister
☒ 3. Mother's brother's wife's mother
☒ 4. Father's brother's wife's mother

Q.80 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 ☒ 1. 31 : 50
☒ 2. 40 : 41
☒ 3. 51 : 42
☒ 4. 40 : 51

Q.81 A crane lifts a 200 kg load to a height of 15 meters in 10 seconds. Assuming acceleration due to gravity is 10 m/s² and energy loss is negligible, what is the power output of the crane during this operation?

- Ans ☒ 1. 3000 W
☒ 2. 2000 W
☒ 3. 1000 W
☒ 4. 1500 W

Q.82 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 ☒ 1. BCD - VZZ
☒ 2. BOC - VZT
☒ 3. ABD - VZZ
☒ 4. VZZ - BCD

Q.83 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 ☒ 1. W
☒ 2. P
☒ 3. S
☒ 4. T

Q.84 Which one of the following statements correctly describes a characteristic of WANs?

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

Q.85 What does the term 'HAZOP' stand for in occupational safety?

- Ans ☒ 1. Handling and Organizing Safety
☒ 2. Hazardous Operation Standard
☒ 3. Hazardous Operations Safety
☒ 4. Hazard and Operability Study

Q.86 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 ☒ 1. DG - EH
☒ 2. SJ - TK
☒ 3. IT - KV
☒ 4. KE - LF

Q.87 What should come in place of '?' in the given series?

11, 22, 44, 88, 176, ?

- Ans ☒ 1. 358
☒ 2. 352
☒ 3. 356
☒ 4. 342

Q.88 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 ☒ 1. 185
☒ 2. 267
☒ 3. 159
☒ 4. 252

Q.89 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 ☒ 1. ₹296.46
☒ 2. ₹284.45
☒ 3. ₹291.18
☒ 4. ₹288.24

Q.90 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 ☒ 1. The fuse wire must have a low melting point to break the circuit during excess current.
☒ 2. The fuse wire must have a high melting point for durability.
☒ 3. The fuse wire must have a shiny surface for efficient cooling.
☒ 4. The fuse wire must have high resistance and be thick to prevent melting.

Q.91 Which type of personal protective equipment is most suitable for tasks involving airborne chemical particles in confined spaces?

- Ans ☒ 1. Respiratory protection devices such as half-face masks
☒ 2. Body protection with flame-retardant suits
☒ 3. Hand protection using chemical-resistant gloves
☒ 4. Head protection with industrial-grade hard hats

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 ☒ 1. 65%
☒ 2. 60%
☒ 3. 30%
☒ 4. 50%

Q.93 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 ☒ 1. 11 – 31 – 38 – 29
☒ 2. 4 – 14 – 21 – 30
☒ 3. 8 – 22 – 15 – 24
☒ 4. 12 – 34 – 41 – 50

Q.94 Which of the following statements best describes a triangle as used in engineering drawing?

- Ans ☒ 1. A triangle must always have all sides of equal length.
☒ 2. A triangle is a polygon having three curved sides.
☒ 3. A triangle is a polygon with four straight sides and four angles.
☒ 4. A triangle is a polygon with three straight sides and three angles.

Q.95 What does CPU stand for in computing?

- Ans ☒ 1. Central Processing Unit
☒ 2. Computer Processing Unit
☒ 3. Control Processing Unit
☒ 4. Core Processing Unit

Q.96 Which factor increases the amount of heat produced in a wire when an electric current flows through it for a fixed time?

- Ans ☒ 1. Making the wire thicker
☒ 2. Increasing the resistance of the wire
☒ 3. Reducing the current in the wire
☒ 4. Decreasing the length of the wire

Q.97 Which statement best describes the front view in an engineering drawing?

- Ans
- ☐ 1. It shows only one dimension of the object
 - ☐ 2. It shows the object's depth and height as seen from the side
 - ☐ 3. It shows only the object's bottom or right side
 - ☒ 4. It shows the object's height and width as seen from the front

Q.98 Why does restricting certain chemical refrigerants effectively reduce damage to the ozone layer?

- Ans
- ☐ 1. Refrigerants emit greenhouse gases that warm the stratosphere.
 - ☐ 2. Refrigerants increase oxygen production, supporting ozone recovery.
 - ☒ 3. Refrigerants release substances that catalyze ozone breakdown.
 - ☐ 4. Refrigerants contain particles that absorb harmful UV light.

Q.99 What should come in place of the question mark (?) in the given series?

1 2 7 20 61 ?

- Ans
- ☐ 1. 185
 - ☐ 2. 181
 - ☒ 3. 182
 - ☐ 4. 183

Q.100 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
- ☐ 1. 55°
 - ☐ 2. 110°
 - ☐ 3. 60°
 - ☒ 4. 45°

Section : Part B (Wireman)

Q.101 Which part of a Vacuum Circuit Breaker (VCB) helps to maintain insulation and protects the breaker from external environmental influences?

- Ans
- ☐ 1. Vacuum interrupter unit
 - ☐ 2. Trip coil assembly
 - ☒ 3. Insulating casing
 - ☐ 4. Drive rod assembly

Q.102 A circuit contains three resistors connected in series with resistances of $2\ \Omega$, $3\ \Omega$, and $5\ \Omega$ across a 20 V DC power supply. According to Kirchhoff's Voltage Law, what is the voltage drop across the $3\ \Omega$ resistor?

- Ans
- ☒ 1. 6 V
 - ☐ 2. 8 V
 - ☐ 3. 2 V
 - ☐ 4. 10 V

Q.103 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
- ☒ 1. 6 days
 - ☐ 2. 5 days
 - ☐ 3. 12 days
 - ☐ 4. 10 days

Q.104 Why is it necessary to monitor isolation resistance in fuel cell electric vehicles?

- Ans
- ☐ 1. To improve the acceleration performance
 - ☐ 2. To increase the driving range of the vehicle
 - ☐ 3. To reduce the emission levels of the vehicle
 - ☒ 4. To prevent potential electric shock to users and maintenance personnel

Q.105 What should a Process Hazard Analysis methodology be based on?

- Ans
- ☐ 1. The production schedule and operating time requirements
 - ☐ 2. The size of the workforce involved in the process
 - ☒ 3. The complexity of the process and associated hazards
 - ☐ 4. A random selection of hazards and process conditions

Q.106 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
- ☒ 1. The timer relay is bypassed or its contacts are shorted
 - ☐ 2. The load is faulty and not responding
 - ☐ 3. The control transformer is incorrectly rated
 - ☐ 4. The timer setting is longer than required

Q.107 Which part of a wattmeter connects in parallel with the load to measure voltage?

- Ans
- ☒ 1. Fixed coil
 - ☒ 2. Current coil
 - ☒ 3. Potential coil
 - ☒ 4. Shunt capacitor

Q.108 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
- ☒ 1. Isolation transformer
 - ☒ 2. Instrument transformer
 - ☒ 3. Distribution transformer
 - ☒ 4. Power transformer

Q.109 What will happen if the secondary winding of a current transformer remains open while the transformer is energized?

- Ans
- ☒ 1. It will ensure accurate current measurement by reducing the current at the secondary
 - ☒ 2. It will induce high voltage at secondary winding and cause equipment damage
 - ☒ 3. It will prevent overheating of the conductors of the supply lines
 - ☒ 4. It will protect the power system from the short circuited faults

Q.110 Why a cumulative compound DC motor is considered for heavy-duty machines with varying loads, such as rolling mills?

- Ans
- ☒ 1. It offers the fastest speed changes
 - ☒ 2. It always runs at maximum efficiency
 - ☒ 3. It prevents any speed drop under load
 - ☒ 4. It combines good starting torque and stable speed

Q.111 If 5 identical components weigh 20 kg, what is the weight of one component?

- Ans
- ☒ 1. 2 kg
 - ☒ 2. 5 kg
 - ☒ 3. 10 kg
 - ☒ 4. 4 kg

Q.112 What is the function of dilute sulfuric acid electrolyte in a lead-acid battery?

- Ans
- ☒ 1. Serves as the active material of the negative electrode plate
 - ☒ 2. Acts as the separator and prevents direct contact between the electrodes
 - ☒ 3. Functions as an insulator and prevents electrical conduction between the electrodes
 - ☒ 4. Acts as the electrolyte and allows ionic conduction between the electrodes

Q.113 For a pure sinusoidal AC voltage, the RMS value is obtained by multiplying the peak value by _____.

- Ans
- ☒ 1. 1
 - ☒ 2. $\sqrt{2}$
 - ☒ 3. $\frac{1}{\sqrt{2}}$
 - ☒ 4. $\frac{1}{2}$

Q.114 Which geometric shape is most commonly used for title blocks and object outlines in engineering drawings?

- Ans
- ☒ 1. Pentagon
 - ☒ 2. Hexagon
 - ☒ 3. Rectangle
 - ☒ 4. Triangle

Q.115 Which component in a solar DC domestic system prevents overcharging of the battery?

- Ans
- ☒ 1. Charge controller
 - ☒ 2. Solar panel
 - ☒ 3. Inverter
 - ☒ 4. Battery

Q.116 Which safety measure should be followed when replacing a CFL or LED lamp connected to a DC power supply?

- Ans
- ☒ 1. Wear gloves while replacing the lamp
 - ☒ 2. Replace the lamp as quickly as possible
 - ☒ 3. Use a wet cloth to hold the lamp
 - ☒ 4. Turn off the power supply before handling the lamp

Q.117 Which standard grading is typically used for cables in a domestic three-phase supply system?

- Ans
- ☐ 1. Extra-high voltage cable insulation
 - ☐ 2. Grade III insulation cable
 - ☐ 3. Bare conductor without insulation
 - ☒ 4. Grade I insulation cable

Q.118 When drawing a complex assembly with hidden details, which instrument is crucial for accurately representing hidden lines?

- Ans
- ☐ 1. Protractor
 - ☐ 2. Scale
 - ☒ 3. Mini-drafter
 - ☐ 4. Eraser

Q.119 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
- ☐ 1. The synchronous speed remains unchanged
 - ☐ 2. The synchronous speed decreases
 - ☐ 3. The synchronous speed reverses direction
 - ☒ 4. The synchronous speed increases

Q.120 Which type of wire is recommended for heavy current carrying in main distribution boards?

- Ans
- ☒ 1. Single core wire
 - ☐ 2. Twin flexible wire
 - ☐ 3. Flexible wire
 - ☐ 4. Multi-strand bell wire

Q.121 Which of the following describes the purpose of portable earthing during electrical maintenance?

- Ans
- ☒ 1. It provides a temporary path for fault current to flow safely to ground.
 - ☐ 2. It prevents earth leakage from electrical panels.
 - ☐ 3. It is used to test insulation resistance of conductors.
 - ☐ 4. It disconnects equipment from the supply for repairs.

Q.122 During precision assembly, which caliper type is least likely to introduce parallax error?

- Ans
- ☐ 1. Spring caliper with pointed measuring legs
 - ☐ 2. Transfer caliper for internal measurements
 - ☐ 3. Steel rule used with inside calipers
 - ☒ 4. Vernier caliper with clear scale markings

Q.123 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
- ☐ 1. 6
 - ☒ 2. 2
 - ☐ 3. 4
 - ☐ 4. 3

Q.124 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
- ☐ 1. LED lamp
 - ☐ 2. Halogen lamp
 - ☒ 3. Incandescent lamp
 - ☐ 4. Fluorescent lamp

Q.125 What is the purpose of using earth connection in electrical appliances?

- Ans
- ☐ 1. To improve the overall performance of appliances
 - ☐ 2. To decrease the electrical energy consumed daily
 - ☒ 3. To enhance safety against electric shock hazards
 - ☐ 4. To reduce the manufacturing cost of appliances

Q.126 A mercury tilt switch is mainly operated by _____.

- Ans
- ☐ 1. Magnetic force
 - ☒ 2. Gravity action
 - ☐ 3. Temperature change
 - ☐ 4. Air pressure

- Q.127** 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 ☒ 1. 20 turns
☒ 2. 14 turns
☒ 3. 16 turns
☒ 4. 22 turns
-
- Q.128** A fan circuit's regulator has multiple resistance steps. What happens electrically when the knob is turned to a higher setting?
- Ans ☒ 1. Circuit resistance increases, decreasing fan current
☒ 2. Circuit resistance decreases, increasing voltage at fan
☒ 3. Fan motor receives less voltage, slowing speed
☒ 4. Fan is disconnected from supply temporarily
-
- Q.129** 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 ☒ 1. Connecting all equipment directly to ground without separate grounding for electronics
☒ 2. Connecting equipment frames to the earth to divert fault currents and using a separate grounding system for sensitive electronics
☒ 3. Isolating equipment from both ground and earth to avoid surges
☒ 4. Using only grounding to protect personnel without earth connection for equipment
-
- Q.130** Which safety device is designed to detect cable electrical leakage and disconnect the circuit?
- Ans ☒ 1. Earth leakage circuit breaker
☒ 2. Relay
☒ 3. Fuse
☒ 4. Miniature circuit breaker
-
- Q.131** Which of the following is NOT a purpose of using dividers in fitting operations?
- Ans ☒ 1. Transferring distances from a rule
☒ 2. Measuring the thickness of plates
☒ 3. Marking circles on a surface
☒ 4. Dividing a line into equal parts
-
- Q.132** What is the purpose of a pre-molded joint in underground cables?
- Ans ☒ 1. To terminate the cable at equipment
☒ 2. To regulate the cable voltage
☒ 3. To securely connect two or more cables
☒ 4. To insulate the cable ends
-
- Q.133** Which function is performed by turning the selector switch on a digital multimeter?
- Ans ☒ 1. Adjusting display brightness
☒ 2. Choosing measurement type
☒ 3. Resetting the instrument
☒ 4. Storing readings
-
- Q.134** How many terminals are available for connection in a single-pole, two-way switch?
- Ans ☒ 1. Three terminals
☒ 2. Four terminals
☒ 3. Five terminals
☒ 4. Two terminals
-
- Q.135** Which type of cell can be recharged by passing electric current in the reverse direction?
- Ans ☒ 1. Dry cell
☒ 2. Secondary cell
☒ 3. Primary cell
☒ 4. Fuel cell
-
- Q.136** Which of the following steps helps prevent void formation during epoxy resin casting in underground cable joints?
- Ans ☒ 1. Slowly pour resin while tapping the joint body
☒ 2. Mix resin near the joint after sealing
☒ 3. Pour resin quickly to finish before hardening
☒ 4. Seal the joint body before pouring resin
-
- Q.137** An electrical panel needs connections that resist corrosion in a coastal environment. Which wire type is best suited?
- Ans ☒ 1. Aluminum wire
☒ 2. PVC insulated copper wire
☒ 3. Bare copper wire
☒ 4. Tinned copper wire

Q.138 A panel has wires labeled with cable markers like 1A, 1B, 2A, 2B. What does this labeling system most likely indicate?

- Ans ☒ 1. The labels show only the wire size and insulation type.
☒ 2. Each wire is paired according to circuit numbers and phase identifiers.
☒ 3. It indicates the manufacturer and batch number of the wire.
☒ 4. It is a color code for distinguishing between wire colors.

Q.139 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 ☒ 1. 54000 lumens
☒ 2. 42800 lumens
☒ 3. 37500 lumens
☒ 4. 64286 lumens

Q.140 Which component in the wind power generating station ensures that the wind turbine faces the wind direction for maximum efficiency?

- Ans ☒ 1. Tower
☒ 2. Yaw mechanism
☒ 3. Brake system
☒ 4. Gearbox

Q.141 Which parameter must be regulated by a charge controller to prevent battery overcharging in a solar plant?

- Ans ☒ 1. Voltage applied to battery terminals
☒ 2. Tilt angle of the solar panel
☒ 3. Solar irradiance level
☒ 4. AC output frequency of inverter

Q.142 Four resistors of 5 Ω each are connected in series. What is the equivalent resistance of the circuit?

- Ans ☒ 1. 20 Ω
☒ 2. 10 Ω
☒ 3. 5 Ω
☒ 4. 15 Ω

Q.143 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 ☒ 1. Immediate cardiac arrest leading to complete unconsciousness
☒ 2. Sudden respiratory paralysis resulting in a prolonged coma
☒ 3. Widespread internal tissue destruction and severe skin burns
☒ 4. Involuntary muscle contraction and a sharp tingling sensation

Q.144 Which symbol is commonly used in wiring diagrams to represent a single-pole switch?

- Ans ☒ 1. A continuous zigzag layout featuring multiple sharp alternating bends
☒ 2. A plain rectangle layout featuring two horizontal internal detail lines
☒ 3. A small circle layout featuring a centered dot and no attached lines
☒ 4. A straight line layout featuring a center break and a diagonal lever

Q.145 Which part of a die ensures the alignment of the die with the workpiece during threading?

- Ans ☒ 1. The central hole
☒ 2. The adjusting screw
☒ 3. The lead-in chamfer
☒ 4. The split slot

Q.146 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 ☒ 1. To reduce the overall cost of the control panel
☒ 2. To ensure the contactor has a higher voltage rating
☒ 3. To withstand inrush currents during circuit switching
☒ 4. To provide overload protection for the main circuit

Q.147 What best describes a short circuit in an electrical system?

- Ans ☒ 1. A connection with unusually high resistance
☒ 2. A connection where no current flows due to a break
☒ 3. An unintended path with zero or very low resistance
☒ 4. An intended path with normal resistance

Q.148 Which factors determine the synchronous speed of the rotating magnetic field in a three-phase induction motor?

- Ans ☒ 1. Rotor resistance and load torque
☒ 2. Stator voltage and power factor
☒ 3. Supply frequency and number of poles
☒ 4. Rotor current and motor slip

Q.149 A raceway is used in electrical and control panel installations. What is the primary purpose of using a raceway in wiring systems?

- Ans ☒ 1. To convert AC supply into DC supply for control circuits
☒ 2. To carry and organize wires neatly between components
☒ 3. To reduce the resistance of conductors during operation
☒ 4. To increase the voltage capacity of electrical wires

Q.150 A rod of length 2 m is cut into 1/4m pieces. How many pieces are obtained?

- Ans ☒ 1. 10
☒ 2. 6
☒ 3. 8
☒ 4. 4

Q.151 According to Indian Electricity (IE) safety practices, what is the first mandatory action before performing maintenance on a commercial electrical wiring installation?

- Ans ☒ 1. Increase the supply voltage to check load condition
☒ 2. Connect all exposed conductors together before inspection
☒ 3. Tighten all terminal connections in the distribution board
☒ 4. Isolate and switch OFF the main electrical supply

Q.152 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 ☒ 1. Communication wiring
☒ 2. Power wiring
☒ 3. Entertainment wiring
☒ 4. Control wiring

Q.153 What is a critical step before distributing PPE to workers in a new manufacturing plant?

- Ans ☒ 1. Schedule regular inspections and maintenance of all PPE
☒ 2. Purchase sufficient quantities of PPE for all workers
☒ 3. Assess workplace hazards and select appropriate PPE
☒ 4. Provide orientation on workplace rules and procedures

Q.154 What will be the impact on solar panel performance if a high-latitude installation uses the same tilt angle as an equatorial installation?

- Ans ☒ 1. Solar panels capture less sunlight in winter months
☒ 2. Solar panels overheat throughout the year
☒ 3. Solar panels degrade rapidly in high temperatures
☒ 4. Solar panels experience frequent wiring faults

Q.155 What is the effect of using a conductor with insufficient current-carrying capacity in a low-voltage (LV) distribution system?

- Ans ☒ 1. It improves system efficiency by reducing conductor resistance
☒ 2. It increases the transmission capacity of the feeder
☒ 3. It causes overheating, voltage drop, and increased power losses
☒ 4. It maintains stable voltage regardless of load conditions

Q.156 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 ☒ 1. The fuse will blow even during normal load conditions.
☒ 2. The fuse will allow equipment to run at a higher current safely.
☒ 3. The fuse will offer improved protection from overloads without any drawback.
☒ 4. The fuse voltage rating will cause insulation breakdown in the circuit.

Q.157 Which type of MCB tripping curve is most appropriate for protecting standard domestic lighting circuits?

- Ans ☒ 1. Type A MCB
☒ 2. Type B MCB
☒ 3. Type D MCB
☒ 4. Type C MCB

Q.158 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 ☒ 1. A known resistance bridge circuit
☐ 2. A digital voltmeter
☐ 3. A clamp meter or tong tester
☐ 4. An earth leakage relay

Q.159 A drawing specifies a hole with 12.00 +0.02/-0.00 mm. What is the minimum permissible diameter of the hole?

- Ans ☐ 1. 12.01 mm
☒ 2. 12.00 mm
☐ 3. 12.02 mm
☐ 4. 12.20 mm

Q.160 Which factor is important when selecting a location for a distribution board in domestic wiring?

- Ans ☒ 1. Proximity to the load centre.
☐ 2. Brand of the distribution board.
☐ 3. Type of wiring used.
☐ 4. Number of rooms in the building.

Q.161 If a lightly loaded DC shunt generator experiences a continuous increase in its external load, how will its efficiency behave?

- Ans ☐ 1. Efficiency will increase at a constant rate with load.
☐ 2. Efficiency will remain constant at all load levels.
☐ 3. Efficiency will decrease steadily as load increases.
☒ 4. Efficiency will initially increase then decrease after a certain point.

Q.162 A house has a three-phase supply, but only single-phase loads are connected. How should the distribution board be configured?

- Ans ☐ 1. Install a single-phase distribution board
☐ 2. Use only one phase for all circuits
☐ 3. Connect all loads to a single phase busbar
☒ 4. Distribute single-phase loads evenly across all three phases

Q.163 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 ☐ 1. The feeder has an open circuit in one of the phases
☐ 2. There is an inter-turn short circuit in the motor windings
☐ 3. Immediate replacement of the cable is required
☒ 4. The insulation between phase conductors is satisfactory

Q.164 During the short circuit test of a single-phase transformer, the wattmeter reading indicates which type of loss in a transformer?

- Ans ☒ 1. Copper loss at rated-current operating condition
☐ 2. Dielectric loss inside transformer insulation oil
☐ 3. Hysteresis loss under no-load operating condition
☐ 4. Core eddy current loss at rated magnetic flux

Q.165 Which of the following best describes the primary function of control wiring in appliance circuits?

- Ans ☐ 1. To provide direct power supply to appliances
☐ 2. To ground the electrical system for safety
☐ 3. To connect only protective devices
☒ 4. To transmit commands between control devices and lighting

Q.166 What is the power factor of a purely resistive AC circuit?

- Ans ☐ 1. It is less than 1
☐ 2. It is equal to 0
☐ 3. It is greater than 1
☒ 4. It is equal to 1

Q.167 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 ☒ 1. Including an appropriate contingency allowance in the estimate
☐ 2. Excluding the contingency from the estimate
☐ 3. Relying solely on historical cost data
☐ 4. Ignoring potential risks in the estimate

Q.168 If a differential compound generator is used in variable load applications, what will be the effect on terminal voltage?

- Ans ☐ 1. Terminal voltage remains unchanged with increasing load
☒ 2. Terminal voltage decreases with increase in load current
☐ 3. Terminal voltage fluctuates randomly
☐ 4. Terminal voltage increases with increasing load

Q.169 Which device is commonly used to measure voltage in a circuit with a digital display?

- Ans ☒ 1. Digital voltmeter
☒ 2. Digital ohmmeter
☒ 3. Digital ammeter
☒ 4. Digital wattmeter
-

Q.170 In an electric vehicle, which approach ensures both physical and visual safety when accessing high voltage components during maintenance?

- Ans ☒ 1. Marking high voltage areas with non-standard symbols
☒ 2. Using enclosures without any color coding
☒ 3. Applying only color coding without physical barriers
☒ 4. Using enclosures with electrical protection barriers and standardized high voltage color coding
-

Q.171 Which part of an electric iron controls the temperature by switching the current on or off?

- Ans ☒ 1. Heating coil
☒ 2. Soleplate
☒ 3. Thermostat
☒ 4. Indicator lamp
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Q.172 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 ☒ 1. Charging the battery at a moderate rate over long periods
☒ 2. Discharging the battery under light loads
☒ 3. Maintaining the battery at constant voltage during use
☒ 4. Charging and discharging the battery rapidly
-

Q.173 Which of the following statements describes a difference between incandescent lamps and fluorescent lamps used in illumination?

- Ans ☒ 1. Incandescent lamps are mainly used for decorative lighting, while fluorescent lamps are only for commercial use.
☒ 2. Incandescent lamps are always tube-shaped, while fluorescent lamps are always round-shaped.
☒ 3. Incandescent lamps produce light by heating a filament, while fluorescent lamps use a gas discharge process.
☒ 4. Incandescent lamps are found only in table lamps, while fluorescent lamps are used only in ceiling fixtures.
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Q.174 Which action causes the failure of voltage buildup in a self-excited DC generator?

- Ans ☒ 1. Maintaining proper residual magnetism
☒ 2. Connecting the load after voltage builds up
☒ 3. Running the generator at rated speed
☒ 4. Increasing the field resistance beyond the critical resistance
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Q.175 Which of the following is an example of equipment that uses mercury cells?

- Ans ☒ 1. Kitchen ovens
☒ 2. Televisions
☒ 3. Ceiling fans
☒ 4. Calculators
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