



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



RRB ALP 2024 CBT 2

Assistant Loco Pilot | CEN 01/2024 | CBT 2 | Wireman

ENGLISH ANSWER KEY

Official Answer Key

All 2 Shifts · 02-05-2025 to 06-05-2025

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.

Note: 29 of 350 questions are printed in Hindi (marked with a chip): our saved English papers do not carry them.

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.

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Blackbook

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Compiled 28 October 2026

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RRB ALP 2024 CBT 2 (Wireman) (English) · 2 shifts

DAY	DATE	SHIFT	TIME	PAGE
Day 1	02-05-2025	Shift 1	09:30 - 12:00	3
Day 2	06-05-2025	Shift 1	09:30 - 12:00	29



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Exam	RRB ALP 2024 CBT 2 (CEN 01/2024)
Paper	Wireman
Test Date	02 May 2025
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.

3. 14 questions marked with a language chip are printed in that language because the English version is not in our saved papers.

Section : Part A

Q.1 What is the primary source of energy for most of the ecosystems?

- Ans ☒ 1. Water
☒ 2. Soil
☒ 3. Wind
☒ 4. Sunlight

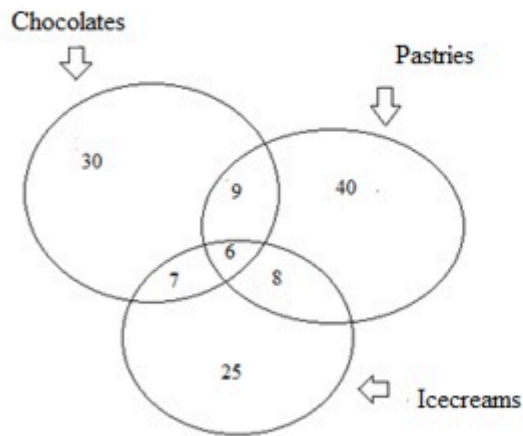
Q.2 Four resistors of 4 ohm each are connected in parallel. Four such parallel combinations are then connected in series. The equivalent resistance is _____.

- Ans ☒ 1. 1 ohm
☒ 2. 2 ohm
☒ 3. 3 ohm
☒ 4. 4 ohm

Q.3 On which of the following factors does the resistivity of a conductor depend?

- Ans ☒ 1. Diameter of the conductor
☒ 2. Area of the conductor
☒ 3. Mass of the conductor
☒ 4. Nature of the conductor

- Q.4 Study the given diagram carefully and answer the question that follows. The numbers in different sections indicate the number of children preferring different desserts.



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

- Ans ✓ 1. 8
✗ 2. 7
✗ 3. 6
✗ 4. 9

- Q.5 Which of the following statements about geometric figures is/are true?

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

- Ans ✗ 1. Both statements 1 and 2 are true
✗ 2. Only statement 2 is true
✗ 3. Neither statement 1 nor 2 is true
✓ 4. Only statement 1 is true

- Q.6 Based on the English alphabetical order, three of the following four letter-clusters are alike in a certain way and thus form a group. Which letter-cluster DOES NOT belong to that group? (Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)

- Ans ✗ 1. GMOT
✗ 2. LRTY
✗ 3. FLNS
✓ 4. NTVB

- Q.7 An ammeter has 20 divisions between 0 A and 2 A. The least count of ammeter is _____.

- Ans ✗ 1. 0.2 A
✗ 2. 1 A
✓ 3. 0.1 A
✗ 4. 2 A

- Q.8** In the following number-pairs, the second number is obtained by applying certain mathematical operations to the first number. Which numbers should replace X and Y so that the pattern followed by the two numbers on the left side of :: is same as that on the right side of ::?

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

X : 85 :: 36 : Y

- Ans ☒ 1. X = 42, Y = 71
☒ 2. X = 43, Y = 77
☒ 3. X = 42, Y = 73
☒ 4. X = 44, Y = 73

- Q.9** Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusion(s) logically follow(s) from the statements.

Statements:

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

Conclusions:

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

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

- Q.10** What does the symbol given below denote in a circuit diagram?



- Ans ☒ 1. Variable resistor
☒ 2. Resistor
☒ 3. Voltmeter
☒ 4. Voltage source

- Q.11** An ammeter of range 0 to 10 A shows a current of 7.5 A. If its true value is 6.2 A, the relative error is _____.

- Ans ☒ 1. 17.33%
☒ 2. 13%
☒ 3. 20.96%
☒ 4. 4.8%

- Q.12** Which of the following actions can help prevent slip and fall injuries?

- Ans ☒ 1. Walking on wet floors carefully
☒ 2. Ignoring clutter in walkways
☒ 3. Cleaning up spills immediately and using warning signs
☒ 4. Wearing loose footwear for comfort

Q.13 If $\frac{5}{9}$ of a number is 6 more than $\frac{1}{2}$ of the number, then what is the number?

- Ans ☒ 1. 102
☒ 2. 104
☒ 3. 108
☒ 4. 106

Q.14 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. GN – PV
☒ 2. AH – JR
☒ 3. JQ – SY
☒ 4. HO – QW

Q.15 A piece of rod $\frac{8}{9}$ metre long is broken into two pieces. If one piece is $\frac{1}{3}$ metre long, find the length (in m) of the other piece.

- Ans ☒ 1. $\frac{7}{9}$
☒ 2. $\frac{5}{9}$
☒ 3. $\frac{2}{9}$
☒ 4. $\frac{4}{9}$

Q.16 Which of the following statements is/are true about Functional Dimensions (F) in engineering drawing?

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

Statement 2: Functional Dimensions are typically shown without limits.

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

- Ans ☒ 1. Only statement 3 is true
☒ 2. Only statement 1 is true
☒ 3. Only statements 2 and 3 are true
☒ 4. Only statements 1 and 2 are true

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

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

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

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

- Q.18** Ten people are sitting in two parallel rows with five people each in such a way that there is equal distance between adjacent persons.
In row I, A, B, C, D and E are seated and all of them are facing south.
In row II, R, S, T, U and V are seated and all of them are facing north.
Thus each person faces another person from the other row. A sits at the extreme right end of their row and is facing U. R sits at the centre of their row and is facing C. E sits between C and D and is facing T. S sits at the extreme right end of their row.

Who sits exactly opposite B?

- Ans ☒ 1. U
☒ 2. V
☒ 3. R
☒ 4. T

- Q.19** Which of the following statements is correct about negative work done?

- Ans ☒ 1. Work done is negative when the force and displacement are in the same direction.
☒ 2. Work done cannot be negative.
☒ 3. Work done is negative when the force is perpendicular to the displacement.
☒ 4. Work done is negative when the force acts opposite to the direction of displacement.

- Q.20** Potential energy belongs to which of the following categories of energy?

- Ans ☒ 1. Heat energy
☒ 2. Light energy
☒ 3. Mechanical energy
☒ 4. Chemical energy

- Q.21** What is the total circuit resistance if it contains resistors $10\ \Omega$, $20\ \Omega$ and $60\ \Omega$, connected in parallel?

- Ans ☒ 1. $60\ \Omega$
☒ 2. $90\ \Omega$
☒ 3. $20\ \Omega$
☒ 4. $6\ \Omega$

- Q.22** In a certain code language, 'BARE' is coded as '8264' and 'RIDS' is coded as '3587'. What is the code for 'R' in the given code language?

- Ans ☒ 1. 6
☒ 2. 3
☒ 3. 5
☒ 4. 8

- Q.23** Which of the following statements regarding the use of a fire extinguisher is/are correct?
Statement 1: It is safe to attempt to extinguish any fire regardless of the presence of toxic smoke.
Statement 2: The P.A.S.S. technique, which stands for Pull, Aim, Squeeze and Sweep, is recommended for the effective use of a fire extinguisher.

- Ans ☒ 1. Only Statement 2 is correct.
☒ 2. Neither Statement 1 nor 2 is correct.
☒ 3. Only Statement 1 is correct.
☒ 4. Both Statements 1 and 2 are correct.

- Q.24** The average of 5 results is 51 and that of the first 4 is 50. The 5th result is ____.

- Ans ☒ 1. 55
☒ 2. 51
☒ 3. 50
☒ 4. 54

Q.25 The weight of an object on Earth is 60 N. What is its weight on the surface of the moon?

- Ans ☒ 1. 10 N
☐ 2. 60 N
☐ 3. 600 N
☐ 4. 6 N

Q.26 In a hospital, the ratio between the number of doctors and the number of nurses was 1 : 3. When 12 new doctors joined the hospital and 24 nurses left the hospital, the ratio became 3 : 4. After the resignation of k more nurses from the hospital, the ratio becomes 1 : 1. Find the value of k.

- Ans ☐ 1. 28
☐ 2. 26
☒ 3. 12
☐ 4. 24

Q.27 What is the average human body temperature?

- Ans ☐ 1. 42°C
☐ 2. 40°C
☒ 3. 37°C
☐ 4. 32°C

Q.28 Kinetic energy and potential energy together are called which form of energy?

- Ans ☐ 1. Thermal
☒ 2. Mechanical
☐ 3. Nuclear
☐ 4. Chemical

Q.29 Which of the following is NOT a benefit of use of mobile governance using ICT?

- Ans ☐ 1. Increased transparency and accountability in the government
☐ 2. Increased efficiency in government processes
☒ 3. Reduced costs for the government
☐ 4. Improved access to government services for citizens

Q.30 What should be done immediately after a fuel spillage in a workshop?

- Ans ☐ 1. Use water to wash it away
☒ 2. Evacuate the area and contain the spill using absorbent materials
☐ 3. Leave it unattended and inform the supervisor later
☐ 4. Cover it with plastic to prevent evaporation

Q.31 What should come in place of the question mark (?) in the given alpha-numeric series?

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

- Ans ☐ 1. W35
☐ 2. V40
☐ 3. U35
☒ 4. V35

Q.32 A copper spoon is dipped in hot water. What happens to its other end?

- Ans ☒ 1. It becomes hot by conduction.
☐ 2. It becomes cold by convection.
☐ 3. It becomes cold by conduction.
☐ 4. It becomes hot by convection.

Q.33 A dozen pairs of jeans quoted at ₹3,520 are available at a discount of 35%. How many pairs of jeans can be bought for ₹572?

- Ans ☒ 1. 1
☒ 2. 3
☒ 3. 5
☒ 4. 2

Q.34 From a rectangular cardboard sheet of length 46 m and breadth 8 m, three circular plates of radii 3 m, 2 m and 1 m are cut out. If the area of the remaining part of the cardboard sheet is equal to the area of a square, then find the length of each side of the square (use $\pi = \frac{22}{7}$).

- Ans ☒ 1. 16 m
☒ 2. 20 m
☒ 3. 18 m
☒ 4. 14 m

Q.35 Two resistors of resistance $20\ \Omega$ and $30\ \Omega$ are connected in series in a circuit. What is the current flow in the circuit if the voltage given is 250 V?

- Ans ☒ 1. 5 A
☒ 2. 20 A
☒ 3. 8 A
☒ 4. 12 A

Q.36 The rate of doing work is known as _____.

- Ans ☒ 1. kinetic energy
☒ 2. potential energy
☒ 3. power
☒ 4. force

Q.37 If $x^3 + y^3 = 16$ and $x + y = 4$, what is the value of xy ?

- Ans ☒ 1. 2
☒ 2. 3
☒ 3. 4
☒ 4. 0

Q.38 Which of the following devices is used to measure temperature?

- Ans ☒ 1. Thermometer
☒ 2. Hygrometer
☒ 3. Odometer
☒ 4. Voltmeter

Q.39 Which of the following is NOT a valid representation of electrical power P in a circuit? (The current, potential difference and resistance are written symbolically as I , V and R , respectively.)

- Ans ☒ 1. $P = IR^2$
☒ 2. $P = V^2/R$
☒ 3. $P = I^2R$
☒ 4. $P = VI$

Q.40 A cube with a mass of 5.74 g occupies a volume of 1.2 cm^3 . The density (in g/cm^3) expressed with the correct number of significant figures is _____.

- Ans ☒ 1. 4.8
☒ 2. 4.7833
☒ 3. 4.78
☒ 4. 4.783

Q.41 A cistern has two inlets I_1 and I_2 . I_1 alone can fill it in 8 hours and I_2 in 4 hours. If both the inlets are open, what will be the time required to fill the cistern.

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

Q.42 Amit's income in 2019 was ₹27,000. He gets an increment of 10% every year. What was his income (in ₹) in 2021?

- Ans
- ☒ 1. 27,000
 - ☒ 2. 29,700
 - ☒ 3. 32,400
 - ☒ 4. 32,670

Q.43 Two sets of numbers are given below. In each set of numbers, certain mathematical operation(s) on the first number result(s) in the second number. Similarly, certain mathematical operation(s) on the second number result(s) in the third number and so on. Which of the given options follows the same set of operations as in the given sets?

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

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

- Ans
- ☒ 1. 1 - 1 - 2 - 4
 - ☒ 2. 9 - 2 - 11 - 24
 - ☒ 3. 6 - 12 - 18 - 34
 - ☒ 4. 7 - 49 - 56 - 122

Q.44 In a certain code language, 'CARD' is coded as '8674' and 'MICE' is coded as '3517'. What is the code for 'C' in the given code language?

- Ans
- ☒ 1. 7
 - ☒ 2. 1
 - ☒ 3. 8
 - ☒ 4. 6

Q.45 Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.

Statements:

Some bananas are litchis.

All litchis are kiwis.

Some kiwis are strawberries.

Conclusions:

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

- Ans
- ☒ 1. Neither conclusion 1 nor 2 follows
 - ☒ 2. Only conclusion 1 follows
 - ☒ 3. Only conclusion 2 follows
 - ☒ 4. Both conclusions 1 and 2 follow

Q.46 According to the ISO-A size series, what is the designation of a trimmed sheet with dimensions 297 mm × 420 mm?

- Ans
- ☒ 1. A1
 - ☒ 2. A2
 - ☒ 3. A3
 - ☒ 4. A4

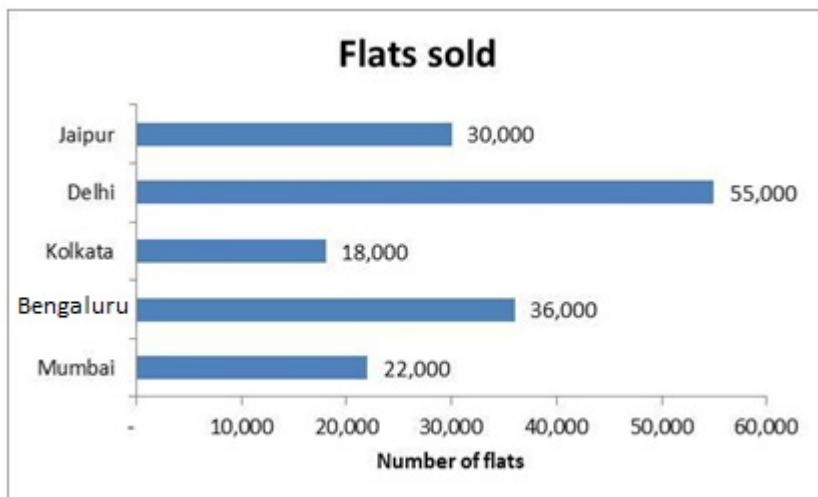
Q.47 Which of the following letter-clusters should replace # and % so that the pattern and relationship followed between the letter-cluster pair on the left side of :: is the same as that on the right side of ::?

: HDI :: MIN : %

- Ans
- ☒ 1. # = JFK, % = KGL
 - ☒ 2. # = JFI, % = KGL
 - ☒ 3. # = JFK, % = KHL
 - ☒ 4. # = JFK, % = KGM

Q.48 Study the given bar-graph and answer the question that follows.

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



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

- Ans
- ☒ 1. 120%
 - ☒ 2. 75%
 - ☒ 3. 125%
 - ☒ 4. 150%

Q.49 A fruit seller initially had some apples. He sold 40% of those and still had 300 apples. How many apples did he initially have?

- Ans
- ☒ 1. 450
 - ☒ 2. 750
 - ☒ 3. 600
 - ☒ 4. 500

Q.50 $\frac{p^2 - n^2}{pn}$

- Ans
- ☒ 1. $\sin A \cdot \cos A$
 - ☒ 2. $\cot A \cdot \cos A$
 - ☒ 3. $\frac{\tan A}{\sec A}$
 - ☒ 4. $= \cos A \cot A$

Q.51 In the following triad, each group of letters is related to the subsequent one following a certain logic. Select from the given options, the one which follows the same logic.

TERM-ERTM-TMRE

- Ans** ☒ 1. ZERO-EZRO-ZREO
☒ 2. WHEN-HWEN-WENH
☒ 3. USER-RESU-REUS
☒ 4. VICE-ICVE-VECI

Q.52 A 280 m long train running at a speed of 72 km/hr passes a platform in 30 seconds. Find the length of the platform (in m).

- Ans** ☒ 1. 320
☒ 2. 335
☒ 3. 300
☒ 4. 280

Q.53 What is the value of 10 km/hr in SI units?

- Ans** ☒ 1. 2.7 m/s
☒ 2. 1000 m/s
☒ 3. 10 m/s
☒ 4. 0.16 m/s

Q.54 Vijay rides a bicycle 10 m from home to his tuition, then 5 m to a shop. He travels back home the same way, covering the same distance. What is his total path length?

- Ans** ☒ 1. 20 m
☒ 2. 15 m
☒ 3. 30 m
☒ 4. Zero

Q.55 A, B, C, D, E and F live on six different floors of the same building. The lowermost floor in the building is numbered 1, the floor above it is numbered 2 and so on till the topmost floor is numbered 6. D lives on an odd-numbered floor but not 3. The sum of floors on which D and E live is 7. A lives immediately below C. F lives on the top floor. How many people live between E and F?

- Ans** ☒ 1. 2
☒ 2. 3
☒ 3. 4
☒ 4. 1

Q.56 Two plumbers, X and Y, are paid a total of ₹770 per day by their employer. If X is paid 140% of the sum paid to Y, then how much is Y paid (in ₹, rounded off to two decimal places) per day?

- Ans** ☒ 1. 320.83
☒ 2. 220.83
☒ 3. 270.83
☒ 4. 370.83

Q.57 Which type of thermometer is used for measuring the internal temperature of ice?

- Ans** ☒ 1. Digital thermometer
☒ 2. Laboratory thermometer
☒ 3. Clinical thermometer
☒ 4. Infrared thermometer

Q.58 6 men or 5 women can complete a job in 7 days. 6 men work for 5 days and leave. The number of women required to complete the remaining work in 5 days is:

- Ans** ☒ 1. 1
☒ 2. 4
☒ 3. 3
☒ 4. 2

Q.59 Which of the following best describes the primary function of a digital signature in electronic communication?

- Ans ☒ 1. It allows the recipient to edit the document before signing.
☒ 2. It verifies the identity of the sender and ensures the integrity of the message.
☒ 3. It automatically archives all electronic documents for future reference.
☒ 4. It encrypts the entire message content to ensure privacy.

Q.60 Which of the following is the work done by the gravitational force on the object of mass 50 kg when the object is moved from one point to another point along a horizontal line ($g = 10 \text{ m/s}^2$)?

- Ans ☒ 1. Zero
☒ 2. 500 J
☒ 3. 50 J
☒ 4. -500 J

Q.61 Find the value of $x^2 + y^2$, given the following.

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

- Ans ☒ 1. 96
☒ 2. 108
☒ 3. 124
☒ 4. 137

Q.62 Jaspreet deposited a sum of ₹58,550 at 20% rate of interest per annum, compounded annually. The total amount (in ₹) received by Jaspreet after 2 years will be:

- Ans ☒ 1. 84,312
☒ 2. 83,876
☒ 3. 84,735
☒ 4. 84,700

Q.63 In the SI system, which of the following options best describes the base quantities?

- Ans ☒ 1. Length, mass, time
☒ 2. Distance, speed, acceleration
☒ 3. Force, power, energy
☒ 4. Temperature, pressure, volume

Q.64 The average of three numbers is 20. If two numbers are 16 and 24, the third number is:

- Ans ☒ 1. 22
☒ 2. 19
☒ 3. 21
☒ 4. 20

Q.65 Which of the following ecosystems has very low temperatures and frozen soil?

- Ans ☒ 1. Grassland
☒ 2. Tropical rainforest
☒ 3. Desert
☒ 4. Tundra

Q.66 Which of the following noise levels is considered potentially harmful to human health if experienced over extended periods?

- Ans ☒ 1. 30 dB
☒ 2. 70 dB
☒ 3. 90 dB
☒ 4. 50 dB

Q.67 Match the columns.

Engineering Applications Type of Engineering Drawings

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

Ans ✓ 1. A-S ; B-R ; C-Q ; D-P

✗ 2. A-S ; B-R ; C-P ; D-Q

✗ 3. A-P ; B-R ; C-Q ; D-S

✗ 4. A-S ; B-P ; C-Q ; D-R

Q.68 How many base units are used to measure the physical quantities, according to SI units system?

Ans ✗ 1. 5

✓ 2. 7

✗ 3. 10

✗ 4. 4

Q.69 Rinku riding his car covers 136 metres in 17 seconds. What is his speed (in km/hr)?

Ans ✗ 1. 11.6

✗ 2. 17

✗ 3. 26

✓ 4. 28.8

Q.70 Megha bought a bag for ₹1,271 after getting a discount of 18% on its marked price. Find the marked price of the bag.

Ans ✓ 1. ₹1,550

✗ 2. ₹1,650

✗ 3. ₹1,350

✗ 4. ₹1,450

Q.71 Refer to the following letter and symbol series and answer the question that follows. Counting to be done from left to right only.

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

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

Ans ✗ 1. Three

✗ 2. One

✓ 3. Four

✗ 4. Two

Q.72 In a certain code language,

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

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

Ans ✓ 1. Wife's mother's father

✗ 2. Wife's brother

✗ 3. Wife's mother's brother

✗ 4. Wife's father

Q.73 Simplify $976 \times 265 + 976 \times 735$.

- Ans ☐ 1. 752800
☒ 2. 976000
☐ 3. 658200
☐ 4. 876000

Q.74 Ganpat starts from Point A and walks 18 m towards west. He takes a left turn, walks 32 m, takes a left turn, walks 26 m, turns left, walks 61 m and stops at Point B. Meena starts from Point Z, which is 22 m towards the east of Point A. She walks 42 m towards north, takes a right turn, walks 35 m, turns right and walks 13 m and stops at Point Y. What is the shortest distance between Point B and Point Y? (All turns are 90-degree turns only.)

- Ans ☐ 1. 52 m
☐ 2. 57 m
☒ 3. 49 m
☐ 4. 43 m

Q.75 Convert 1 kilowatt hour (kW h) into joule.

- Ans ☐ 1. $1 \text{ kW h} = 3.6 \times 10^3 \text{ J}$
☐ 2. $1 \text{ kW h} = 3.6 \times 10^7 \text{ J}$
☐ 3. $1 \text{ kW h} = 3.6 \times 10^5 \text{ J}$
☒ 4. $1 \text{ kW h} = 3.6 \times 10^6 \text{ J}$

Q.76 The sum of the ages of Yash and his father is 90 years. When Yash is as old as his father's present age, he will be five times as old as his son Suraj's present age. Suraj will be 12 years older than Yash's present age, when Yash is as old as his father at present. How old is Suraj at present?

- Ans ☐ 1. 15 years
☐ 2. 18 years
☒ 3. 12 years
☐ 4. 16 years

Q.77 The areas of three adjacent faces of a solid cuboid are 216 cm^2 , 114 cm^2 and 19 cm^2 . What is the volume (in cm^3) of the cuboid?

- Ans ☐ 1. 955
☐ 2. 532
☒ 3. 684
☐ 4. 880

Q.78 Which of the following is a supplementary protocol that allows non-ASCII data to be sent through e-mail?

- Ans ☒ 1. Multipurpose Internet Mail Extensions (MIME)
☐ 2. Mailing Lists
☐ 3. DNS
☐ 4. HTTPS

Q.79 Which of the following statements is/are true?

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

Statement 2: All plastics are good conductors of heat.

- Ans ☐ 1. Neither statement 1 nor 2
☐ 2. Both statements 1 and 2
☐ 3. Only statement 2
☒ 4. Only statement 1

Q.80 In hot climate regions, the outer walls of the house are preferred to be white in colour because _____.

- Ans ☒ 1. white colour reflects sunlight to make the interior of the house cool
☐ 2. white colour looks good
☐ 3. white colour absorbs more sunlight to make the house bright
☐ 4. white colour makes the wall more durable

Q.81 Use of energy-efficient machineries in industrial settings primarily helps ____.

- Ans ☒ 1. reduce industrial energy requirement and improve products' competitiveness.
☒ 2. decrease operational efficiency
☒ 3. increase energy consumption and thereby product cost
☒ 4. extend the lifespan of outdated equipment
-

Q.82 The area of a regular polygon with a side of 8 cm is 112 cm^2 . If the perpendicular distance from the centre to the side of the polygon is 7 cm, then the number of sides of the polygon is:

- Ans ☒ 1. 6
☒ 2. 5
☒ 3. 7
☒ 4. 4
-

Q.83 What is the term used to describe organisms that produce their own food in an ecosystem?

- Ans ☒ 1. Herbivores
☒ 2. Consumers
☒ 3. Producers
☒ 4. Decomposers
-

Q.84 Each of Preeti, Kiran, Grace, Ankit, Deepak, Nitin and Neelam has an exam on a different day of a week, starting from Monday and ending on Sunday of the same week. Preeti has an exam on Thursday. Only one person has an exam between Preeti and Nitin. Grace has exam on the day immediately before Nitin but not on a Monday. Only two people have exams between Grace and Deepak. Neelam's exam is on one of the days before Ankit's but on one of the days after Kiran's. Who among the following has an exam on Monday?

- Ans ☒ 1. Deepak
☒ 2. Nitin
☒ 3. Kiran
☒ 4. Neelam
-

Q.85 What should come in place of the question mark (?) in the given series?

185 174 163 152 ? 130

- Ans ☒ 1. 143
☒ 2. 144
☒ 3. 142
☒ 4. 141
-

Q.86 If $50 : x :: x : 32$, and $x > 0$, then find the value of x .

- Ans ☒ 1. 45.8
☒ 2. 40.6
☒ 3. 40
☒ 4. 38.7
-

Q.87 If 'A' stands for ' $\div$ ', 'B' stands for ' $\times$ ', 'C' stands for ' $+$ ' and 'D' stands for ' $-$ ', what will come in place of the question mark (?) in the following equation?

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

- Ans ☒ 1. 10
☒ 2. 11
☒ 3. 8
☒ 4. 9
-

Q.88 Work done is defined in science as _____.

Ans ☒ 1. 1. force × distance

☒ 2. $\frac{\text{force}}{\text{distance}}$

☒ 3. 3. force × displacement

☒ 4. $\frac{\text{force}}{\text{displacement}}$

Q.89 Which of the following will verify the credentials and documents of applicants uploaded on National Scholarship Portal?

Ans ☒ 1. Third party

☒ 2. National Scholarship Portal

☒ 3. Government

☒ 4. University/Institute in which applicant is studying

Q.90 A man purchased two varieties of pens at the rates of ₹8 for 9 pens and ₹8 per pen. If he purchased an equal number of pens of each of the two varieties and then sold all his pens at ₹6 per pen, what was his profit percentage?

Ans ☒ 1. 32%

☒ 2. 33%

☒ 3. 35%

☒ 4. 45%

Q.91 Which of the following relations is NOT correct?

Ans ☒ 1. Electric Power = (Voltage)² / Resistance

☒ 2. Electric Power = Voltage / Current

☒ 3. Electric Power = Voltage × Current

☒ 4. Electric Power = (Current)² × Resistance

Q.92 In the following series, only one letter-cluster is incorrect. Select the INCORRECT letter-cluster.

PCO MEM JGK GIJ DKG AME

Ans ☒ 1. AME

☒ 2. JGK

☒ 3. GIJ

☒ 4. DKG

Q.93 Which of the following expressions is NOT correct for electric power?

Ans ☒ 1. $P = \frac{V^2}{R}$

☒ 2. $P = VI$

☒ 3. $P = \frac{I^2}{R}$

☒ 4. $P = I^2R$

Q.94 Which of the following is true?

Ans ☒ 1. Both insulators and conductors allow heat to pass through them easily.

☒ 2. Wood is a good conductor of heat.

☒ 3. In a kitchen, aluminium vessels are used because aluminium is a good conductor of heat.

☒ 4. Plastic is a good conductor of heat.

Q.95 Which of the following is the safest method for disposing of toxic dust?

- Ans ☒ 1. Sweeping it into open areas
☒ 2. Releasing it into the air for dilution
☒ 3. Using specialised hazardous waste disposal containers
☒ 4. Dumping it in regular trash bins

Q.96 Eight people are sitting in two parallel rows containing 4 people each in such a way that there is equal distance between adjacent persons. In row 1, A, B, C and D are seated, and all of them are facing south. In row 2, P, Q, R and S are seated, and all of them are facing north. Thus, each person faces another person from the other row. Only two people sit between P and Q. A faces the person sitting to the immediate left of P. R sits to the immediate left of S. D sits to the immediate right of C. Who among the following faces P?

- Ans ☒ 1. B
☒ 2. C
☒ 3. A
☒ 4. D

Q.97 Which of the following orders of components is primarily responsible for executing instructions, storing permanent firmware, temporarily storing data during program execution and providing a platform for interconnecting hardware components on a computer motherboard?

- Ans ☒ 1. RAM - ROM - CPU - PCB
☒ 2. CPU - ROM - RAM - PCB
☒ 3. CPU - RAM - ROM - PCB
☒ 4. PCB - ROM - CPU - RAM

Q.98 Which of the following is a geometrical figure with a three-dimensional geometry that has eight vertices and six rectangular faces?

- Ans ☒ 1. Cylinder
☒ 2. Cuboid
☒ 3. Parallelogram
☒ 4. Pyramid

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

893 891 889 887 ? 883

- Ans ☒ 1. 886
☒ 2. 986
☒ 3. 885
☒ 4. 985

Q.100 Which of the following is the best way to identify workplace hazards?

- Ans ☒ 1. Ignoring small risks
☒ 2. Waiting for an incident to occur
☒ 3. Conducting regular safety inspections
☒ 4. Relying on employees to report accidents

Section : Part B (Wireman)

Q.101 A 220 V shunt generator has a field resistance of 110 Ω . What is the field current?

- Ans ☒ 1. 10 A
☒ 2. 20 A
☒ 3. 5 A
☒ 4. 2 A

Q.102 Which of the following best describes the construction of a mica capacitor?

- Ans
- ☐ 1. A thin polymer film rolled into a cylinder
 - ☐ 2. A ceramic disc with metal coatings
 - ☒ 3. Alternating layers of metal foil and mica sheets
 - ☐ 4. A liquid electrolyte between two aluminium plates

Q.103 At what overload percentage does the solenoid attract the armature fully, causing instantaneous tripping in a MCB?

- Ans
- ☒ 1. 700%
 - ☐ 2. 130%
 - ☐ 3. 300%
 - ☐ 4. 1000%

Q.104 When measuring the resistance of a resistor using an ohmmeter, what does a reading of zero resistance indicate?

- Ans
- ☐ 1. The resistor is functioning normally.
 - ☐ 2. The resistor is open-circuited.
 - ☒ 3. The resistor is short-circuited.
 - ☐ 4. The ohmmeter is malfunctioning.

Q.105 A circuit consists of three resistors; 15 ohms, 10 ohms, and 20 ohms. The 15-ohm resistor is in series with the parallel combination of the 10-ohm and 20-ohm resistors. If a 24 V battery is applied across the circuit, what is the total current flowing through the circuit?

- Ans
- ☐ 1. 3.1 A
 - ☐ 2. 0.1 A
 - ☒ 3. 1.1 A
 - ☐ 4. 2.1 A

Q.106 Read the given statements carefully and select the correct option.

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

- Ans
- ☐ 1. Both Statement 1 and Statement 2 are correct.
 - ☐ 2. Statement 1 is incorrect, but Statement 2 is correct.
 - ☒ 3. Statement 1 is correct, but Statement 2 is incorrect.
 - ☐ 4. Both Statement 1 and Statement 2 are incorrect.

Q.107 केबलों में तांबे की तुलना में ऐलुमिनियम चालकों का उपयोग करने का नुकसान निम्नलिखित में से कौन-सा है? **HINDI**

- Ans
- ☒ 1. तांबे की तुलना में ऐलुमिनियम में उच्चतर प्रतिरोध होता है, जिससे अधिक विद्युत हानि होती है।
 - ☐ 2. तांबे की तुलना में ऐलुमिनियम अधिक महंगा होता है।
 - ☐ 3. तांबे की तुलना में ऐलुमिनियम कम चिरस्थायी होती है।
 - ☐ 4. तांबे की केबल की तुलना में ऐलुमिनियम केबल अधिक नम्य होती हैं।

Q.108 किस प्रकार का केबल चैनल उन क्षेत्रों के लिए सबसे उपयुक्त होता है, जहां बार-बार अनुरक्षण या वायरिंग प्रणाली में परिवर्तन की आवश्यकता होती है? **HINDI**

- Ans
- ☐ 1. धातु नलिका चैनल (Metal conduit channel)
 - ☐ 2. नम्य केबल चैनल (Flexible cable channel)
 - ☐ 3. दृढ़ केबल चैनल (Rigid cable channel)
 - ☒ 4. खांचित केबल चैनल (Slotted cable channel)

Q.109 What is the effect of increasing the field current in a DC shunt motor?

- Ans
- ☐ 1. The motor speed increases.
 - ☐ 2. The torque decreases.
 - ☐ 3. The motor stops immediately.
 - ☒ 4. The motor speed decreases.

Q.110 What is the basic working principle of a DC generator?

- Ans
- ☐ 1. Electrostatic induction
 - ☐ 2. Mutual induction
 - ☒ 3. Faraday's law of electromagnetic induction
 - ☐ 4. Lenz's law
-

Q.111 A drawing instrument box is used to carry all _____ instruments.

- Ans
- ☒ 1. drawing
 - ☐ 2. screening
 - ☐ 3. drilling
 - ☐ 4. casting
-

Q.112 What is the primary material used in the resistance wire of wire-wound resistors?

- Ans
- ☐ 1. Aluminium
 - ☐ 2. Silver
 - ☒ 3. Nichrome
 - ☐ 4. Copper
-

Q.113 What should you do to ensure your personal safety at work?

- Ans
- ☒ 1. Wear personal protective equipment.
 - ☐ 2. Work in a hurry without checking equipment.
 - ☐ 3. Ignore warning signs and instructions.
 - ☐ 4. Take risks to finish tasks quickly.
-

Q.114 Calculate the voltage regulation (in percentage) of the transformer if the no load secondary voltage is 250 V and full load secondary voltage is 200 V?

- Ans
- ☐ 1. 20%
 - ☐ 2. 100%
 - ☐ 3. 50%
 - ☒ 4. 25%
-

Q.115 Non-functional dimensions are _____.

- Ans
- ☒ 1. not essential for the function of the space or component
 - ☐ 2. essential for the function of the space or component
 - ☐ 3. derived from the values of the related features of a drawing
 - ☐ 4. directly derived from the values given on a drawing
-

Q.116 Which of the following hand-operated drilling machines is used for drilling small diameter holes up to 6 mm?

- Ans
- ☐ 1. Electric hand drill
 - ☐ 2. Ratchet drilling machine
 - ☐ 3. Breast drilling machine
 - ☒ 4. Bevel gear type drilling machine
-

Q.117 Which of the following instruments is used to test the earth resistance of an earthing system?

- Ans
- ☐ 1. Multimeter
 - ☒ 2. Megger
 - ☐ 3. Clamp meter
 - ☐ 4. Oscilloscope
-

Q.118 $\left(\frac{3}{8}\right) + \left(\frac{5}{12}\right)$

Ans

- ☒ 1. $\frac{17}{12}$
- ☒ 2. $\frac{24}{19}$
- ☒ 3. $\frac{24}{8}$
- ☒ 4. $\frac{20}{7}$
- ☒ 5. $\frac{12}{12}$

Q.119 Permeability of ideal transformer core is equal to:

- Ans
- ☒ 1. low value
 - ☒ 2. zero
 - ☒ 3. unity
 - ☒ 4. infinite

Q.120 जब सामान्यतः खुले (NO) संपर्क को ऊर्जित किया जाता है, तो क्या होता है? **HINDI**

- Ans
- ☒ 1. संपर्क, परिपथ से वियोजित हो जाता है।
 - ☒ 2. परिपथ खुला रहता है।
 - ☒ 3. संपर्क अपनी स्थिति में लॉक हो जाता है।
 - ☒ 4. परिपथ बंद हो जाता है।

Q.121 In a lead-acid battery, what is the chemical composition of the material used for the positive plate during discharge?

- Ans
- ☒ 1. Sulphuric acid (H_2SO_4)
 - ☒ 2. Lead (Pb)
 - ☒ 3. Lead dioxide (PbO_2)
 - ☒ 4. Lead sulfate ($PbSO_4$)

Q.122 Air-cored inductors are most commonly used in circuits operating at/in:

- Ans
- ☒ 1. high frequencies from 1 MHz to several hundred MHz
 - ☒ 2. DC power supply circuits
 - ☒ 3. low frequencies below 50 Hz
 - ☒ 4. audio frequency range (20 Hz – 20 kHz)

Q.123 According to BIS SP 46-2003, which of the following applications is correctly represented by a chain-thin line in engineering drawings?

- Ans
- ☒ 1. Center lines
 - ☒ 2. Hidden edges
 - ☒ 3. Dimension lines
 - ☒ 4. Visible edges

Q.124 What is the advantage of giving heat treatment to a material?

- Ans
- ☒ 1. To decrease the melting point of the material
 - ☒ 2. To increase the weight of the material
 - ☒ 3. To change it from one element to another element
 - ☒ 4. To make surgical knives of sharp edges

Q.125 What does the 'Make and Break after delay' function primarily protect against in electrical systems?

- Ans
- ☒ 1. Voltage spikes and electromagnetic interference
 - ☒ 2. Sudden mechanical movements of motors
 - ☒ 3. High inrush currents and voltage surges
 - ☒ 4. Overheating of the circuit

Q.126 A transformer's open circuit test is used to determine:

- Ans ☒ 1. core losses and no load current
☒ 2. stray loss
☒ 3. windage loss
☒ 4. copper loss

Q.127 Where are ceramic capacitors commonly used?

- Ans ☒ 1. Mobile Phones
☒ 2. High-power motors
☒ 3. TV circuits
☒ 4. Transformers

Q.128 केंसिंग और कैपिंग तार स्थापन प्रणाली कहाँ उपयोग के लिए सबसे उपयुक्त है? **HINDI**

- Ans ☒ 1. सुंदर दिखने और विस्तार के लिए भीतरी पृष्ठीय तार-स्थापन
☒ 2. बाह्य उच्च-वोल्टेता पारेषण लाइन
☒ 3. भूमिगत केबल अधिष्ठापन
☒ 4. जलगत विद्युत अधिष्ठापन

Q.129 When selecting a sheet size for an original drawing, what should be the primary consideration?

- Ans ☒ 1. The standard size of the drawing office.
☒ 2. The clarity and resolution required.
☒ 3. The orientation of the drawing (horizontal or vertical).
☒ 4. The size of the reproduction.

Q.130 A DC generator is running at constant speed. If the load current increases, what happens to the terminal voltage?

- Ans ☒ 1. Decreases
☒ 2. Increases
☒ 3. Remains constant
☒ 4. Fluctuates randomly

Q.131 Which of the following statements is NOT true if any electrical system is not properly earthed?

- Ans ☒ 1. It provides voltage constant voltage supply regardless of perturbation in load side.
☒ 2. It may lead to damage of electrical equipment.
☒ 3. It can increase the risk of electric shock.
☒ 4. It may cause the electric current to flow in an uncontrolled manner.

Q.132 In the context of earthing in an electrical system, _____ has the greatest impact on earth resistance.

- Ans ☒ 1. the length of the earthing conductor
☒ 2. the voltage applied to the ground
☒ 3. the material of the grounding rod
☒ 4. soil resistivity

Q.133 What type of components are used for tapping in the ring main system?

- Ans ☒ 1. Directly from the main supply
☒ 2. Using transformers
☒ 3. Through capacitors
☒ 4. Through fuses and controlling switches

Q.134 Which of the following is an important safety measure during a power failure?

- Ans ☒ 1. Using candles for lighting
☒ 2. Continuing to use equipment without verifying power status
☒ 3. Ensuring all machines and electrical equipment are turned off
☒ 4. Ignoring alarm systems

Q.135 तारों को बदलते समय इंसुलेटेड कनेक्टर का उपयोग करने का मुख्य कारण क्या है? **HINDI**

- Ans ☒ 1. आकस्मिक शॉर्ट सर्किट या विद्युत प्रघात को रोकना
☒ 2. धारावाही क्षमता को बढ़ाना
☒ 3. तार को अधिक नम्य बनाना
☒ 4. संस्थापन की लागत को कम करना

Q.136 यदि कुल लोड 800 वाट से कम हो, तो कितने लाइटिंग परिपथों (lighting circuits) की आवश्यकता होती है? **HINDI**

- Ans ☒ 1. दो
☒ 2. चार
☒ 3. एक
☒ 4. तीन

Q.137 Which of the following factors DOES NOT affect the rating of a fuse?

- Ans ☒ 1. The ambient temperature
☒ 2. The colour of the fuse holder
☒ 3. The type of electrical load
☒ 4. The cross-sectional area of the conductor

Q.138 What is a key advantage of using MOSFETs in electronic circuits compared to other types of transistors?

- Ans ☒ 1. High frequency response
☒ 2. High input impedance and low power consumption
☒ 3. Ability to handle higher voltages and currents than BJTs
☒ 4. Ability to amplify both AC and DC signals

Q.139 Which component in a magnetic hydraulic MCB holds the ferrous plunger?

- Ans ☒ 1. A non-ferrous tube
☒ 2. A bimetallic strip
☒ 3. A thermal coil
☒ 4. A fuse element

Q.140 What is the main purpose of continuity testing in a DC generator?

- Ans ☒ 1. To detect open or broken windings
☒ 2. To test insulation resistance
☒ 3. To measure current flow
☒ 4. To check voltage regulation

Q.141 Arrange the following steps in the correct order to draw an equilateral triangle with each side of 35 mm.

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

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

Q.142 In a velocity-time graph, the negative slope represents ____.

- Ans ☒ 1. retardation
☒ 2. displacement
☒ 3. acceleration
☒ 4. distance

Q.143 What is the purpose of an emergency evacuation plan?

- Ans
- ✓ 1. To ensure safe and orderly evacuation during emergencies
 - ✗ 2. To avoid safety drills
 - ✗ 3. To increase productivity
 - ✗ 4. To allow workers to leave early

Q.144 दोषपूर्ण तार को बदलते समय सबसे महत्वपूर्ण सुरक्षा कदम क्या है? **HINDI**

- Ans
- ✗ 1. खुले धातु भागों वाले टूल का उपयोग करें
 - ✓ 2. प्रभावित क्षेत्र में बिजली की आपूर्ति बंद करें
 - ✗ 3. आर्द्र परिस्थितियों में काम करें
 - ✗ 4. कनेक्शन के लिए उचित इन्सुलेशन का उपयोग करें

Q.145 For what purpose are pins and clips used in engineering drawings?

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

Q.146 जंक्शन बॉक्स में तारों के सुरक्षित कनेक्शन के लिए निम्नलिखित में से किस वायरिंग उपकरण (accessories) मुख्य रूप से उपयोग किया जाता है? **HINDI**

- Ans
- ✗ 1. स्विच (Switch)
 - ✓ 2. टर्मिनल ब्लॉक (Terminal Block)
 - ✗ 3. सॉकेट (Socket)
 - ✗ 4. फ्यूज (Fuse)

Q.147 Which of the following vices consists of a handle and a small collet chuck at one end?

- Ans
- ✗ 1. Hand vice
 - ✓ 2. Pin vice
 - ✗ 3. Pipe vice
 - ✗ 4. Toolmaker's vice

Q.148 Which of the following is a key safety measure to follow when installing an earthing system?

- Ans
- ✗ 1. Use thin copper wires for earthing to reduce costs.
 - ✗ 2. Use flexible conductors for earthing connections.
 - ✓ 3. Ensure the earthing system is properly inspected and tested for safety compliance.
 - ✗ 4. Ensure the earthing system is designed for maximum efficiency.

Q.149 In the open circuit test of a transformer, the supply frequency should be:

- Ans
- ✗ 1. higher than the rated frequency
 - ✓ 2. equal to the rated frequency
 - ✗ 3. independent of the rated frequency
 - ✗ 4. lower than the rated frequency

Q.150 When a strong magnet is placed near a weak magnet, what will likely happen?

- Ans
- ✗ 1. The weak magnet will disappear.
 - ✓ 2. The strong magnet will induce magnetism in the weak magnet.
 - ✗ 3. The strong magnet will lose its magnetism.
 - ✗ 4. The weak magnet will repel the strong magnet.

Q.151 Which of the following parts of a file is the part fitted to the tang for holding the file?

- Ans
- ✗ 1. Tip or Point
 - ✓ 2. Handle
 - ✗ 3. Edge
 - ✗ 4. Tang

Q.152 What is the primary reason for electrical injuries when a person comes in contact with electrical equipment?

- Ans
- ☐ 1. Electrical equipment is not properly grounded.
 - ☒ 2. Current flows through the body causing harm.
 - ☐ 3. Devices are used for too long.
 - ☐ 4. Electrical devices are too powerful.

Q.153 प्राथमिक और द्वितीयक अंतः क्षेपण परीक्षण (injection testing) का उद्देश्य क्या है? **HINDI**

- Ans
- ☐ 1. शक्ति गुणक का परीक्षण करना
 - ☒ 2. ब्रेकर और रिले प्रचालन की जाँच करना
 - ☐ 3. विद्युत रोधन प्रतिरोध की जाँच करना
 - ☐ 4. संपर्क प्रतिरोध को मापना

Q.154 A 20 kVA, 2500/250 V, 50 Hz, single phase transformer gave the open circuit test result (on low voltage side) as 250 V and 100 W; then core loss current is:

- Ans
- ☒ 1. 0.4 A
 - ☐ 2. 0.1 A
 - ☐ 3. 0.3 A
 - ☐ 4. 0.2 A

Q.155 If two inductors are connected in series with mutual inductance M (aiding), what is the equivalent inductance?

- Ans
- ☐ 1. $L_{eq} = L_1 + L_2 - 2M$
 - ☐ 2. $L_{eq} = \frac{L_1 + L_2}{2}$
 - ☒ 3. $L_{eq} = L_1 + L_2 + 2M$
 - ☐ 4. $L_{eq} = \frac{L_1 * L_2}{L_1 + L_2}$

Q.156 $\cos\theta$

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

Q.157 विद्युत प्रणाली के संदर्भ में 'अधिकतम मांग' का क्या अर्थ है? **HINDI**

- Ans
- ☐ 1. प्रचालन के लिए आवश्यक न्यूनतम लोड
 - ☐ 2. किसी महीने में खपत की गई कुल ऊर्जा
 - ☐ 3. किसी अवधि में औसत लोड
 - ☒ 4. किसी विशिष्ट अवधि में रिकॉर्ड किया गया उच्चतम लोड

Q.158 How long does a fuse element take to melt when carrying twice its rated current?

- Ans
- ☐ 1. 1 minute
 - ☐ 2. 5 minutes
 - ☐ 3. 30 seconds
 - ☒ 4. 2 minutes

Q.159 Which of the following files is used for filing narrow grooves and angles above 10°?

- Ans ✓ 1. Knife-edge file
✗ 2. Half round file
✗ 3. Square file
✗ 4. Triangular file

Q.160 A circular hole of radius 3 cm is cut from a rectangular sheet of dimensions 12 cm × 10 cm. Find the remaining area.

(Take $\pi = 3.14$)

- Ans ✗ 1. 100 cm²
✓ 2. 91.74 cm²
✗ 3. 95.86 cm²
✗ 4. 75.74 cm²

Q.161 When using a multimeter to measure current, which of the following is correct?

- Ans ✗ 1. The multimeter is connected directly to the power source.
✓ 2. The multimeter is connected in series with the load.
✗ 3. The multimeter is connected only across resistive components.
✗ 4. The multimeter is connected in parallel with the load.

Q.162 Where are Kit-Kat type fuses commonly used?

- Ans ✗ 1. Electronic circuits
✗ 2. High-voltage transmission systems
✓ 3. Domestic and small industrial electrical circuits
✗ 4. Power generation plants

Q.163 Gaskets, seals and spacers are made using:

- Ans ✗ 1. centre punch
✓ 2. hollow punch
✗ 3. pin punch
✗ 4. prick punch

Q.164 विद्युत वायरिंग में फेरुल (ferrule) का प्राथमिक कार्य क्या है? **HINDI**

- Ans ✓ 1. तार के स्ट्रैंड को टूटने से बचाकर सुरक्षित और विश्वसनीय कनेक्शन सुनिश्चित करना
✗ 2. तार को यांत्रिक क्षति से बचाना
✗ 3. तार को इन्सुलेशन प्रदान करना
✗ 4. तार की वोल्टता रेटिंग को बढ़ाना

Q.165 Why is it important for every person to follow safety procedures in the workplace?

- Ans ✗ 1. To increase overall production efficiency
✓ 2. To minimise risks and avoid accidents
✗ 3. To reduce operational costs significantly
✗ 4. To limit the need for frequent supervision

Q.166 Which of the following types of pliers is used to shape loops in wires and to form curves in light metal strips?

- Ans ✗ 1. Flat nose pliers
✓ 2. Round nose pliers
✗ 3. Slip-joint pliers
✗ 4. End cutting pliers

Q.167 The unit for specific gravity is _____.

- Ans
- ☐ 1. m/s^2
 - ☐ 2. g/cm^3
 - ☐ 3. kg/m^3
 - ☒ 4. no unit (dimensionless)

Q.168 If the current flowing through a conductor is 5 A and the resistance of the conductor is 10 ohms, what will be the voltage across the conductor, according to Ohm's Law?

- Ans
- ☐ 1. 15 V
 - ☒ 2. 50 V
 - ☐ 3. 5 V
 - ☐ 4. 10 V

Q.169 किसी पैनल में दोषपूर्ण तार को बदलते समय, तार की रूटिंग के संबंध में क्या सावधानी बरतनी चाहिए? **HINDI**

- Ans
- ☐ 1. भविष्य में मरम्मत को आसान बनाने के लिए तार में अतिरिक्त ढीलापन छोड़ दें।
 - ☐ 2. सुविधा के लिए तार को अन्य परिपथों में रूट करें।
 - ☒ 3. सुनिश्चित करें कि तार ताप स्रोतों और गतिशील भागों से दूर रूट हो।
 - ☐ 4. पैनल के अंदर किसी भी उपलब्ध स्थान पर तार को रूट करें।

Q.170 IEEE 80 provides recommendations for _____.

- Ans
- ☐ 1. standards for electrical insulation materials
 - ☐ 2. voltage regulation in power systems
 - ☐ 3. measurement of electrical power consumption
 - ☒ 4. proper installation of grounding and bonding systems in electrical installations

Q.171 Which of the following organisations is responsible for enforcing workplace safety regulations in India?

- Ans
- ☐ 1. World Health Organization (WHO)
 - ☐ 2. Food and Drug Administration (FDA)
 - ☒ 3. Directorate General of Factory Advice Service and Labour Institutes (DGFASLI)
 - ☐ 4. Environmental Protection Agency (EPA)

Q.172 घरेलू तार-स्थापन प्रणाली में, निम्नलिखित में से कौन-सा उपकरण सामान्य तौर पर प्रतिरोधी लोड को प्रदर्शित करता है? **HINDI**

- Ans
- ☐ 1. प्रशीतक (Refrigerator)
 - ☒ 2. वैद्युत तापक (Electric heater)
 - ☐ 3. प्रतिदीप्ति लैम्प (Fluorescent lamp)
 - ☐ 4. छत पंखा (Ceiling fan)

Q.173 A 20 kVA, 2500/250 V, 50 Hz, single phase transformer gave the open circuit test result (on low voltage side) as 250 V, 1.6 A and 100 W; then no load power factor is:

- Ans
- ☐ 1. 0.15
 - ☐ 2. 0.2
 - ☒ 3. 0.25
 - ☐ 4. 0.1

Q.174 भार गुणक (Load Factor) के संबंध में निम्नलिखित में से कौन-सा कथन सत्य है? **HINDI**

- Ans
- ☐ 1. भार गुणक घरेलू तार-स्थापन के लिए अप्रासंगिक है।
 - ☐ 2. भार गुणक की गणना केवल उच्चतम मांग का उपयोग करके की जाती है।
 - ☒ 3. अधिक भार गुणक के परिणामस्वरूप विद्युत अवसंरचना का बेहतर उपयोग होता है।
 - ☐ 4. भार गुणक सदैव 1 से अधिक होता है।

Q.175 Why is armature resistance control NOT suitable for speed control in high-power DC motors?

- Ans ✓ 1. It results in poor efficiency due to high power loss.
✗ 2. It causes high torque fluctuations.
✗ 3. It cannot reduce the motor speed.
✗ 4. It increases field current.
-

Blackbook



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



Exam	RRB ALP 2024 CBT 2 (CEN 01/2024)
Paper	Wireman
Test Date	06 May 2025
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.

3. 15 questions marked with a language chip are printed in that language because the English version is not in our saved papers.

Section : Part A

Q.1 Which of the following is NOT a fundamental quantity in the SI system?

- Ans ☒ 1. Force
☒ 2. Time
☒ 3. Luminous intensity
☒ 4. Amount of substance

Q.2 The floor of a rectangular hall has a perimeter of 220 m. If the cost of painting the four walls at the rate of ₹10 per m² is ₹11,000, then find the volume of the hall.

- Ans ☒ 1.
☒ 2.
☒ 3.
☒ 4.

Q.3 Two sets of numbers are given below. In each set of numbers, certain mathematical operation(s) on the first number results in the second number. Similarly, certain mathematical operation(s) on the second number results in the third number and so on. Which of the given options follows the same set of operations as in the given sets?

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

4 – 8 – 18 – 9
 6 – 12 – 22 – 11

- Ans ☒ 1. 11 – 13 – 22 – 63
☒ 2. 8 – 16 – 26 – 13
☒ 3. 9 – 18 – 28 – 20
☒ 4. 3 – 15 – 12 – 20

Q.4 A fruit seller had some apples. He sells 40% of the apples and now has 900 apples. How many apples did he originally have?

- Ans ☒ 1. 1350
☒ 2. 1800
☒ 3. 2250
☒ 4. 1500

Q.5 Which of the following is a poor conductor of heat?

- Ans ☒ 1. Wool
☒ 2. Copper
☒ 3. Steel spoon
☒ 4. Aluminium rod

Q.6 Pihu starts her car at 9 a.m. to reach her office, which is 20 km away. She covers the first 10 km in 30 minutes and reaches her office at 10 a.m. Pihu's motion is _____.

- Ans ☒ 1. uniform motion
☒ 2. non-uniform motion
☒ 3. retarded motion
☒ 4. accelerated motion

Q.7 $\frac{121\tan^2\theta - 3}{169\cot^2\theta + 1}$

- Ans ☒ 1. $-\frac{83}{21}$
☒ 2. $-\frac{21}{83}$
☒ 3. $\frac{83}{61}$
☒ 4. $\frac{61}{83}$
☒ 5. $\frac{21}{83}$

Q.8 Match the following, according to lettering and numbering (uppercase lettering) as per BIS SP: 46-2003.

Width (W) Capital letters

- (A) 5 (I) W
(B) 6 (II) A, M, Q, V, X, Y
(C) 7 (III) B, D, G, H, K, N, O, P, R, S, T, U and Z
(D) 9 (IV) C, E, F, L

- Ans ☒ 1. A-(IV), B-(III), C-(II), D-(I)
☒ 2. A-(I), B-(III), C-(II), D-(IV)
☒ 3. A-(IV), B-(II), C-(III), D-(I)
☒ 4. A-(IV), B-(III), C-(I), D-(II)

Q.9 If an electric heater draws a current of 5 A when the potential difference across its terminals is 75 V, what current will it draw when the potential difference is increased to 150 V?

- Ans ☒ 1. 30 A
☒ 2. 20 A
☒ 3. 10 A
☒ 4. 15 A

Q.10 The list price of an article is ₹5,000 and a discount of 70% is offered on the list price. What additional discount per cent on the already discounted price must be offered to a customer to bring the net selling price to ₹1,275?

- Ans ☒ 1. 18%
☒ 2. 15%
☒ 3. 16%
☒ 4. 10%

Q.11 $\frac{a^2 + b^2 + ab}{a^3 - b^3}$

- Ans
- ✓ 1. $\frac{1}{2}$
 - ✗ 2. $\frac{2}{3}$
 - ✗ 3. $\frac{3}{5}$
 - ✗ 4. $\frac{2}{5}$

Q.12 The areas of three adjacent faces of a solid cuboid are 162 cm^2 , 144 cm^2 and 50 cm^2 . What is the volume (in cm^3) of the cuboid?

- Ans
- ✗ 1. 1365
 - ✗ 2. 805
 - ✗ 3. 833
 - ✓ 4. 1080

Q.13 How many base units are given in the SI system?

- Ans
- ✗ 1. 9
 - ✗ 2. 3
 - ✗ 3. 11
 - ✓ 4. 7

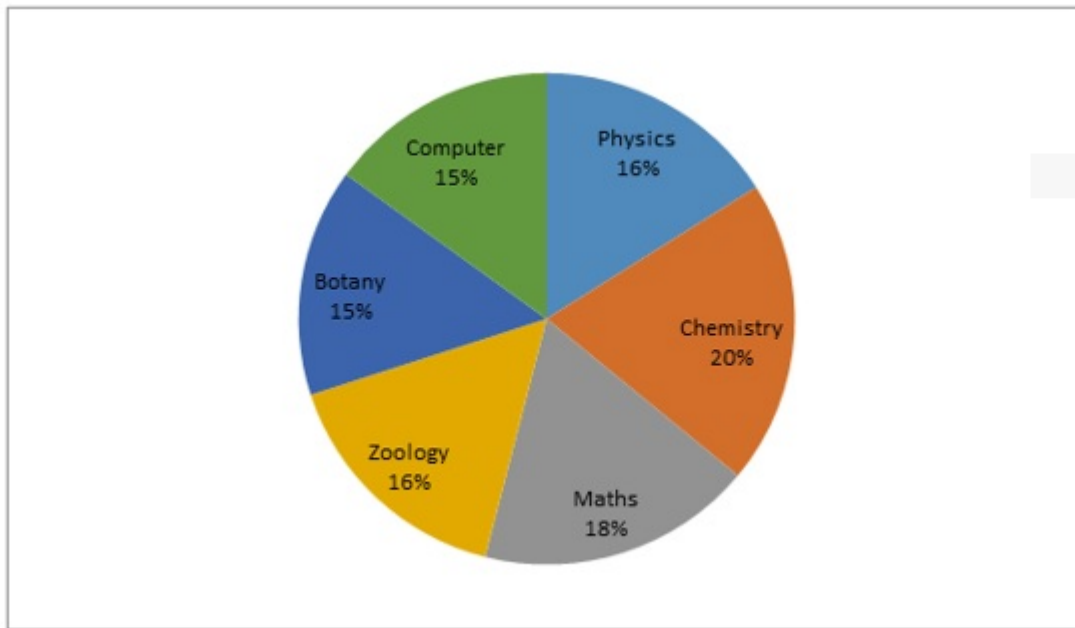
Q.14 What should come in place of the question mark (?) in the given series?

87 118 149 ? 211 242

- Ans
- ✗ 1. 199
 - ✗ 2. 171
 - ✗ 3. 188
 - ✓ 4. 180

Q.15 Study the given pie chart and answer the question that follows.

The given pie chart indicates the percentage-wise breakup of students in different subjects. The total number of students in the college is 5000.



What is the ratio of the students studying Zoology to the students studying Botany?

- Ans ☒ 1. 15 : 14
☒ 2. 16 : 15
☐ 3. 15 : 16
☐ 4. 14 : 15

Q.16 The heat developed in a 5 ohm resistor in 2 minutes when a 2A current passes through it is _____.

- Ans ☐ 1. 1000 J
☐ 2. 500 J
☒ 3. 2400 J
☐ 4. 40 J

Q.17 Two sets of numbers are given below. In each set of numbers, certain mathematical operation(s) on the first number results in the second number. Similarly, certain mathematical operation(s) on the second number results in the third number and so on. Which of the given options follows the same set of operations as in the given sets?

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

11 – 121 – 221 – 171; 27 – 729 – 829 – 779

- Ans ☐ 1. 13 – 169 – 244 – 188
☐ 2. 16 – 196 – 296 – 246
☐ 3. 23 – 529 – 629 – 589
☒ 4. 25 – 625 – 725 – 675

Q.18 Which term describes the maximum amount of solar energy that a photovoltaic (PV) system can convert into electricity under standard test conditions?

- Ans ☐ 1. Effective capacity
☐ 2. Peak load
☒ 3. Nameplate capacity
☐ 4. Rated capacity

Q.19 If the sum of lengths of two adjacent sides of a parallelogram is 12 cm, then the perimeter of the parallelogram is:

- Ans ☐ 1. 36 cm
☐ 2. 34 cm
☐ 3. 20 cm
☒ 4. 24 cm

Q.20 Which of the following is an application of the 5S concept in a workshop?

- Ans ☐ 1. Removing safety protocols to improve efficiency
☐ 2. Increasing the number of safety supervisors
☐ 3. Using extra tools without proper storage
☒ 4. Keeping tools and materials organised for easy access

Q.21 Two containers, one painted black and the other painted white, have been kept in sunlight for one hour in the afternoon. Choose the correct observation.

- Ans ☐ 1. Both containers become equally hot.
☒ 2. The black container becomes hotter than the white container.
☐ 3. There is no effect on either container.
☐ 4. The white container becomes hotter than the black container.

Q.22 The energy possessed by an object by virtue of its motion is known as _____.

- Ans ☐ 1. heat energy
☒ 2. kinetic energy
☐ 3. light energy
☐ 4. potential energy

Q.23 What should come in place of the question mark (?) in the given alpha-numeric series?

2M, 5O, 10R, 13T, 18W, 21Y, ?

- Ans ☐ 1. 26A
☒ 2. 26B
☐ 3. 26C
☐ 4. 24B

Q.24 Which of the following features allows the user to quickly find emails received from a specific sender?

- Ans ☐ 1. Draft
☒ 2. Sort
☐ 3. Filter
☐ 4. Archive

Q.25 Which technology operates through an electrochemical process that transforms the energy stored in hydrogen gas (H_2) and oxygen into electrical power without combustion?

- Ans ☐ 1. Wind power
☐ 2. Solar thermal power
☒ 3. Hydrogen fuel cells
☐ 4. Hydroelectric power

Q.26 Simran rides a distance of 60 m in one minute and then returns along the same straight path. The average velocity of her ride is _____.

- Ans ☐ 1. 1 m/s
☐ 2. 60 m/s
☐ 3. 2 m/s
☒ 4. 0 m/s

Q.27 In a certain code language, 'WILD' is coded as '8164' and 'DOGS' is coded as '3517'. What is the code for 'D' in the given code language?

- Ans ☒ 1. 1
☐ 2. 4
☐ 3. 3
☐ 4. 5

Q.28 If 'A' stands for '÷', 'B' stands for '×', 'C' stands for '+' and 'D' stands for '-', then what will come in place of the question mark (?) in the following equation?

35 A 7 C 9 B 3 D 16 = ?

- Ans ☒ 1. 16
☐ 2. 10
☐ 3. 18
☐ 4. 21

Q.29 In a certain code language, 'LOVE' is coded as '8364' and 'EARS' is coded as '3517'. What is the code for 'E' in the given code language?

- Ans ☐ 1. 7
☐ 2. 4
☐ 3. 5
☒ 4. 3

Q.30 Seema is twice as old as Alka. If nine years is subtracted from Alka's age and six years is added to Seema's age, then Seema will be four times Alka's age. How old was Alka three years ago?

- Ans ☐ 1. 20 years
☐ 2. 16 years
☒ 3. 18 years
☐ 4. 21 years

Q.31 What should come in place of the question mark (?) in the given series?

UT27, RQ25, NM23, ?

- Ans ☒ 1. IH21
☐ 2. IG21
☐ 3. IH29
☐ 4. JH19

Q.32 Find the value of $x^2 + y^2$, given that, $x = 7 + \sqrt{1}$, $y = 7 - \sqrt{1}$.

- Ans ☐ 1. 98
☐ 2. 69
☒ 3. 100
☐ 4. 56

Q.33 What is the main advantage of using solar energy over fossil fuels?

- Ans ☐ 1. Solar energy extraction requires high operational cost when compared to fossil fuels.
☐ 2. Greenhouse gas emission is higher when solar energy is used.
☒ 3. Solar energy is abundantly available and renewable in nature.
☐ 4. Solar energy requires mining and extraction, whereas fossil fuels are free of cost.

Q.34 Match the following.

- (A) Continuous thick lines (P) Projection lines
(B) Hidden lines (Q) Principal lines
(C) Outlines (R) Dotted lines
(D) Extension lines (S) Object lines

Ans **X** 1. A-S, B-R, C-P, D-Q
X 2. A-P, B-R, C-Q, D-S
✓ 3. A-S, B-R, C-Q, D-P
X 4. A-R, B-S, C-Q, D-P

Q.35 If $11.6 : x :: x : 2.9$, and $x > 0$, then find the value of x .

Ans **X** 1. 10.9
X 2. 7.7
✓ 3. 5.8
X 4. 3.1

Q.36 A can complete a piece of work in 18 days. B can complete it in 14 days. With the assistance of C, they completed the work in 7 days. C alone can complete it in _____ days.

Ans **X** 1. 36
✓ 2. 63
X 3. 42
X 4. 64

Q.37 A person saves 50% of his income. If his expenditure is ₹640, then his income (in ₹) is:

Ans **X** 1. 600
X 2. 1,320
✓ 3. 1,280
X 4. 560

Q.38 Mangal starts from Point A and walks 14 m towards north. He takes a right turn, walks 9 m and then takes a right turn, walks 37 m, reaches Point B and stops. Jayanti starts from Point Z which is 15 m towards the east of Point B. She walks 11 m towards east, takes a left turn, walks 42 m, turns left and walks 63 m, turns left and walks 19 m and stops at Point Y. What is the shortest distance between Point A and Point Y? (All turns are 90 degree turns only.)

Ans **X** 1. 25 m
X 2. 31 m
X 3. 26 m
✓ 4. 28 m

Q.39 In a business, Tushar invests in ₹10,000 and Salil invests in ₹20,000. Tushar received 10% of the profit for managing the business and the rest of the profit is divided in the ratio of their capitals. Find Tushar's share of the profit (in ₹) in a profit of ₹14,400.

Ans **X** 1. 5,510
X 2. 5,610
X 3. 5,910
✓ 4. 5,760

Q.40 Aditya is using two thin blankets instead of one thick blanket in winter to keep himself warm because _____.

Ans **X** 1. the friction between the two blankets produces heat
✓ 2. the air trapped between the blankets is a poor conductor of heat
X 3. two blankets are cheaper than one thick blanket
X 4. the blankets are at a higher temperature than the surroundings

Q.41 Which of the following steps is essential when configuring a web browser to enhance both security and privacy for a user?

- Ans
- ☒ 1. Enabling pop-ups for all websites to improve user experience
 - ☒ 2. Setting the homepage to a frequently visited website for quick access
 - ☒ 3. Configuring the browser to block third-party cookies and enabling HTTPS-only mode
 - ☒ 4. Disabling the browser's cache to improve website loading times

Q.42 Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which letter-cluster pair DOES NOT belong to that group?
(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster pair.)

- Ans
- ☒ 1. DL – HB
 - ☒ 2. WE – AU
 - ☒ 3. SA – WQ
 - ☒ 4. MU – QL

Q.43 Select the triad that follows the same pattern as that followed by the two triads given below. Both triads follow the same pattern.

JK - LM - NO
TU - VW - XY

- Ans
- ☒ 1. DE - FB - DF
 - ☒ 2. DE - FG - KL
 - ☒ 3. WE - DF - HI
 - ☒ 4. DE - FG - HI

Q.44 Which of the following represents an item with kinetic energy?

- Ans
- ☒ 1. A stone in motion
 - ☒ 2. A book resting on a table
 - ☒ 3. A compressed spring
 - ☒ 4. An extended rubber band

Q.45 Which key combination is commonly used for copying text in many text editing applications in Windows?

- Ans
- ☒ 1. Ctrl+C
 - ☒ 2. Tab
 - ☒ 3. Ctrl+V
 - ☒ 4. Ctrl+S

Q.46 Which of the following is an example of uniform motion?

- Ans
- ☒ 1. A vehicle moving through a crowded area
 - ☒ 2. A sprinter running a 100-metre race with varying speed
 - ☒ 3. A ball rolling down a slope
 - ☒ 4. A train moving at a constant speed on a straight track

Q.47 Which of the following is an effective way to prevent electrical accidents in the workplace?

- Ans
- ☒ 1. Using water to cool overheated electrical equipment
 - ☒ 2. Using insulated tools and wearing rubber gloves
 - ☒ 3. Working on live wires with bare hands
 - ☒ 4. Ignoring minor electrical faults

Q.48 An object of mass m is made to fall freely from a height h . As the object continues to fall, what will happen to its energy?

- Ans
- ☒ 1. The potential energy and kinetic energy will both increase.
 - ☒ 2. The potential energy would decrease while the kinetic energy would increase.
 - ☒ 3. The kinetic energy and potential energy will not change.
 - ☒ 4. The potential energy would increase while the kinetic energy would decrease.

- Q.49** E, F, G, H, P, Q, and R, are sitting around a circular table facing the centre. F sits fourth to the right of E. Only R sits between F and H. H is NOT an immediate neighbour of E. Only P sits between E and G. How many people sit between G and Q when counted from the right of G?
- Ans ☒ 1. Three
☒ 2. One
☒ 3. Two
☒ 4. Four
-
- Q.50** Jaspreet deposited a sum of ₹12,800 at 5% rate of interest per annum, compounded annually. The total amount (in ₹) received by Jaspreet after 2 years will be:
- Ans ☒ 1. 14,512
☒ 2. 14,112
☒ 3. 14,442
☒ 4. 13,997
-
- Q.51** A boy goes to school at a speed of 5 km/hr. He returns at a speed of 14 km/hr. He takes a total of 8 hours for both going to school and returning. The distance (in km) between his home and school is:
- Ans ☒ 1. 28.6
☒ 2. 29.5
☒ 3. 31
☒ 4. 27
-
- Q.52** Find the value of 96.86572×10^7 .
- Ans ☒ 1. 96,86,57,200
☒ 2. 9,68,65,720
☒ 3. 0.9686572
☒ 4. 96,86,572
-
- Q.53** An electric lamp with a resistance of 35 ohms and a conductor with a resistance of 5 ohms are connected to an 8 V battery in series. Calculate the current flowing through the circuit.
- Ans ☒ 1. 2 A
☒ 2. 1.82 A
☒ 3. 0.2 A
☒ 4. 40 A
-
- Q.54** What is the scientific notation for 55,60,000 km?
- Ans ☒ 1. 55.6×10^4 km
☒ 2. 5.56×10^4 km
☒ 3. 5.56×10^6 km
☒ 4. 556×10^6 km
-
- Q.55** Calculate the energy possessed by an object of mass 10 kg when it is raised to a height of 5 m from the ground. Given: $g = 9.8 \text{ m s}^{-2}$.
- Ans ☒ 1. 450 J
☒ 2. 400 J
☒ 3. 500 J
☒ 4. 490 J
-
- Q.56** What is the first step when encountering a system failure in a workplace?
- Ans ☒ 1. Report the issue and follow the emergency protocol
☒ 2. Immediately restart all systems without inspection
☒ 3. Ignore the failure and continue working
☒ 4. Disconnect all power sources permanently
-

Q.57 Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusion(s) logically follow(s) from the statements.

Statements:

Some ships are boats.
All boats are submarines.
Some submarines are yachts

Conclusions:

- (I) Some yachts are boats.
(II) Some yachts are ships.

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

Q.58 The mode of 4, 6, 4, 6, 5, 7, 5, 7, 4, 6, 7, 6 is:

Ans ✗ 1. 5
✓ 2. 6
✗ 3. 4
✗ 4. 7

Q.59 Akshay gets 2% increase in his sale amount in the first year and 25% in the second year. With that his present sale is ₹1,42,800. What was his sale (in ₹) two years ago?

Ans ✓ 1. 1,12,000
✗ 2. 1,14,240
✗ 3. 1,40,000
✗ 4. 92,000

Q.60 In a certain code language,
'A × B' means 'A is the son 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 M related to T if 'M × N % P + S – T'?

Ans ✗ 1. Brother's wife's father's brother
✗ 2. Brother's wife's father's father
✓ 3. Brother's wife's brother
✗ 4. Brother's wife's father

Q.61 What is the immediate action to take when a fire breaks out in a workplace?

Ans ✓ 1. Raise the alarm and evacuate the area
✗ 2. Try to put it out using water without knowing the fire type
✗ 3. Gather near the fire to observe the situation
✗ 4. Ignore the fire and continue working

Q.62 The resistances of 30 ohm, 20 ohm and 60 ohm are connected in parallel. The equivalent resistance of the combination is _____.

Ans ✗ 1. 12 ohm
✓ 2. 10 ohm
✗ 3. 0.1 ohm
✗ 4. 110 ohm

Q.63 Each of I, J, K, L, U, V and W has an exam on a different day of a week starting from Monday and ending on Sunday of the same week. J has the exam on Friday. Only two people have the exam between V and J. Only four people have the exam between L and V. U has the exam immediately after W. K does not have the exam on Monday. How many people have the exam before K and after I?

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

Q.64 The resistance of a metallic wire is R. If the radius of the metallic wire is reduced to half of its initial value while keeping all other parameters the same, the new resistance becomes _____.

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

Q.65 In a certain code language, 'BORE' is coded as '8624' and 'TABS' is coded as '3217'. What is the code for 'B' in the given code language?

- Ans ☒ 1. 1
☒ 2. 7
☒ 3. 8
☒ 4. 2

Q.66 Two trains of lengths 155 m and 160 m are running at speeds of 74 km/hr and 52 km/hr, respectively, on parallel tracks in opposite directions. In how many seconds will they pass each other?

- Ans ☒ 1. 7 seconds
☒ 2. 18 seconds
☒ 3. 14 seconds
☒ 4. 9 seconds

Q.67 Select the pair that follows the same pattern as the one followed by the two sets of pairs given below. Both pairs follow the same pattern.

BSR : QW
LOB : QMG

- Ans ☒ 1. QGT : TDW
☒ 2. RWH : WUM
☒ 3. HVD : LTH
☒ 4. KRW : NPZ

Q.68 Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which letter-cluster pair DOES NOT belong to that group??
(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster pair)

- Ans ☒ 1. SL – NP
☒ 2. MF – HJ
☒ 3. WP – RS
☒ 4. DW – YA

Q.69 Refer to the following letter, number and symbol series and answer the question that follows. Counting to be done from left to right only.

(Left) K A T & 4 @ Y # 6 K & 2 R % 7 D 3 5 E * S (Right)

How many such symbols are there which are immediately preceded by a number and also immediately followed by a letter?

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

Q.70 In winters, people wear jacket because ____.

- Ans ☒ 1. jacket allows the heat to flow from our body to surroundings
☒ 2. fabric of jacket is an insulator of heat so it traps body heat
☒ 3. it looks good
☒ 4. fabric of jacket is a conductor of heat so it traps body heat

Q.71 Which of the following options is correct when two objects at the same temperature are kept in contact with each other?

- Ans ☒ 1. Heat is transferred from object 1 to object 2.
☒ 2. Both objects transfer heat to each other.
☒ 3. Heat is transferred from object 2 to object 1.
☒ 4. No heat is transferred.

Q.72 How fast should a cat of mass 15 kg run in order to have a kinetic energy of 120 J?

- Ans ☒ 1. 0.16 m/s
☒ 2. 40 m/s
☒ 3. 4 m/s
☒ 4. 16 m/s

Q.73 Two sets of numbers are given below. In each set of numbers, certain mathematical operation(s) on the first number results in the second number. Similarly, certain mathematical operation(s) on the second number results in the third number and so on. Which of the given options follows the same set of operations as in the given sets?

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

24 – 48 – 108 – 36; 18 – 36 – 96 – 32

- Ans ☒ 1. 82 – 139 – 234 – 78
☒ 2. 48 – 96 – 156 – 52
☒ 3. 53 – 106 – 166 – 55
☒ 4. 132 – 264 – 444 – 138

Q.74 In a clearance sale of electronic items, an item whose marked price was ₹12,225 is now sold for ₹10,758, d% is the discount percentage on the item. The value of d is:

- Ans ☒ 1. 12%
☒ 2. 11%
☒ 3. 14%
☒ 4. 13%

Q.75 In Engineering Drawing, principal lines are drawn to represent _____.

- Ans ☒ 1. wide lines along which the prints are trimmed
☒ 2. interior or hidden edges
☒ 3. axes of cylindrical, conical or spherical objects
☒ 4. visible edges and surface boundaries of objects

Q.76 What should come in place of the question mark (?) in the given series?

17 29 41 59 77 101 125 ?

- Ans ☐ 1. 161
☐ 2. 149
☐ 3. 175
☒ 4. 155

Q.77 Eight people are sitting in two parallel rows containing 4 people each in such a way that there is equal distance between adjacent persons. In row 1 – A, B, C and D are seated and all of them are facing south. In row 2 – P, Q, R and S are seated and all of them are facing north. Thus each person faces another person from the other row.
Only three people sit to the right of R. D faces the person who is the immediate neighbour of S and P. C faces the person who sits second to the left of S. R does not face A.
Who amongst the following faces B?

- Ans ☒ 1. R
☐ 2. S
☐ 3. P
☐ 4. Q

Q.78 The taxi charges in a city consist of a fixed charge together with the charge per kilometre for the distance covered. For a distance of 35 km, the charge paid is ₹375 and for a distance of 48 km, the charge paid is ₹427. Find the fixed charges and the charge per km (in ₹), respectively.

- Ans ☐ 1. 227 and 5
☒ 2. 235 and 4
☐ 3. 275 and 3
☐ 4. 220 and 6

Q.79 A is thrice as good a workman as B and together they can finish a piece of work in 12 days. In how many days can A alone finish the work?

- Ans ☐ 1. 18 days
☒ 2. 16 days
☐ 3. 12 days
☐ 4. 14 days

Q.80 What will come in place of the question mark (?) in the following equation, if '+' and '-' are interchanged and 'x' and '÷' are interchanged?

$$32 + 28 \div 3 \times 4 - 15 = ?$$

- Ans ☐ 1. 29
☒ 2. 26
☐ 3. 20
☐ 4. 32

Q.81 Which of the following benefits can be obtained by conducting an energy audit in a commercial building?

- Ans ☒ 1. Identification of opportunities for energy savings
☐ 2. Increasing the cost of energy bills
☐ 3. Reduced market value of building
☐ 4. Reduction in price of energy per its unit usage

Q.82 What is the amount of work done in moving a charge of 6 C from a point with a potential of 120 V to a point with a potential of 140 V?

- Ans ☐ 1. 3.33 J
☒ 2. 120 J
☐ 3. 720 J
☐ 4. 840 J

Q.83 In this question, a statement is given followed by two courses of action, numbered I and II. You must assume everything in the statement to be true, and on the basis of the information given in the statement, decide which of the given courses of action logically follow(s) for pursuing.

Statement:

A major fire broke out this afternoon in a mall in Jaipur, causing several casualties amongst the people present inside.

Courses of Action:

- I. The police must check to see if the fire safety regulations were followed by the mall.
- II. Traffic police must divert traffic away from the fire site, to enable evacuation of people.

- Ans
- ☒ 1. Only II follows.
 - ☒ 2. Neither I nor II follows.
 - ☒ 3. Both I and II follow.
 - ☒ 4. Only I follows.

Q.84 A line in an engineering drawing is the _____.

- Ans
- ☒ 1. closed curve where all points are the same distance from a fixed centre point
 - ☒ 2. three-dimensional object with length, breadth, and height
 - ☒ 3. dimensionless location in space or on a drawing sheet that has no width, height, or depth
 - ☒ 4. one-dimensional figure, which has length but no width

Q.85 The HCF of two numbers is 62, and the other two factors of the LCM of these factors are 7 and 9. Which of the options given below can be a possible value of the smaller of the two numbers?

- Ans
- ☒ 1. 433
 - ☒ 2. 434
 - ☒ 3. 431
 - ☒ 4. 432

Q.86 How does turning off unused electrical devices contribute to energy conservation?

- Ans
- ☒ 1.
 - ☒ 2.
 - ☒ 3.
 - ☒ 4.

Q.87 In Engineering Drawing, which of the following is the correct definition of the term 'dimension'.

- Ans
- ☒ 1. A numerical value expressed in an appropriate unit of measurement
 - ☒ 2. A continuous thick or wide line along which the prints are trimmed
 - ☒ 3. The thickness of the line of a letter
 - ☒ 4. A line that is drawn to make a section evident

Q.88 Which of the following is an INCORRECT formula for power?

- Ans
- ☒ 1. VI
 - ☒ 2. I^2Rt
 - ☒ 3. I^2R
 - ☒ 4. V^2/R

Q.89 Ampere is the SI unit of _____.

- Ans
- ☒ 1. mass
 - ☒ 2. electric charge
 - ☒ 3. electric current
 - ☒ 4. electric power

Q.90 Which of the following groups represents conductors of heat?

- Ans ☒ 1. Wood, paper, silver
☒ 2. Paper, copper, plastic
☒ 3. Aluminium, silver, copper
☒ 4. Aluminium, plastic, wood

Q.91 The median of the data 2, 6, 4, 8, 1, 2, 5, 8, 9, 10, 12, 9, 7, 8, 3, 1, 0, 9, 2, 5 is _____.

- Ans ☒ 1. 5
☒ 2. 5.5
☒ 3. 6.5
☒ 4. 6

Q.92 What is the main function of the Transport Layer in the internet architecture?

- Ans ☒ 1. Routing of packets
☒ 2. Data encapsulation
☒ 3. IP addressing
☒ 4. Reliable data transfer and error correction

Q.93 How do we find absolute error?

- Ans ☒ 1. Absolute error = Actual value + observed value
☒ 2. Absolute error = Actual value/observed value
☒ 3. Absolute error = Actual value – observed value
☒ 4. Absolute error = Actual value × observed value

Q.94 Alloys are preferred over pure metals in electrical heating devices:

- Ans ☒ 1. because the resistivity of an alloy is lower than that of its constituent metals.
☒ 2. because the resistivity of an alloy is generally higher than its constituent metals.
☒ 3. because the elasticity of an alloy is higher than that of its constituent metals.
☒ 4. because alloys oxidise (burn) readily at high temperatures.

Q.95 Which of the following is NOT one of the 5S principles?

- Ans ☒ 1. Supervise
☒ 2. Standardise
☒ 3. Sustain
☒ 4. Sort

Q.96 How many significant figures are there in 4.700 m?

- Ans ☒ 1. 3
☒ 2. 4
☒ 3. 2
☒ 4. 1

Q.97 Which of the following correctly describes the role of DNS (Domain Name System) in internet architecture?

- Ans ☒ 1. DNS routes data packets to their destination across the internet.
☒ 2. DNS translates IP addresses into domain names to make them easier to remember.
☒ 3. DNS translates domain names into IP addresses to allow browsers to locate web servers.
☒ 4. DNS secures the data transmitted over the internet by encrypting it.

Q.98 Which of the following is the temperature range in a clinical thermometer?

- Ans ☒ 1. 10°C to 45°C
☒ 2. 31°C to 44°C
☒ 3. 30°C to 43°C
☒ 4. 35°C to 42°C

Q.99 Which of the following correctly describes the direction of electric current?

- Ans ✓ 1. Opposite to the direction of electron flow
✗ 2. From low potential to high potential
✗ 3. Same as the direction of electron flow
✗ 4. Opposite to the direction of positive charge flow

Q.100 Rakesh starts a business with a capital of ₹2,50,000. He incurs a loss of 5% during the first year. However, he makes a profit of 4% on his remaining investment during the second year. Finally, he makes a profit of 20% on his new capital during the third year. Find his total profit at the end of three years.

- Ans ✗ 1. ₹46,500
✗ 2. ₹46,600
✓ 3. ₹46,400
✗ 4. ₹46,700

Section : Part B (Wireman)

Q.101 The SI unit of 'ultimate stress' is _____.

- Ans ✓ 1. pascal (Pa)
✗ 2. newton (N)
✗ 3. newton per meter (N/m)
✗ 4. joule per square meter (J/m²)

Q.102 The voltage regulation in percentage for transformer is given by:

- Ans ✗ 1. Voltage regulation = $\frac{V_{\text{no load}} - V_{\text{load}}}{V_{\text{load}}} \times 100$
✓ 2. Voltage regulation = $\frac{V_{\text{no load}} - V_{\text{load}}}{V_{\text{no load}}} \times 100$
✗ 3. Voltage regulation = $\frac{V_{\text{load}} - V_{\text{no load}}}{V_{\text{load}}} \times 100$
✗ 4. Voltage regulation = $\frac{V_{\text{load}} - V_{\text{no load}}}{V_{\text{no load}}} \times 100$

Q.103 Which of the following is a primary difference between a primary and a secondary electrochemical cell?

- Ans ✗ 1. A secondary cell produces more energy than a primary cell.
✗ 2. A primary cell can be recharged, while a secondary cell cannot be recharged.
✓ 3. A primary cell cannot be recharged, while a secondary cell can be recharged.
✗ 4. There is no difference between primary and secondary cells.

Q.104 निम्नलिखित में से कौन-सा, वायरिंग संस्थापनों में कंड्यूट का सही अनुप्रयोग नहीं है? **HINDI**

- Ans ✓ 1. सर्किट की वोल्टता को कम करना
✗ 2. दोष की स्थिति में आग को फैलने से रोकना
✗ 3. वायरिंग को यांत्रिक क्षति से बचाना
✗ 4. तारों को व्यवस्थित करना और विद्युत रव को कम करना

Q.105 Two coils, A and B, have self-inductances of 120 μH and 300 μH, respectively. When a current of 1 A flows through coil A, it induces a flux linkage of 100 μWb turns in coil B. What is the mutual inductance between the coils?

- Ans ✗ 1. 50 μH
✓ 2. 100 μH
✗ 3. 120 μH
✗ 4. 300 μH

Q.106 Which of the following is INCORRECT about line standard?

- Ans ✓ 1. More accurate due to line thickness
✗ 2. Subject to parallax error
✗ 3. Quick measurements over a wide range
✗ 4. Used to measure the distance between two engraved lines

Q.107 While performing short circuit test on a transformer to determine its parameter, instruments are placed on the:

- Ans ✗ 1. low voltage side, while the high voltage side is short circuit
✓ 2. high voltage side, while the low voltage side is short circuit
✗ 3. high voltage side, while the low voltage side is open circuit
✗ 4. low voltage side, while the high voltage side is open circuit

Q.108 Match the following designations of sheets with their respective trimmed sizes in length and breadth.

Designation Trimmed Size

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

- Ans ✓ 1. A-S ; B-R ; C-Q ; D-P
✗ 2. A-Q ; B-R ; C-S ; D-P
✗ 3. A-S ; B-P ; C-Q ; D-R
✗ 4. A-P ; B-R ; C-Q ; D-S

Q.109 Which of the following types of resistors is preferred for high-current applications?

- Ans ✗ 1. Film resistor
✓ 2. Wire-wound resistor
✗ 3. Variable resistor
✗ 4. Carbon composition resistor

Q.110 Which of the following care and maintenance of a marking table is INCORRECT?

- Ans ✗ 1. The marking table should be protected from damage.
✗ 2. The marking table should be protected from rust.
✗ 3. After use, the marking table should be cleaned with a soft cloth.
✓ 4. The surface of the marking table should not be given a thin layer of oil.

Q.111 What is the primary goal of the 5S concept?

- Ans ✗ 1. To replace traditional safety measures
✗ 2. To increase the number of safety regulations
✓ 3. To improve workplace organisation and efficiency
✗ 4. To eliminate the need for maintenance

Q.112 In the context of earthing system measurement, what does 'Earth resistance' refer to?

- Ans ✗ 1. The resistance between any two points of the ground with a distance of 1 metre
✗ 2. The resistance between the live wire and the earth
✓ 3. The ability of the ground to resist current flow
✗ 4. The voltage required to activate the earthing system

Q.113 कंट्रोल पैनल वायरिंग में DIN रेल का उपयोग करने का प्राथमिक उद्देश्य क्या है? **HINDI**

- Ans ✗ 1. विद्युत धारा के लिए एक पथ प्रदान करना
✓ 2. विद्युत घटकों को सुरक्षित रूप से व्यवस्थित और आरोपित करना
✗ 3. विद्युत घटकों की बिजली खपत को कम करना
✗ 4. घटकों की वोल्टता रेटिंग को बढ़ाना

Q.114 Which of the following is a key electrical safety tip in a workshop?

- Ans
- ☒ 1. Operate machines with wet hands
 - ☒ 2. Ignore frayed wires if the device is still working
 - ☒ 3. Use water to clean electrical panels
 - ☒ 4. Ensure electrical equipment is properly grounded

Q.115 संयोजक ब्लॉकों के निर्माण के लिए निम्नलिखित में से किस सामग्री का उपयोग किया जाता है? **HINDI**

- Ans
- ☒ 1. ऐलुमिनियम
 - ☒ 2. तांबा
 - ☒ 3. पीतल
 - ☒ 4. पॉलीकार्बोनेट

Q.116 नियंत्रण पैनल सर्किट में, रिले पर NO (Normally Open - सामान्य रूप से खुला) संपर्क क्या दर्शाता है? **HINDI**

- Ans
- ☒ 1. रिले के ऊर्जाविहीन होने पर संपर्क बंद हो जाते हैं।
 - ☒ 2. रिले के ऊर्जाविहीन (de-energised) होने पर संपर्क बंद होते हैं।
 - ☒ 3. संपर्क ऊर्जावित्त (energised) और ऊर्जाविहीन दोनों अवस्थाओं में खुले होते हैं।
 - ☒ 4. रिले के ऊर्जाविहीन होने पर संपर्क खुले होते हैं।

Q.117 नियंत्रण पैनल में PVC चैनल का क्या कार्य होता है? **HINDI**

- Ans
- ☒ 1. विद्युत परिपथों के लिए भू-संपर्कन चालक के रूप में कार्य करना
 - ☒ 2. सुरक्षा के लिए उच्च-वोल्टेज ट्रांसफॉर्मर को परिवर्द्ध करना
 - ☒ 3. वेंटिलेशन स्लॉट के साथ विद्युत वायरिंग के लिए मार्ग प्रदान करना
 - ☒ 4. कठोर परिवेश में आउटडोर केबल संस्थापनों को सपोर्ट करना

Q.118 Sine bars are used when a high degree of accuracy less than _____ is needed for measuring angles.

- Ans
- ☒ 1. 1 degree
 - ☒ 2. 30 degrees
 - ☒ 3. 1 minute
 - ☒ 4. 30 minutes

Q.119 What is the importance of following the manufacturer's guidelines for DC motor maintenance?

- Ans
- ☒ 1. Ensures safe and efficient operation
 - ☒ 2. Modifies the motor's design
 - ☒ 3. Increases the motor's power output
 - ☒ 4. Saves time and resources

Q.120 What is the objective of testing an earthing system?

- Ans
- ☒ 1. To test the current capacity of the earthing system
 - ☒ 2. To check the voltage levels
 - ☒ 3. To measure the insulation resistance of cables
 - ☒ 4. To ensure the system has a low resistance path to the earth

Q.121 What is the term used to describe programs that distinguish between uppercase and lowercase letters, treating "yes" and "YES" as different inputs?

- Ans
- ☒ 1. Case-insensitive
 - ☒ 2. Numerical
 - ☒ 3. Case-sensitive
 - ☒ 4. Alphabetical

Q.122 घरेलू अधिष्ठापन में, 1.5 का विविधता गुणक क्या दर्शाता है? **HINDI**

- Ans
- ☒ 1. अधिकतम मांग, कुल संयोजित भार से 1.5 गुना कम है।
 - ☒ 2. अधिकतम मांग, संयोजित भार से 1.5 गुना है।
 - ☒ 3. भार सभी परिपथों में समान रूप से वितरित किया जाता है।
 - ☒ 4. युक्तियों का सदैव एक साथ उपयोग किया जाएगा।

Q.123 According to Ohm's Law, how is current related to voltage and resistance?

- Ans ☒ 1. It is directly proportional to voltage and inversely proportional to resistance.
☒ 2. It has no relation with voltage or resistance.
☒ 3. It is directly proportional to voltage and resistance.
☒ 4. It is inversely proportional to voltage and resistance.

Q.124 Connection of voltage transformer and current transformer across line are _____, respectively.

- Ans ☒ 1. series and parallel
☒ 2. series and series
☒ 3. parallel and series
☒ 4. parallel and parallel

Q.125 What is the primary reason for conducting a vehicle road test?

- Ans ☒ 1. To test how fast the vehicle can go
☒ 2. To avoid the need for inspections
☒ 3. To increase fuel efficiency
☒ 4. To ensure the vehicle is functioning safely and correctly

Q.126 A statement and conclusion for pictorial drawing are given below. Determine the logical relationship between them.

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

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

- Ans ☒ 1. The conclusion does not logically follow from the statement.
☒ 2. The conclusion is partially supported by the statement.
☒ 3. The conclusion is unrelated to the statement.
☒ 4. The conclusion logically follows from the statement.

Q.127 In a logic circuit, three SPST (Single Pole Single Throw) switches are used to implement a logic gate. The switches are connected in series. What is the output of the circuit if all switches are closed?

- Ans ☒ 1. Undefined
☒ 2. 1
☒ 3. The output will depend on the type of gate used
☒ 4. 0

Q.128 Which of the following statements is/are true about Non-Functional Dimensions (NF) in engineering drawing?

Statement 1: Non-functional Dimensions are shown without limits, as they do not affect the functionality of the component or space.

Statement 2: Non-Functional Dimensions are typically used for reference purposes only, and do not impact the assembly or performance of the component or space.

- Ans ☒ 1. Only statement 2 is true
☒ 2. Only statement 1 is true
☒ 3. Both statements are true
☒ 4. Neither statement is true

Q.129 In a transformer, insulation resistance test is carried out to measure:

- Ans ☒ 1. frequency
☒ 2. magnetic flux
☒ 3. the resistance of the insulation between windings and core
☒ 4. the inductance between different parts of the transformer

Q.130 Why do cars have treaded tyres?

- Ans ✓ 1. To increase friction and grip on the road
✗ 2. To reduce weight
✗ 3. To decrease friction
✗ 4. To increase speed

Q.131 उच्चतर विविधता गुणक का घरेलू तार-स्थापन प्रणाली पर क्या प्रभाव पड़ता है? **HINDI**

- Ans ✗ 1. यह सुनिश्चित करता है कि उपकरणों का उपयोग एक साथ किया जाए।
✗ 2. यह प्रणाली के कुल लोड में वृद्धि करता है।
✓ 3. यह तार-स्थापन के आवश्यक आकार और परिपथ सुरक्षा को कम करता है।
✗ 4. यह समग्र विद्युत खपत को कम करने में सहायता करता है।

Q.132 An angle greater than 180 degrees is referred to as _____.

- Ans ✗ 1. a right angle
✗ 2. an acute angle
✗ 3. an obtuse angle
✓ 4. a reflex angle

Q.133 _____ recommend(s) 20 mm wide margins for sheet sizes AO and A1 in engineering drawings.

- Ans ✓ 1. Borders and frames: SP: 46 (2003)
✗ 2. Geographic coordinate systems
✗ 3. Custom grids
✗ 4. Grid reference system

Q.134 दो स्थानों से लाइट को नियंत्रित करने के लिए निम्नलिखित में से कौन-सी स्विचिंग व्यवस्था अनुशंसित की जाती है? **HINDI**

- Ans ✗ 1. सिंगल-पोल स्विच (Single-pole switch)
✗ 2. पुश-बटन स्विच (Push-button switch)
✗ 3. डिमर स्विच (Dimmer switch)
✓ 4. द्वि-पथी स्विच (Two-way switch)

Q.135 Which device is used to protect against electric shocks and fires caused by earth leakage currents?

- Ans ✓ 1. ELCB
✗ 2. MCCB
✗ 3. MCB
✗ 4. ECB

Q.136 घरेलू संस्थापनों में शाखा परिपथों के लिए लोड आवश्यकताओं के प्राक्कलन में, जब वास्तविक लोड मान ज्ञात नहीं होते हैं, तो विशिष्ट रूप से किस पर विचार किया जाता है? **HINDI**

- Ans ✓ 1. प्रकाश व्यवस्था और उपकरणों के लिए मानक लोड अभिधारणाओं
✗ 2. केवल हैवी-ड्यूटी उपकरणों की वाट क्षमता
✗ 3. मुख्य परिपथ वियोजक की अधिकतम क्षमता
✗ 4. विविधता के बिना सभी उपकरणों की कुल धारा

Q.137 A 100-mm centre-punch could have a 10-mm diameter body and a 6-mm diameter point ground to an angle of _____.

- Ans ✗ 1. 120°
✓ 2. 90°
✗ 3. 60°
✗ 4. 30°

Q.138 Which type of electrolytic capacitor is generally more stable and has better performance in small sizes?

- Ans ✗ 1. Tantalum capacitor
✗ 2. Mica capacitor
✓ 3. Aluminium capacitor
✗ 4. Ceramic capacitor

Q.139 Transformer oil should have _____ dielectric strength and _____ viscosity.

- Ans
- ☐ 1. high; high
 - ☐ 2. low; high
 - ☒ 3. high; low
 - ☐ 4. low; low

Q.140 रिले और संपर्कित्र (contactor) के बीच निर्माण संबंधी प्राथमिक अंतर क्या होता है? **HINDI**

- Ans
- ☐ 1. संपर्कित्र आमतौर पर प्लास्टिक से बने होते हैं, जबकि रिले धातु से बने होते हैं।
 - ☐ 2. रिले सदैव परिबद्ध रहते हैं, जबकि संपर्कित्र परिबद्ध नहीं रहते।
 - ☒ 3. रिले में संपर्कित्र की तुलना में छोटे संपर्क (contacts) होते हैं।
 - ☐ 4. इनके निर्माण में कोई अंतर नहीं होता है।

Q.141 The Insulation Resistance value for a transformer is measured in:

- Ans
- ☒ 1. megaohms
 - ☐ 2. ohms
 - ☐ 3. KVA
 - ☐ 4. kiloohms

Q.142 Why is a DC compound generator preferred for industrial loads?

- Ans
- ☐ 1. It has no losses.
 - ☐ 2. It is easier to manufacture.
 - ☐ 3. It provides better efficiency.
 - ☒ 4. It has constant voltage characteristics.

Q.143 What is the purpose of measuring the electrode resistance during the installation of an earthing system?

- Ans
- ☐ 1. To measure the insulation resistance of the system
 - ☐ 2. To determine the electrical load capacity of the system
 - ☒ 3. To ensure the earthing system has low impedance for fault current dissipation
 - ☐ 4. To ensure proper grounding of electrical equipment

Q.144 What is the primary purpose of preventive maintenance?

- Ans
- ☐ 1. To increase the workload of employees
 - ☒ 2. To reduce unexpected equipment failures
 - ☐ 3. To delay repairs until breakdowns occur
 - ☐ 4. To eliminate the need for regular inspections

Q.145 What should be the position of the 'OFF' marking on a fireman's switch?

- Ans
- ☒ 1. At the top
 - ☐ 2. In the centre
 - ☐ 3. At the bottom
 - ☐ 4. On the side

Q.146 उच्च लोड आकलन, वायरिंग घटकों के चयन को कैसे प्रभावित करता है? **HINDI**

- Ans
- ☐ 1. परिपथ-वियोजक की आवश्यकता को कम करता है
 - ☐ 2. वितरण-बोर्ड की आवश्यकता को समाप्त करता है
 - ☒ 3. उच्च रेटिंग वाले मुख्य स्विच और सुरक्षात्मक उपकरणों की आवश्यकता होती है
 - ☐ 4. पतली केबल के उपयोग की अनुमति देता है

Q.147 In pipe earthing, what is used to connect the earthing conductor to the pipe?

- Ans
- ☒ 1.
 - ☐ 2.
 - ☐ 3.
 - ☐ 4.

Q.148 Which of the following conversions are correct?

- Ans ☒ 1. $1\text{ L} = 1000\text{ dm}^3$ and $1\text{ mL} = 1000\text{ cm}^3$
☒ 2. $1000\text{ L} = 1\text{ dm}^3$ and $1000\text{ mL} = 1\text{ cm}^3$
☒ 3. $1\text{ L} = 1\text{ dm}^3$ and $1\text{ mL} = 1\text{ cm}^3$
☒ 4. $1000\text{ L} = 1\text{ dm}^3$ and $1\text{ mL} = 1000\text{ cm}^3$

Q.149 Which option shows the correct answer when 27°C is converted to the kelvin scale?

- Ans ☒ 1. -300 K
☒ 2. 246 K
☒ 3. 300 K
☒ 4. -246 K

Q.150 औद्योगिक परिवेश में नियंत्रण वायरिंग (control wiring) के लिए निम्नलिखित में से किस प्रकार के केबल को इसकी नम्यता और परिस्थिति गुणकों के प्रति प्रतिरोध के कारण प्राथमिकता दी जाती है? **HINDI**

- Ans ☒ 1. PVC रोषित केबल (PVC insulated cables)
☒ 2. कवचित केबल (Armoured cables)
☒ 3. हाई-टेंशन केबल (High-tension cables)
☒ 4. निम्न-वोल्टता केबल (Low-voltage cables)

Q.151 Which of the following screwdrivers has cross-shaped tips that are unlikely to slip from the cruciform slots in Philips recessed head screws?

- Ans ☒ 1. Stumpy screwdriver
☒ 2. Offset screwdriver
☒ 3. Cross-recess screwdriver
☒ 4. Ratchet screwdriver

Q.152 NBC के अनुसार आवासीय कमरों में सामान्य प्रकाश व्यवस्था के लिए अनुशंसित प्रदीप्ति स्तर कितना है? **HINDI**

- Ans ☒ 1. 200 लक्स
☒ 2. 500 लक्स
☒ 3. 50 लक्स
☒ 4. 100 लक्स

Q.153 A rectangular floor measuring $10\text{ m} \times 8\text{ m}$ is to be tiled. If each tile covers 0.25 m^2 , how many tiles are needed?

- Ans ☒ 1. 200
☒ 2. 300
☒ 3. 320
☒ 4. 250

Q.154 For which of the following calipers, a screw and nut are provided for opening and closing the caliper legs?

- Ans ☒ 1. Spring joint calipers
☒ 2. Firm joint calipers
☒ 3. Simple calipers
☒ 4. Leg and point calipers

Q.155 What is the primary cause of sudden insulation resistance failure in a DC generator?

- Ans ☒ 1. Moisture ingress or contamination
☒ 2. High ambient temperature
☒ 3. Increase in rotational speed
☒ 4. Excessive armature current

Q.156 In a circuit with a NTC type thermistor and a fixed resistor connected in series connected to a DC power supply, what will happen to the output voltage if there is a rise in temperature?

- Ans
- ✓ 1. The output voltage will increase.
 - ✗ 2. The output voltage will remain constant.
 - ✗ 3. The output voltage will fluctuate depending on the resistor value.
 - ✗ 4. The output voltage will decrease.

Q.157 What is the primary purpose of shielding in electrical cables?

- Ans
- ✗ 1. To increase the voltage capacity of the cable
 - ✗ 2. To increase the current-carrying capacity of the cable
 - ✓ 3. To protect the cable from external electromagnetic interference
 - ✗ 4. To prevent heat loss from the cable

Q.158 The energy stored (W) in an inductor is given by the formula _____, where C = Capacitance, V= Voltage, I = Current, and L= inductance.

- Ans
- ✗ 1. $W = \frac{1}{2} VI$
 - ✓ 2. $W = \frac{1}{2} LI^2$
 - ✗ 3. $W = LI$
 - ✗ 4. $W = \frac{1}{2} CV^2$

Q.159 Which DC motor type provides the best speed regulation under varying loads?

- Ans
- ✗ 1. DC Series Motor
 - ✗ 2. Cumulative Motor
 - ✓ 3. DC Shunt Motor
 - ✗ 4. Permanent Magnet DC Motor

Q.160 Which component in an MCB is responsible for detecting a short circuit?

- Ans
- ✗ 1. Bimetallic strip
 - ✓ 2. Solenoid
 - ✗ 3. Arc chute
 - ✗ 4. Handle

Q.161 घटकों के बीच विद्युत कनेक्शन प्रदान करने के लिए DIN रेल के साथ सामान्यतः किस प्रकार के कनेक्टर का उपयोग किया जाता है? **HINDI**

- Ans
- ✗ 1. सोल्डर कनेक्टर (Solder connectors)
 - ✗ 2. वायर नट (Wire nuts)
 - ✓ 3. टर्मिनल ब्लॉक (Terminal blocks)
 - ✗ 4. प्लग-इन कनेक्टर (Plug-in connectors)

Q.162 Which of the following types of DC motor is commonly used in electric traction applications such as trains and trams?

- Ans
- ✗ 1. Permanent Magnet DC Motor
 - ✗ 2. DC Compound Motor
 - ✓ 3. DC Series Motor
 - ✗ 4. DC Shunt Motor

Q.163 What is the unit of measurement for earth fault loop impedance?

- Ans
- ✗ 1. Amperes (A)
 - ✓ 2. Ohms (Ω)
 - ✗ 3. Volts (V)
 - ✗ 4. Farads (F)

Q.164 Which electrical component is used to perform a polarity test to check whether or not the switches are connected in phase/live cable?

- Ans
- ☐ 1. Megger
 - ☐ 2. Ammeter
 - ☐ 3. Multimeter
 - ☒ 4. Test lamp

Q.165 Which of the following is a major risk associated with fuel spillage?

- Ans
- ☒ 1. Fire hazards and environmental contamination
 - ☐ 2. Better lubrication for workshop floors
 - ☐ 3. Increased productivity
 - ☐ 4. Reduced need for ventilation

Q.166 In crane and hoist applications, why is a DC series motor preferred over a DC shunt motor?

- Ans
- ☐ 1. It requires minimal maintenance compared to other motors.
 - ☐ 2. It maintains constant speed regardless of load variations.
 - ☒ 3. It provides a high starting torque, which is required for lifting loads.
 - ☐ 4. It consumes less power at no load.

Q.167 What are the two types of mica capacitors?

- Ans
- ☐ 1. Ceramic and film capacitors
 - ☐ 2. Electrolytic and paper capacitors
 - ☐ 3. Variable and fixed capacitors
 - ☒ 4. Stacked foil and silvered mica capacitors

Q.168 Natural rubber is soft at high temperatures and brittle at low temperatures; hence raw rubber is heated with sulphur and other additives at a temperature range between 373 – 415 K to make it strong. This process is called _____ of rubber.

- Ans
- ☒ 1. vulcanisation
 - ☐ 2. molding
 - ☐ 3. latex
 - ☐ 4. extrusion

Q.169 What is the maximum total current allowed in a ring circuit as per IEE regulations?

- Ans
- ☐ 1.
 - ☐ 2.
 - ☒ 3.
 - ☐ 4.

Q.170 Read the Assertion (A) and Reason (R) carefully, and select the correct option.

Assertion (A): The earth resistance must be kept as low as possible to ensure that the earthing system is effective during fault conditions.

Reason (R): A low resistance allows fault current to flow easily into the ground, ensuring safety by preventing electrical hazards.

- Ans
- ☒ 1. Both Assertion (A) and Reason (R) are correct, and the reason correctly explains the assertion.
 - ☐ 2. Assertion (A) is incorrect, but Reason (R) is correct.
 - ☐ 3. Both Assertion (A) and Reason (R) are correct, but the reason does not correctly explain the assertion.
 - ☐ 4. Assertion (A) is correct, but Reason (R) is incorrect.

Q.171 Which of the following actions is a part of the emergency response team's responsibilities during an active emergency?

- Ans
- ☐ 1. Preparing reports on emergency incidents
 - ☒ 2. Rescuing persons in immediate danger
 - ☐ 3. Conducting routine safety checks
 - ☐ 4. Scheduling regular evacuation drills

Q.172 The accuracy of measurement by a try square is about:

- Ans
- ☐ 1. 0.02 mm per 10 mm length
 - ☐ 2. 0.001 mm per 10 mm length
 - ☐ 3. 0.004 mm per 10 mm length
 - ☒ 4. 0.002 mm per 10 mm length

Q.173 टेपित वायरिंग प्रणाली (taped wiring system) का निम्नलिखित में से कौन-सा एक विशिष्ट लक्षण है? HINDI

- Ans
- ☐ 1. यह भौतिक क्षति के विरुद्ध यांत्रिक सुरक्षा प्रदान करता है।
 - ☐ 2. इसका उपयोग सामान्यतः सीलिंग (ceilings) जैसे खुले क्षेत्रों में किया जाता है।
 - ☐ 3. इसका उपयोग उच्च-वोल्टता उपकरणों में किया जाता है।
 - ☒ 4. यह नम्य होता है और इसे रुद्ध स्थानों (tight spaces) पर संस्थापित किया जा सकता है।

Q.174 How should the electrode resistance be measured if multiple earthing electrodes are used in parallel?

- Ans
- ☐ 1. Measure electrode resistance individually and then add it
 - ☐ 2. Use a clamp meter to measure the resistance of parallel electrodes
 - ☐ 3. Measure electrode resistance individually and then average the values
 - ☒ 4. Measure the total resistance of the combined electrodes in parallel

Q.175 What is the primary reason for the heating effect in a conductor when an electric current passes through it?

- Ans
- ☐ 1. The electric field in the conductor causes heat generation.
 - ☒ 2. The movement of electrons causes heat generation.
 - ☐ 3. The conductor absorbs heat from the surrounding environment.
 - ☐ 4. The movement of protons causes heat generation.