



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 | Mechanic Radio & TV

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: 16 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.

Check your marks, normalized score and zone-wise rank free at
rank.qmaths.in

Blackbook

Score & Rank Calculator · rank.qmaths.in

Compiled 28 October 2026

INDEX · Click any row to open that paper

RRB ALP 2024 CBT 2 (Mechanic Radio & TV) (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	14:30 - 17:00	29



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	Mechanic Radio & TV
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. 2 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** 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.2** 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.3** 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.4** Which of the following devices is used to measure temperature?

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

- Q.5** Two resistors of resistance 20Ω and 30Ω are connected in series in a circuit. What is the current flow in the circuit if the voltage given is 250 V?

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

Q.6 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.7 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.8 Which of the following ecosystems has very low temperatures and frozen soil?

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

Q.9 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.10 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.11 What does the symbol given below denote in a circuit diagram?



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

Q.12 What is the average human body temperature?

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

Q.13 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.14 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.15 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%
-

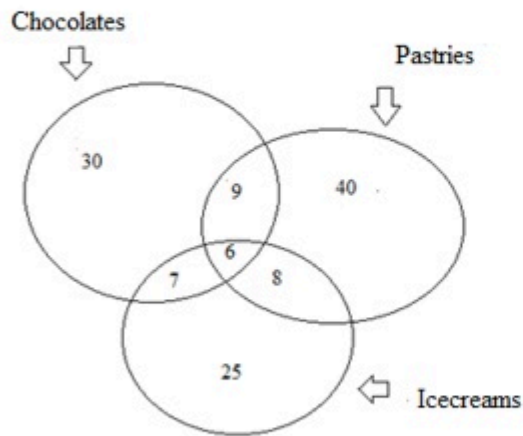
Q.16 What is the value of 10 km/hr in SI units?

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

Q.17 The rate of doing work is known as _____.

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

- Q.18 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.19 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.20 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.21 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.22 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.23 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.24 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.25 What is the total circuit resistance if it contains resistors 10 Ω , 20 Ω and 60 Ω , connected in parallel?

- Ans ☒ 1. 60 Ω
☒ 2. 90 Ω
☒ 3. 20 Ω
☒ 4. 6 Ω

Q.26 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.27 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.28 In a certain code language,

'A + B' means 'A is the mother of B',
'A - B' means 'A is the brother of B',
'A $\times$ 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 $\times$ T'?

- Ans ☒ 1. Wife's mother's father
☒ 2. Wife's brother
☒ 3. Wife's mother's brother
☒ 4. Wife's father

Q.29 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.30 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.31 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.32 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.33 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.34 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.35 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.36 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.37 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.38 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.39 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.40 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.41 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.42 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.43 If 'A' stands for '÷', 'B' stands for '×', 'C' stands for '+' and 'D' stands for '-', what will come in place of the question mark (?) in the following equation?

38 C 32 A 4 D 5 B 7 = ?

- Ans ☐ 1. 10
☒ 2. 11
☐ 3. 8
☐ 4. 9

Q.44 Work done is defined in science as ____.

- Ans ☐ 1. force × distance
☐ 2. $\frac{\text{force}}{\text{distance}}$
☒ 3. force × displacement
☐ 4. $\frac{\text{force}}{\text{displacement}}$

Q.45 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.46 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.47 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.48 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.49 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.50 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.51 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.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 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.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 Kinetic energy and potential energy together are called which form of energy?

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

Q.56 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.57 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.58 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.59 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.60 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.61 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.62 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.63 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.64 According to the ISO-A size series, what is the designation of a trimmed sheet with dimensions 297 mm x 420 mm?

Ans ☒ 1. A1
☒ 2. A2
☒ 3. A3
☒ 4. A4

Q.65 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

Q.66 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.67 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.68 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.69 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.70 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

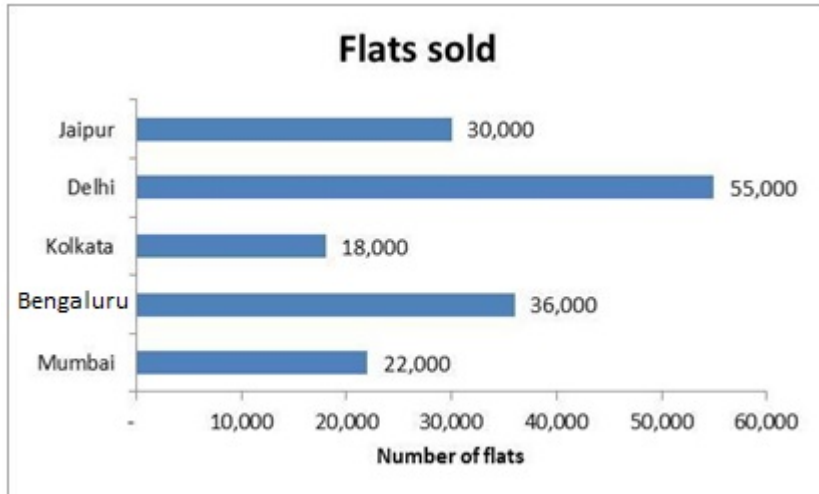
Q.71 Which of the following statements is/are true?

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.72 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.73 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.74 Simplify $976 \times 265 + 976 \times 735$.

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

Q.75 What is the primary source of energy for most of the ecosystems?

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

Q.76 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.77 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.78 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.79 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.80 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.81 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.82 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.83 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.84 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.85 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.86 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.87 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.88 $\frac{p^2 - n^2}{pn}$

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.89 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.90 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.91 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.92 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.93 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.94 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.95 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 **X** 1. ZERO-EZRO-ZREO
X 2. WHEN-HWEN-WENH
X 3. USER-RESU-REUS
✓ 4. VICE-ICVE-VECI

Q.96 Convert 1 kilowatt hour (kW h) into joule.

- Ans **X** 1. $1 \text{ kW h} = 3.6 \times 10^3 \text{ J}$
X 2. $1 \text{ kW h} = 3.6 \times 10^7 \text{ J}$
X 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.97 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
X 2. 9 - 2 - 11 - 24
X 3. 6 - 12 - 18 - 34
X 4. 7 - 49 - 56 - 122

Q.98 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
X 2. white colour looks good
X 3. white colour absorbs more sunlight to make the house bright
X 4. white colour makes the wall more durable

Q.99 The average of three numbers is 20. If two numbers are 16 and 24, the third number is:

- Ans **X** 1. 22
X 2. 19
X 3. 21
✓ 4. 20

Q.100 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
X 2. C
X 3. A
X 4. D

Q.101 Which type of circuit is used to amplify low-level signals, such as those from sensors or microphones, to a level that is sufficient to drive a load?

- Ans ☒ 1. Power amplifier
☒ 2. Voltage amplifier
☒ 3. Operations-based Schmitt trigger
☒ 4. Current amplifier

Q.102 If a 1 : 4 demux has an input of logic 1 and the select lines (S1, S0) are set to 01, what will be the output?

- Ans ☒ 1. Output 1 will be 1.
☒ 2. Output 2 will be 1.
☒ 3. Output 3 will be 1.
☒ 4. Output 0 will be 1.

Q.103 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.104 यदि कोई ट्रांसफॉर्मर प्रचालन के दौरान अधितापन के संकेत प्रदर्शित कर रहा हो तो क्या किया जाना चाहिए? **HINDI**

- Ans ☒ 1. ट्रांसफॉर्मर को ठंडा होने दें, फिर लघु पथन की जांच करें
☒ 2. ट्रांसफॉर्मर को तत्काल वियोजित करें और विद्युत-रोधन प्रतिरोध की जांच करें
☒ 3. ट्रांसफॉर्मर की वाइंडिंग सामग्री को अधिक उत्तम सामग्री से बदलें
☒ 4. शीतलन बढ़ाने के लिए प्रचालन वोल्टता बढ़ाएं

Q.105 Plasma TV utilises the additive colour method, in which a colour is created by combining coloured light sources in three primary colours, ____.

- Ans ☒ 1. red, green and violet
☒ 2. red, green and blue
☒ 3. pink, green and blue
☒ 4. red, yellow and blue

Q.106 Gaskets, seals and spacers are made using:

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

Q.107 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.108 Which of the following Boolean expressions represents the behaviour of a 3-input OR gate?

- Ans ☒ 1. $A + B + C$
☒ 2. $(A + B) * C$
☒ 3. $A * B * C$
☒ 4. $(A * B) + C$

Q.109 The pointer of the dynamo meter type power factor meter moved to the left of the centre. Which of the following does it indicate?

- Ans ☒ 1. Capacitive load and power factor lagging
☒ 2. Inductive load and power factor lagging
☒ 3. Capacitive load and power factor leading
☒ 4. Inductive load and power factor leading

Q.110 Identify whether the given statements related to BJT transistor testing is/are correct.

Statement I: A digital multimeter can work as a transistor tester.

Statement II: Normally, the transistor tester is used to identify the terminals of the transistor (NPN or PNP) .

- Ans
- ☒ 1. Both statements I and II are incorrect
 - ☒ 2. Only statement I is correct
 - ☒ 3. Both statements I and II are correct
 - ☒ 4. Only statement II is correct

Q.111 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.112 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.113 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.114 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.115 The unit for specific gravity is ____.

- Ans
- ☒ 1. m/s²
 - ☒ 2. g/cm³
 - ☒ 3. kg/m³
 - ☒ 4. no unit (dimensionless)

Q.116 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.117 Which type of transformer is used in a full wave rectifier circuit with two diodes?

- Ans
- ☒ 1. Auto-transformer
 - ☒ 2. Center-tapped transformer
 - ☒ 3. Step-up transformer
 - ☒ 4. Current transformer

Q.118 The ESR meter used to test electrolytic capacitors measures the ____ of the capacitor.

- Ans ☒ 1. shunt conductance
☒ 2. series resistance
☐ 3. electric field
☐ 4. permittivity

Q.119 A drawing instrument box is used to carry all _____ instruments.

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

Q.120 Identify the element that is NOT a key constituent of the DTH system.

- Ans ☐ 1. Dish
☒ 2. GPS
☐ 3. Set top box
☐ 4. Coaxial cable

Q.121 Which of the following configurations, commonly used in audio amplifiers, has a high current gain and a good voltage gain?

- Ans ☒ 1. Common Emitter (CE)
☐ 2. Common Base (CB)
☐ 3. Common Drain (CD)
☐ 4. Common Collector (CC)

Q.122 The purpose of copper shading rings in an induction type single phase energy meter is:

- Ans ☒ 1. to produce phase difference between flux and voltage in a pressure coil
☐ 2. to produce magnetic force
☐ 3. to produce controlling force
☐ 4. to produce eddy current damping

Q.123 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.124 How many minimum number of NAND gates will be required to implement the Boolean expression $F = A.B + C$ using only NAND gate?

- Ans ☐ 1. 3
☒ 2. 4
☐ 3. 5
☐ 4. 6

Q.125 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.126 Identify whether the given statements related to megger are correct.

Statement I: Megger testing is a common part of regular maintenance procedures in industries like power generation, manufacturing, construction, and utilities.

Statement II: Meggers are used to diagnose faults in electrical systems.

- Ans ☒ 1. Both statements I and II are incorrect
☒ 2. Only statement II is correct
☒ 3. Only statement I is correct
☒ 4. Both statements I and II are correct

Q.127 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.128 Which of the following factors should be prioritised when replacing an IC socket in circuits designed for low power consumption, such as mobile devices?

- Ans ☒ 1. The socket's cost and availability
☒ 2. The electrical contact resistance and current handling capacity
☒ 3. The size and pin count of the socket
☒ 4. The physical durability and mechanical strength of the socket

Q.129 Identify whether the given statements related to DTH system are correct.

Statements:

I. Distortion in sound or picture can be due to a problem in the DTH signal or a problem in the antenna itself.

II. The coaxial cable is an integral part of both DTH and traditional cable TV systems.

- Ans ☒ 1. Both statements I and II are correct
☒ 2. Only statement II is correct
☒ 3. Both statements I and II are incorrect
☒ 4. Only statement I is correct

Q.130 Which of the following is a good practice when replacing an IC socket in a high-speed digital circuit?

- Ans ☒ 1. Use an IC socket with a higher current rating than the original
☒ 2. Use a socket with larger pins for better conductivity
☒ 3. Ensure the socket material has low inductance to avoid signal distortion
☒ 4. Choose a socket with a lower resistance rating

Q.131 Which of the following factors can be the cause of the largest errors in the accuracy of GPS positioning?

- Ans ☒ 1. Satellite position accuracy
☒ 2. Atmospheric ionospheric delay
☒ 3. Multipath interference
☒ 4. Receiver clock bias

Q.132 What is the primary function of the pseudorandom noise (PRN) code in GPS signals?

- Ans ☒ 1. To allow the receiver to distinguish between signals from different satellites
☒ 2. To encrypt the signal for security
☒ 3. To correct signal errors caused by atmospheric interference
☒ 4. To modulate the carrier frequency for signal transmission

Q.133 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.134 What should be the current rating of an induction type watt meter, in general, if a current transformer is used for measurement of power?

- Ans ☐ 1. 2 A
☐ 2. 10 A
☐ 3. 30 A
☒ 4. 5 A

Q.135 In a JK Flip-Flop, if $J = 0$, $K = 0$ and the clock pulse occurs, what will happen to the output Q?

- Ans ☒ 1. The output will remain unchanged.
☐ 2. The output will be set to 1.
☐ 3. The output will toggle.
☐ 4. The output will be reset to 0.

Q.136 How are flip flops used in digital counters?

- Ans ☒ 1. Flip-flops store the count value in binary form and change state with each clock pulse.
☐ 2. Flip-flops convert analogue input signals to a digital count.
☐ 3. Flip-flops perform addition operations for the counter.
☐ 4. Flip-flops generate a clock signal for the counter.

Q.137 What is the effect of a decrease in base area region due to a rise in base width modulation on the collector current in a PNP transistor?

- Ans ☐ 1. The collector current becomes zero.
☒ 2. The collector current increases.
☐ 3. The collector current remains the same.
☐ 4. The collector current decreases.

Q.138 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.139 Manganese is used as a shunt resistor for extension of range in an Ammeter because ____.

- Ans ☐ 1. manganese is a highly resistive material
☐ 2. manganese is a superior conductor
☒ 3. there won't be any variation in resistance due to temperature
☐ 4. there won't be any magnetic loss

Q.140 What is the condition for a transistor to operate in the saturation region?

- Ans ☐ 1. The base-emitter junction is reverse-biased and the collector-emitter junction is forward-biased.
☐ 2. The base-emitter junction is forward-biased and the collector-emitter junction is reverse-biased.
☐ 3. The base-emitter junction is reverse-biased.
☒ 4. The base-emitter junction is forward-biased and the collector-emitter junction is also forward-biased.

Q.141 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.142 How can the range of an ammeter be extended?

- Ans ☐ 1. By using a step-up transformer
☐ 2. By increasing the applied voltage
☒ 3. By connecting a shunt resistor in parallel with the ammeter
☐ 4. By connecting a resistor in series with the ammeter

Q.143 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.144 $\cos\theta$

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

Q.145 For a metal based thin film resistor, the measured value of resistance ____ with ____ in temperature.

- Ans
- ✗ 1. increases; decrease
 - ✗ 2. decreases; increase
 - ✓ 3. increases; increase
 - ✗ 4. remains constant; decrease

Q.146 To implement an OR gate using only NAND gates, how many NAND gates are required?

- Ans
- ✗ 1. 1
 - ✓ 2. 3
 - ✗ 3. 2
 - ✗ 4. 4

Q.147 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.148 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.149 Which of the following components is primarily responsible for transmitting signals from the ground station to the satellite in a satellite communication system?

- Ans
- ✗ 1. Transponder
 - ✗ 2. Geostationary Satellite
 - ✓ 3. Uplink Antenna
 - ✗ 4. Downlink Antenna

Q.150 $\left(\frac{3}{8}\right) + \left(\frac{5}{12}\right)$

Ans

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

Q.151 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.152 Why is a high-impedance input preferred in a frequency meter?

- Ans
- ☒ 1. To allow better voltage regulation
 - ☒ 2. To increase the power consumption of the meter
 - ☒ 3. To reduce display brightness fluctuations
 - ☒ 4. To prevent voltage drop across the circuit being measured

Q.153 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.154 In a velocity-time graph, the negative slope represents ____.

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

Q.155 How can one avoid a parallax error while taking a reading from a moving iron type voltmeter?

- Ans
- ☒ 1. By seeing the needle at an angle of 90°
 - ☒ 2. By seeing the image of the pointer on the mirror
 - ☒ 3. By seeing straight on the needle
 - ☒ 4. By seeing the needle at an angle of 45°

Q.156 What is the advantage of using a transistor as a switch in a power electronic circuit?

- Ans
- ☒ 1. High current gain
 - ☒ 2. High power gain
 - ☒ 3. High voltage gain
 - ☒ 4. High switching frequency and low switching losses

Q.157 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.158 What is the sum output of a Full Adder when the inputs A = 1, B = 1, and Cin = 0?

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

Q.159 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.160 What type of oscillator uses a capacitive voltage divider as the feedback network?

- Ans
- ☒ 1. Crystal oscillator
 - ☒ 2. Colpitts oscillator
 - ☒ 3. RC oscillator
 - ☒ 4. Hartley oscillator

Q.161 What is the Boolean expression for the carry-out (Cout) output of a Full Adder?

- Ans
- ☒ 1. $Cout = (A \cdot B) \oplus Cin$
 - ☒ 2. $Cout = A \oplus B \oplus Cin$
 - ☒ 3. $Cout = (A \cdot B) + (B \cdot Cin) + (Cin \cdot A)$
 - ☒ 4. $Cout = (A \cdot B) \cdot Cin$

Q.162 IC सॉकेट को बदलते समय, PCB में नया सॉकेट डालने से पहले क्या करना चाहिए? HINDI

- Ans
- ☒ 1. परिपथ में धारा आपूर्ति को बढ़ाएँ
 - ☒ 2. सुसंगतता (compatibility) सुनिश्चित करने के लिए आस-पास के सभी घटकों को बदलें
 - ☒ 3. सुनिश्चित करें कि सॉकेट का रंग मूल (original) से सुमेलित हो
 - ☒ 4. भौतिक संरक्षण की जाँच करें और सुनिश्चित करें कि कोई पिन मुड़ा हुआ न हो

Q.163 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.164 What is the output waveform of a half-wave rectifier considering input as a sinusoidal AC signal?

- Ans
- ☒ 1. Square wave
 - ☒ 2. Pulsating DC wave
 - ☒ 3. Triangular wave
 - ☒ 4. Perfect sine wave

Q.165 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.166 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.167 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.168 Which of the following is NOT the correct truth table output for an OR gate?

- Ans
- ☒ 1. 1 if either input is 1
 - ☒ 2. 1 if both inputs are 1
 - ☒ 3. 0 if both inputs are 0
 - ☒ 4. 0 if either of input is 1

Q.169 What is the primary action that occurs in the base region of an NPN transistor when a small positive voltage is applied to the base with respect to the emitter?

- Ans
- ☒ 1. The collector current is reduced.
 - ☒ 2. Holes are created in the base region.
 - ☒ 3. Electrons from the emitter are attracted to the base region.
 - ☒ 4. The base-emitter junction is reverse-biased.

Q.170 Minimum gate required to implement XOR gate using NOR gate only are:

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

Q.171 What is the significance of beta (β) in a transistor?

- Ans
- ☒ 1. Current gain in common base configuration
 - ☒ 2. Power gain in common base configuration
 - ☒ 3. Power gain in common emitter configuration
 - ☒ 4. Current gain in common emitter configuration

Q.172 Which of the following is a switching error in electrical measuring instruments?

- Ans
- ☒ 1. Error due to wrong calculation of subdivisions
 - ☒ 2. Wrong connection of the meter
 - ☒ 3. Error due to heat
 - ☒ 4. Error due to vibration

Q.173 The loading effect of a voltmeter is determined by ____.

- Ans
- ☒ 1. the input resistance of the voltmeter
 - ☒ 2. the weight of the voltmeter
 - ☒ 3. the frequency of the circuit
 - ☒ 4. the size of the voltmeter display

Q.174 Identify the correct statement related to a radio receiver.

- Ans
- ☒ 1. It is desired to have a radio receiver of low quality factor and high noise figure.
 - ☒ 2. It is desired to have a radio receiver of low quality factor and low noise figure.
 - ☒ 3. It is desired to have a radio receiver of high quality factor and high noise figure.
 - ☒ 4. It is desired to have a radio receiver of high quality factor and low noise figure.

Q.175 A/an _____ is connected in series with the voltmeter to increase the range of the voltmeter.

- Ans
- ☒ 1. inductor
 - ☒ 2. capacitor
 - ☒ 3. resistor
 - ☒ 4. inductor and capacitor in series
-

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	Mechanic Radio & TV
Test Date	06 May 2025
Test Time	2:30 PM - 5:00 PM
Language	English

*** Note**

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

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

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

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

- Ans ☒ 1. energy transferred
☐ 2. change in velocity
☐ 3. energy lost
☐ 4. change in speed

Q.2 What is the first step to take in case of a power failure in a workshop?

- Ans ☒ 1. Check if emergency lighting and backup power are functional
☐ 2. Continue working as usual
☐ 3. Panic and leave the premises immediately
☐ 4. Ignore the situation and wait for power to return

Q.3 Which of the following terms is used to describe the pollutants that originate from identifiable sources, such as factories or vehicles?

- Ans ☐ 1. Random Pollution
☒ 2. Point Source Pollution
☐ 3. Radicle Pollution
☐ 4. Non-point Source Pollution

Q.4 Four chairs and a table set up cost ₹22,000. Determine the table's cost, if it is ₹2,000 more expensive than the chair.

- Ans ☐ 1. ₹5,000
☒ 2. ₹6,000
☐ 3. ₹4,000
☐ 4. ₹6,500

Q.5 What should come in place of the question mark (?) in the given series?

62 73 87 104 124 ?

- Ans ☐ 1. 142
☐ 2. 134
☒ 3. 147
☐ 4. 153

Q.6 What is the dimensional equation of mass density (ρ) ?

- Ans ☒ 1. $[M L^{-3} T^0]$
☐ 2. $[M L^{-2} T^0]$
☐ 3. $[M^0 L^3 T^0]$
☐ 4. $[M L^{-3} T^{-2}]$

- Q.7** Eight people are sitting in two parallel rows containing 4 people each in such a way that there is equal distance between adjacent persons. In row 1 – A, B, C and D are seated and all of them are facing south. In row 2 – P, Q, R and S are seated and all of them are facing north. Thus each person faces another person from the other row.
No one sits to the left of B. R faces the person who sits second to the right of D. C faces the person who is the immediate neighbour of Q and R, B does not face S.
Who amongst the following faces P?

Ans ☒ 1. D
☒ 2. B
☒ 3. A
☒ 4. C

- Q.8** Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which letter-cluster pair DOES NOT belong to that group?
(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster pair)

Ans ☒ 1. KF – HM
☒ 2. DY – AG
☒ 3. QL – NT
☒ 4. BW – YE

- Q.9** If the length, the breadth, and the height of a cuboid are 5 m, 2 m, and 50 cm, respectively, then find its volume.

Ans ☒ 1. 50 m^3
☒ 2. 500 m^3
☒ 3. 5 m^3
☒ 4. 20 m^3

- Q.10** Find the minimum value of $2x^2 - 5x - 3$ and also find x.

Ans ☒ 1. 6.125 and $x = 1.2$
☒ 2. -6.125 and $x = 0.25$
☒ 3. 6.125 and $x = 1.25$
☒ 4. -6.125 and $x = 1.25$

- Q.11** A shopkeeper sells sugar at ₹30 per kg, which he has bought at ₹24 per kg. Being dishonest, he also gives only y gm of sugar instead of 1000 gm that is mentioned on the weight. In this way, the shopkeeper manages to make an overall profit of $66\frac{2}{3}\%$. What is the value of y?

Ans ☒ 1. 720
☒ 2. 750
☒ 3. 600
☒ 4. 800

- Q.12** What is the primary purpose of netiquette in online communication?

Ans ☒ 1. To increase the number of followers on social media
☒ 2. To improve typing speed
☒ 3. To enhance internet connection speed
☒ 4. To ensure polite and respectful interactions

- Q.13** E, F, G, H, P, Q, and R, are sitting around a circular table facing the centre. F sits third to the left of H. Only two people sit between H and G when counted from the right of H. Q is an immediate neighbor of G. P is NOT an immediate neighbour of H. E is an immediate neighbour of Q.
Who sits second to the left of E?

Ans ☒ 1. P
☒ 2. H
☒ 3. G
☒ 4. R

Q.14 If 24 joules of work is done in moving a charge of 2 coulombs across two points, then what will be the correct voltage across these two points?

- Ans ☒ 1. 12 V
☒ 2. 24 V
☒ 3. 2 V
☒ 4. 48 V

Q.15 Which of the following is an ethical concern related to Information Technology?

- Ans ☒ 1. Increased accessibility to educational resources
☒ 2. Enhancement of communication channels
☒ 3. Privacy violations and data breaches
☒ 4. Reduction in administrative costs

Q.16 Which of the following tools is commonly used to support the 'Standardize' step in the 5S methodology?

- Ans ☒ 1. Job cycle charts
☒ 2. Labels and signs
☒ 3. Floor markings
☒ 4. Cleaning supplies

Q.17 Under which Section of the Factories Act, of 1948, is the employment of women and children near cotton openers prohibited?

- Ans ☒ 1. Section 29
☒ 2. Section 25
☒ 3. Section 21
☒ 4. Section 27

Q.18 A mass m is moving with a velocity v and its kinetic energy is K . What will be the new kinetic energy if the velocity is doubled?

- Ans ☒ 1. 4 K
☒ 2. 2 K
☒ 3. $K/2$
☒ 4. K

Q.19 How does retrofitting an old building with energy-efficient windows impact energy consumption?

- Ans ☒ 1. It decreases the building's heating and cooling costs.
☒ 2. It causes a rise in indoor temperatures.
☒ 3. It has no effect on energy consumption.
☒ 4. It increases the need for artificial lighting.

Q.20 What should come in place of the question mark (?) in the given series?

WU5, SQ7, NL11, ?

- Ans ☒ 1. HE15
☒ 2. HF13
☒ 3. HF17
☒ 4. GE17

Q.21 What should come in place of the question mark (?) in the given series?

179 171 163 ? 147 139

- Ans ☒ 1. 153
☒ 2. 151
☒ 3. 157
☒ 4. 155

Q.22 The speed of a train is 144 km/hr. The distance covered by the train in 12 seconds is:

- Ans ☐ 1. 78 m
☒ 2. 480 m
☐ 3. 518 m
☐ 4. 103 m

Q.23 What is necessary for a circuit to have electric current flowing through it?

- Ans ☐ 1. Only bulb
☐ 2. Only wire
☒ 3. A closed conducting path with a voltage source
☐ 4. Only switch

Q.24 The cost of painting a spherical ball at the rate of ₹2.50 per cm^2 is ₹13,860. What is the diameter of the ball (use $\Pi = (\frac{22}{7})$)?

- Ans ☐ 1. 48 cm
☐ 2. 21 cm
☒ 3. 42 cm
☐ 4. 40 cm

Q.25 An electric heater of resistance $50\ \Omega$ uses a current of 3 A. Determine the heat generated in 20 seconds.

- Ans ☐ 1. 5000 J
☒ 2. 9000 J
☐ 3. 1000 J
☐ 4. 60 J

Q.26 Among three partners A, B and C in a business. The capital of B is equal to half the difference between thrice the capital of C and twice the capital of A. If at the end of the year, they received a profit of ₹25,415, what is the share of C (in ₹)?

- Ans ☐ 1. 9,166
☐ 2. 8,666
☐ 3. 11,666
☒ 4. 10,166

Q.27 What is the value of 100 g in SI units?

- Ans ☐ 1. 100 kg
☐ 2. 10 kg
☒ 3. 0.1 kg
☐ 4. 1 kg

Q.28 The thickness of a thread is measured by a student using a microscope of magnification 100. After making 30 observations, he finds the average width of the thread is 5.7 mm. What is the estimated thickness of the thread?

- Ans ☒ 1. 0.057 mm
☐ 2. 171 mm
☐ 3. 0.57 mm
☐ 4. 0.09 mm

Q.29 Read the given statement and conclusions carefully. Assuming that the information given in the statement is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusion(s) logically follow(s) from the statement.

Statement:

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

Conclusions:

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

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

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

Q.30 Which is the least number that must be subtracted from 5563 to make it exactly divisible by 18?

- Ans ☒ 1. 3
☒ 2. 7
☒ 3. 5
☒ 4. 1

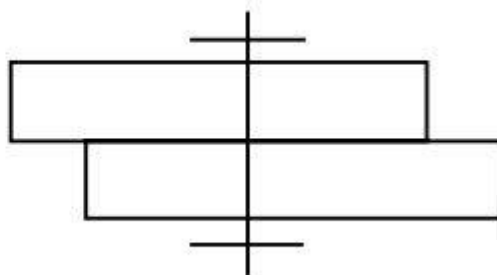
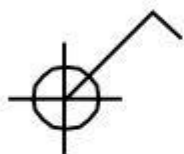
Q.31 Three partners, A, B and C, shared the profit in a business in the proportion of 11 : 13 : 16. They invested their capitals for 7 months, 5 months and 12 months, respectively. What was the ratio of their capitals?

- Ans ☒ 1. 96 : 135 : 101
☒ 2. 3 : 5 : 8
☒ 3. 21 : 35 : 44
☒ 4. 165 : 273 : 140

Q.32 Which element is used in thermometers?

- Ans ☒ 1. Lead
☒ 2. Mercury
☒ 3. Gallium
☒ 4. Bromine

Q.33 Examine the symbolic representation of the hole and rivet provided below. According to BIS SP 46-2003, what does this symbol represent?



- Ans ☒ 1. Drilled on-site
☒ 2. Fitted in the workshop
☒ 3. Drilled in the workshop
☒ 4. Drilled and fitted on-site

Q.34 Calculate the resistance of the bulb filament if it draws 200 mA current from 220 V source.

- Ans ☒ 1. 44 Ω
☒ 2. 220 Ω
☒ 3. 1100 Ω
☒ 4. 0 Ω

Q.35 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. JNEL
☒ 2. UYPW
☒ 3. CGXF
☒ 4. QULS

Q.36 In a certain code language, 'WIDE' is coded as '8694' and 'INKS' is coded as '3917'. What is the code for 'I' in the given code language?

- Ans ☒ 1. 9
☒ 2. 7
☒ 3. 3
☒ 4. 6

Q.37 Why does a combination of two thin blankets keep you warmer in the winter than a single thick blanket?

- Ans ☒ 1. Two thin blankets absorb more heat from the surroundings than one thick blanket.
☒ 2. Two thin blankets allow more heat to escape, keeping you warmer.
☒ 3. Two thin blankets generate more heat than one thick blanket.
☒ 4. Two blankets create an additional insulating layer of air, reducing heat loss.

Q.38 Two trains are running in opposite directions at the same speed. The length of each train is 175 m. If they cross each other in 7 s, the speed of each train is:

- Ans ☒ 1. 80 km/hr
☒ 2. 85 km/hr
☒ 3. 90 km/hr
☒ 4. 75 km/hr

Q.39 What is the ratio of the areas of two successive format sheet sizes created by either halving along the length or doubling along the width?

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

Q.40 The speed of a bus is 6 metres/second. The distance (in kilometres) travelled by the bus in 8 hours and 20 minutes is:

- Ans ☒ 1. 180
☒ 2. 184
☒ 3. 175
☒ 4. 185

Q.41 The weights (in kg) of 20 students of a class have been recorded as 35, 42, 56, 44, 55, 44, 36, 44, 49, 48, 55, 35, 44, 47, 49, 48, 56, 44, 37 and 35. The modal weight (in kg) of the class is:

- Ans ☒ 1. 45
☒ 2. 47
☒ 3. 37
☒ 4. 44

Q.42 Which of the following keyboard shortcuts on a Windows 10 home screen opens the item's properties?

- Ans
- ☐ 1. Insert + Alt
 - ☐ 2. F2 + Alt
 - ☐ 3. Tab + Del
 - ☒ 4. Alt + Enter

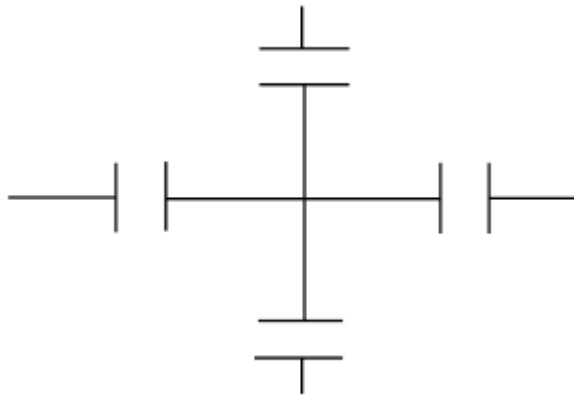
Q.43 Two sets of numbers are given below. In each set of numbers, certain mathematical operation(s) on the first number results in the second number. Similarly, certain mathematical operation(s) on the second number results in the third number and so on. Which of the given options follows the same set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

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

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

- Ans
- ☒ 1. 682 – 341 – 291 – 381
 - ☐ 2. 226 – 113 – 144 – 268
 - ☐ 3. 586 – 293 – 244 – 328
 - ☐ 4. 138 – 69 – 14 – 98

Q.44 Identify the orthographic symbol of a pipe fitting shown in the figure.



- Ans
- ☐ 1. Bend
 - ☐ 2. Union
 - ☐ 3. Tee
 - ☒ 4. Cross

Q.45 A can do a work in 14 hours. B can do the same work in 21 hours. A started working alone. After how many hours should B join A so that the whole work is completed in 10 hours?

- Ans
- ☐ 1. 3.5
 - ☒ 2. 4
 - ☐ 3. 3
 - ☐ 4. 4.5

Q.46 Pipes A and B can fill a rectangular tank in 40 minutes and 120 minutes, respectively. Pipe C can empty the completely filled same tank in 240 minutes. If pipes A, B and C are opened at the same time, then how many minutes will it take to fill the tank?

- Ans
- ☐ 1. $32\frac{2}{7}$
 - ☐ 2. $34\frac{3}{7}$
 - ☒ 3. $34\frac{2}{7}$
 - ☐ 4. $34\frac{2}{8}$

Q.47 A shopkeeper allows a discount of 18% on the marked price of an article and sells it for ₹2,870. Find the marked price of the article.

- Ans
- ☐ 1. ₹3,460
 - ☒ 2. ₹3,500
 - ☐ 3. ₹3,350
 - ☐ 4. ₹3,200

Q.48 By how much is 60% of 50 greater than $\frac{4}{5}$ of 35?

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

Q.49 In order to resolve disputes arising from cyber crime, such as tampering with computer source documents, hacking the computer system, using password of another person and publishing sensitive personal data of others without their consent, a forum has been established by the Central Government (India) in accordance with the provisions contained under Section 48(1) of the Information Technology Act, 2000. What is the name of that forum?

- Ans
- ☐ 1. Internet Crime Complaint Center
 - ☐ 2. National Cybercrime Reporting Station
 - ☒ 3. Cyber Appellate Tribunal
 - ☐ 4. Cybercrime Reporting Tribunal

Q.50 Which of the following is the primary reason for adopting scientifically designed methods for safely disposing of toxic waste from automobiles?

- Ans
- ☐ 1. To improve vehicle lifespan by minimising mechanical wear
 - ☐ 2. To reduce fuel consumption and improve overall efficiency
 - ☒ 3. To protect human health from harmful fumes and dust in the air
 - ☐ 4. To increase vehicle performance by optimising engine efficiency

Q.51 ABC Association meeting is to be held on the 2nd Sunday of next month. The cost of the registration is ₹50 per person. Lunch will be provided to the participants at an additional cost of ₹24. If the number of participants who paid for lunch was 100 more than the members who did not, and if the total receipts for registrations and lunch is ₹69,400, how many people registered and how many lunches are to be prepared, respectively?

- Ans
- ☐ 1. 1100 and 500
 - ☐ 2. 500 and 600
 - ☐ 3. 1100 and 1100
 - ☒ 4. 1100 and 600

Q.52 Which of the following is NOT correct about Joule's law of heating?

- Ans
- ☒ 1. Heat produced in a resistor is directly proportional to the resistance for a given current.
 - ☒ 2. Heat produced in a resistor is directly proportional to the time for which the current flows through the resistor.
 - ☒ 3. Heat produced in a resistor is inversely proportional to the square of the current for a given resistance.
 - ☒ 4. Heat produced in a resistor is directly proportional to the square of the current for a given resistance.

Q.53 When reporting a fire in an emergency, what is the most critical information to provide to emergency services?

- Ans
- ☒ 1. The likely cause of the fire and the building owner's name
 - ☒ 2. The weather conditions at the time of the fire
 - ☒ 3. How the fire started and if someone is injured or missing
 - ☒ 4. The colour of the smoke and the direction it is moving

Q.54 Given below are two sets of numbers. Both the sets are formed using the same mathematical equations or follow a common pattern. Which of the given options follows the same set of mathematical equations or patterns as the sets given in the question?

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

- Ans
- ☒ 1. 3 – 10 – 29 – 66 – 127
 - ☒ 2. 3 – 6 – 11 – 18 – 27
 - ☒ 3. 38 – 51 – 66 – 83 – 102
 - ☒ 4. 123 – 146 – 171 – 198 – 227

Q.55 A refrigerator seller offers a discount of 10% on its listed price of ₹57,500 and still earns a profit of 15%. The cost price of the refrigerator is:

- Ans
- ☒ 1. ₹42,000
 - ☒ 2. ₹45,000
 - ☒ 3. ₹48,000
 - ☒ 4. ₹40,000

Q.56 Which of the following letter-clusters should replace # and % so that the pattern and relationship followed between the letter-cluster pair on the left side of :: is the same as that on the right side of ::?

: KHM :: OLQ : %

- Ans
- ☒ 1. # = LIN, % = NLP
 - ☒ 2. # = LIM, % = NKP
 - ☒ 3. # = LIN, % = NKP
 - ☒ 4. # = LIN, % = NKO

Q.57 If an electric load draws a current of 2 A for 1 second, then calculate the number of electrons (with charge 1.6×10^{-19} C) passing through the load.

- Ans
- ☒ 1. 1.25×10^{19}
 - ☒ 2. 1.25×10^{20}
 - ☒ 3. 0.25×10^{20}
 - ☒ 4. 0.25×10^{19}

Q.58 Study the given table carefully and answer the question that follows.

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

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

- Ans
- ☐ 1. 28
 - ☐ 2. 33
 - ☐ 3. 21
 - ☒ 4. 31

Q.59 Which of the following processes causes accumulation of heavy metals such as lead and mercury in soil?

- Ans
- ☒ 1. Improper disposal of industrial wastes
 - ☐ 2. Natural soil formation
 - ☐ 3. Ozone layer depletion
 - ☐ 4. Water evaporation

Q.60 Given below are two sets of numbers. Both the sets are formed using the same mathematical equations or follow a common pattern. Which of the given options follows the same set of mathematical equations or patterns as the sets given in the question?

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

- Ans
- ☐ 1. 16 – 36 – 64 – 100 – 144
 - ☒ 2. 64 – 225 – 529 – 1444 – 3721
 - ☐ 3. 64 – 100 – 144 – 196 – 256
 - ☐ 4. 4 – 16 – 36 – 64 – 100

Q.61 Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusion(s) logically follow(s) from the statements.

Statements:

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

Conclusions:

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

- Ans
- ☒ 1. All conclusions I, II and III follow.
 - ☐ 2. Only conclusions I and II follow.
 - ☐ 3. Only conclusions II and III follow.
 - ☐ 4. Only conclusions I and III follow.

Q.62 T-Square is used to _____ in engineering drawings.

- Ans
- ☐ 1. transfer dimensions and dividing lines into a number of equal parts
 - ☒ 2. draw horizontal lines, parallel lines and to guide/hold the setsquares
 - ☐ 3. draw curved lines on drawing sheets
 - ☐ 4. support the drawing paper/tracing paper for making drawings

Q.63 If 'A' stands for '+', 'B' stands for 'x', 'C' stands for '+' and 'D' stands for '-', then what will come in place of the question mark (?) in the following equation?

$$47 \text{ D } 25 \text{ A } 5 \text{ C } 2 \text{ B } 9 = ?$$

- Ans ☒ 1. 60
☒ 2. 58
☒ 3. 56
☒ 4. 62

Q.64 Which of the following is generally the temperature range in a laboratory thermometer?

- Ans ☒ 1. -10°C to 110°C
☒ 2. -100°C to 130°C
☒ 3. -10°C to 150°C
☒ 4. 35°C to 42°C

Q.65 If $x + y + z = 0$, then find the value of $\frac{x^2}{2yz} + \frac{y^2}{2xz} + \frac{z^2}{2xy}$.

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

Q.66 $\frac{r}{10}\%$

- Ans ☒ 1. $\frac{r^4}{10}$
☒ 2. $10r^4$
☒ 3. $\frac{r^4}{5}$
☒ 4. $\frac{r^4}{20}$

Q.67 What should come in place of the question mark (?) in the given alpha-numeric series?

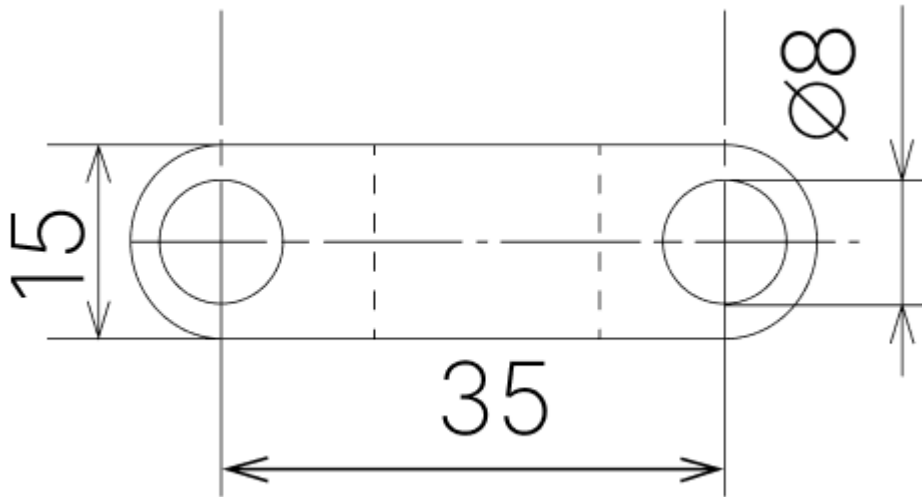
Q16, O14, M12, K10, I8, ?

- Ans ☒ 1. H6
☒ 2. G6
☒ 3. G4
☒ 4. J6

Q.68 Which of the following is a main greenhouse gas that is responsible for global warming?

- Ans ☒ 1. Carbon Dioxide
☒ 2. Nitrogen
☒ 3. Oxygen
☒ 4. Helium

Q.69 What type of view is represented of the given machine component?



- Ans
- ☒ 1. Isometric view
 - ☒ 2. Oblique view
 - ☒ 3. Orthographic view
 - ☒ 4. Perspective view

Q.70 What is the SI unit for solid angle?

- Ans
- ☒ 1. Metre
 - ☒ 2. Candela
 - ☒ 3. Steradian
 - ☒ 4. Radian

Q.71 A man rides a bicycle from Point A to Point B in 10 minutes and comes back to Point B along the same path in 10 minutes. If the distance between Points A and B is 1 km, calculate his average velocity?

- Ans
- ☒ 1. 0 m/s
 - ☒ 2. 0.1 m/s
 - ☒ 3. 3.3 m/s
 - ☒ 4. 1.6 m/s

Q.72 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. EKJR
 - ☒ 2. VBZI
 - ☒ 3. GMKT
 - ☒ 4. IOMV

Q.73 Select the pair which follows the same pattern as that followed by the two sets of pairs given below. Both pairs follow the same pattern.

ARF : YTH
WVJ : UXL

- Ans
- ☒ 1. MEL : HZN
 - ☒ 2. KXF : HZH
 - ☒ 3. SZN : QBP
 - ☒ 4. QEB : NBD

Q.74 Which of the following is NOT a good heat conductor?

- Ans ☒ 1. Aluminum
☒ 2. Copper
☒ 3. Fur
☒ 4. Iron

Q.75 A porter lifts a 10 kg luggage from the ground and places it on his head, 2.5 m above the ground. Calculate the work done by him on the luggage. (Take $g = 10 \text{ ms}^{-2}$.)

- Ans ☒ 1. 200 J
☒ 2. 250 N
☒ 3. 250 J
☒ 4. 100 J

Q.76 Which of the following statements is INCORRECT?

- Ans ☒ 1. In solids, heat transfer is typically carried out through conduction.
☒ 2. Burning of feet on hot sand is an example of heat transfer by conduction.
☒ 3. Conduction is the process of heat transfer from hotter body to colder body.
☒ 4. Conduction is the process of heat transfer that does not require any medium to transfer heat.

Q.77 Which of the following features is unique to Telegram compared to WhatsApp and Facebook Messenger?

- Ans ☒ 1. Ability to create channels for broadcasting messages to large audiences
☒ 2. Integration with Facebook for seamless sharing
☒ 3. Voice and video calling capabilities
☒ 4. End-to-end encryption for all messages

Q.78 Which of the following is NOT correct?

- Ans ☒ 1. The motion of satellite around Earth in a circular orbit is uniform circular motion.
☒ 2. The distance-time graph of an object moving with uniform speed is not a straight line.
☒ 3. A person jogging in the park is not an example of uniform circular motion.
☒ 4. An object moving with a constant velocity represents uniform motion.

Q.79 If $21.6 : x :: x : 29.4$, and $x > 0$, then find the value of x .

- Ans ☒ 1. 23.9
☒ 2. 25.4
☒ 3. 25.2
☒ 4. 23.3

Q.80 Which of the following options is NOT a necessary characteristic of a kite?

- Ans ☒ 1. The pairs of opposite angles are bisected by the corresponding diagonals.
☒ 2. At least one diagonal is bisected by the other diagonal.
☒ 3. At least one pair of opposite angles is congruent.
☒ 4. The diagonals are perpendicular to each other.

Q.81 A force of 6 N is exerted on an object, resulting in its displacement of 2 m in the direction of the force. If the force is constant during the displacement, what is the work done in this case?

- Ans ☒ 1. 25 J
☒ 2. 12 J
☒ 3. 10 J
☒ 4. 3 J

Q.82 A person saves 50% of his income. If his expenditure is ₹440, then his income (in ₹) is:

- Ans ☒ 1. 560
☒ 2. 600
☒ 3. 880
☒ 4. 920

Q.83 The marked price of an article was ₹27,500. The shopkeeper gave two successive discounts; the first discount was 20%, and the second was at a rate of 30% of the first discount. What is the selling price (in ₹) of the article?

- Ans ☒ 1. 20,860
☒ 2. 26,080
☒ 3. 20,086
☒ 4. 20,680

Q.84 What is the kinetic energy possessed by an object having mass 25 kg and moving with a uniform velocity of 2 m s^{-1} ?

- Ans ☒ 1. 50 J
☒ 2. 100 J
☒ 3. 120 J
☒ 4. 80 J

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

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

- Ans ☒ 1. A1
☒ 2. Z2
☒ 3. Z1
☒ 4. Y1

Q.86 Which of the following is the correct statement of Ohm's Law?

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

Q.87 Which term is used to describe the closeness of the measured value to the standard or true value?

- Ans ☒ 1. Precision
☒ 2. Approximate
☒ 3. Accuracy
☒ 4. Mean

Q.88 Which of the following statements is correct?

- Ans ☒ 1. All metals are poor conductors of heat.
☒ 2. Plastic and wood allow heat to pass through them easily.
☒ 3. Copper and aluminium are good conductors of heat.
☒ 4. Dry air is a good conductor of heat.

Q.89 Which of the following statements is NOT true?

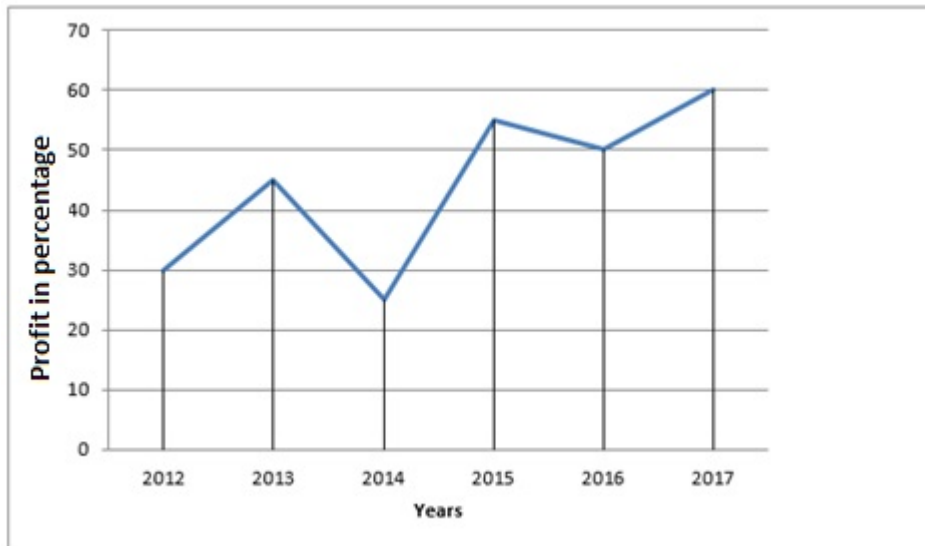
- Ans ☒ 1. Clinical and laboratory thermometers are the same.
☒ 2. The range of clinical thermometer is 35 to 42°C .
☒ 3. Laboratory thermometer cannot be used to measure body temperature.
☒ 4. Clinical thermometer should not be used to measure the temperature of boiling water.

Q.90 How is a voltmeter connected in a circuit to measure potential difference?

- Ans ☒ 1. Neither in series nor in parallel
☒ 2. Directly to the power source only
☒ 3. In series with the circuit
☒ 4. In parallel across the points where potential difference is to be measured

- Q.91** In a certain code language, 'BOAT' is coded as '8654' and 'AIDS' is coded as '3517'. What is the code for 'A' in the given code language?
- Ans ☒ 1. 5
☒ 2. 3
☒ 3. 6
☒ 4. 8
-
- Q.92** A, B, C, D, E and F live on six different floors of the same building. The lowermost floor in the building is numbered 1, the floor above it is numbered 2 and so on till the topmost floor is numbered 6. E lives on an even-numbered floor but not 4. The sum of floors on which E and B live is 9. Only three people live between A and C. The sum of floors on which F and C live is 3. What is the sum of floors on which B and F live?
- Ans ☒ 1. 6
☒ 2. 5
☒ 3. 7
☒ 4. 4
-
- Q.93** The two sides CB and BA of triangle ABC are produced to CE and BD, respectively, in such a way that $\angle DAC = 110^\circ$ and $\angle ABE = 130^\circ$. Which of the following options is true?
- Ans ☒ 1. $BC < AC < AB$
☒ 2. $AB < AC < BC$
☒ 3. $AC < AB < BC$
☒ 4. $BC < AB < AC$
-
- Q.94** In a certain code language, 'GOES' is coded as '8624' and 'SNYC' is coded as '3817'. What is the code for 'S' in the given code language?
- Ans ☒ 1. 8
☒ 2. 2
☒ 3. 4
☒ 4. 3
-
- Q.95** In an electrical circuit, 'n' number of $1\ \Omega$ resistors are connected in parallel. When one of the resistors is eliminated, the overall resistance of the circuit is _____.
- Ans ☒ 1. $\frac{1}{(n-1)}$
☒ 2. Zero
☒ 3. $\frac{1}{n^2}$
☒ 4. $\frac{1}{n}$
-
- Q.96** Which of the following actions involves scientific work?
- Ans ☒ 1. Climbing up the stairs
☒ 2. Spending time conversing with friends
☒ 3. Watching a film
☒ 4. Holding a large load on one's head while standing motionless
-
- Q.97** Why is regular maintenance of HVAC systems considered a medium ECO?
- Ans ☒ 1. It prevents overheating of the system.
☒ 2. It decreases the system's energy consumption.
☒ 3. It speeds up system breakdowns.
☒ 4. It increases the cost of energy.
-

Q.98 Study the given graph and answer the question that follows.



What is the average profit percentage of the given years?

- Ans
- ☒ 1. 43.4%
 - ☒ 2. 45%
 - ☒ 3. 44%
 - ☒ 4. 44.1%

Q.99 Which of the following letter-number clusters will replace the question mark (?) in the given series to make it logically complete?

AD8, FI16, KN24, ?

- Ans
- ☒ 1. PS35
 - ☒ 2. PS32
 - ☒ 3. OS32
 - ☒ 4. OR35

Q.100 Which of the following is NOT an SI unit?

- Ans
- ☒ 1. Mole
 - ☒ 2. Hour
 - ☒ 3. Metre
 - ☒ 4. Kilogram

Section : Part B (Mechanic Radio & TV)

Q.101 उच्च आवृत्ति के अनुप्रयोग के लिए RF कुंडली को वाइंडिंग करते समय, कुंडली फेरों के बीच पराश्रयी धारिता (parasitic capacitance) के प्रभाव को न्यूनतम करने के लिए क्या महत्वपूर्ण विचार है? **HINDI**

- Ans
- ☒ 1. टर्न-टु-टर्न धारिता (turn-to-turn capacitance) को कम करने के लिए कुंडली के व्यास को बढ़ाएं
 - ☒ 2. फेरों को अलग करने के लिए विद्युत-रोधी लेपन (insulated coating) युक्त तार का उपयोग करें
 - ☒ 3. कुंडली के पृष्ठीय क्षेत्रफल को कम करने के लिए मोटे तार का उपयोग करें
 - ☒ 4. कुंडली के निष्पादन को बेहतर बनाने के लिए फेरों की संख्या बढ़ाएं

Q.102 प्रिसिजन अप्रोच रडार (PAR) प्रणाली में, दिगंश (azimuth) और उन्नयन चैनलों का क्या महत्व है? **HINDI**

- Ans
- ☒ 1. दिगंश चैनल विमान की पार्श्व स्थिति को मापता है, और उन्नयन चैनल रनवे के सापेक्ष ऊर्ध्वाधर स्थिति को मापता है।
 - ☒ 2. दिगंश चैनल विमान की वायुगति के बारे में डेटा प्रदान करता है, तथा उन्नयन चैनल अवरोहण दर को मापता है।
 - ☒ 3. दिगंश और उन्नयन चैनलों का उपयोग केवल मौसम का पता लगाने के लिए किया जाता है, न कि विमान नेविगेशन के लिए।
 - ☒ 4. दिगंश चैनल विमान की ऊर्ध्वाधर स्थिति को मापता है, और उन्नयन चैनल रनवे के सापेक्ष विमान की क्षैतिज स्थिति को मापता है।

Q.103 Who is authorised to conduct road tests on workshop vehicles?

- Ans ☒ 1. Only trained and certified personnel
☒ 2. Visitors to the workshop
☒ 3. Any employee
☒ 4. The company accountant

Q.104 Why should the highest voltage range be selected first when measuring an unknown voltage?

- Ans ☒ 1. To save the battery power
☒ 2. To increase the measurement accuracy
☒ 3. To improve the response time of the display
☒ 4. To protect the multimeter from damage

Q.105 GPRS सिस्टम में, निम्नलिखित में से कौन-सा घटक डेटा पैकेट को सही मोबाइल स्टेशन पर रूट करने के लिए उत्तरदायी है? HINDI

- Ans ☒ 1. मोबाइल स्टेशन (MS)
☒ 2. बेस स्टेशन सबसिस्टम (BSS)
☒ 3. गेटवे GPRS सपोर्ट नोड (GGSN)
☒ 4. सर्विंग GPRS सपोर्ट नोड (SGSN)

Q.106 What is the correct way to connect a multimeter when measuring current in a circuit?

- Ans ☒ 1. In series with the circuit
☒ 2. Across the power supply terminals
☒ 3. Across a resistor
☒ 4. In parallel with the circuit

Q.107 Which of the following is the main property of the OR gate?

- Ans ☒ 1. It produces a high output only when all inputs are low.
☒ 2. It produces a low output only when all inputs are high.
☒ 3. It produces a high output when at least one input is high.
☒ 4. It produces a low output when at least one input is low.

Q.108 What is the advantage of using a transistor as a switch in a digital circuit?

- Ans ☒ 1. High voltage gain
☒ 2. High current gain
☒ 3. Low sensitivity
☒ 4. High switching speed

Q.109 Which of the following is a common calibration method for electrical measuring instruments?

- Ans ☒ 1. Approximation method
☒ 2. Estimation method
☒ 3. Null method
☒ 4. Guesswork method

Q.110 What happens when both the J and K inputs of a JK Flip-Flop are HIGH (1)?

- Ans ☒ 1. The output toggles.
☒ 2. The output is set to 1.
☒ 3. The output is reset to 0.
☒ 4. The output remains the same.

Q.111 Match the following types of lines with their correct descriptions according to their orientation and characteristics.

Description	Type of Line
A. A line that is neither parallel to a horizontal plane nor perpendicular to it.	1. Horizontal line
B. A line that is perpendicular to horizontal lines.	2. Vertical line
C. A line that changes its direction continuously.	3. Inclined line
D. A line that is parallel to a horizontal plane.	4. Curved line

- Ans **X** 1. A - 1, B - 2, C - 3, D - 4
X 2. A - 2, B - 3, C - 4, D - 1
✓ 3. A - 3, B - 2, C - 4, D - 1
X 4. A - 2, B - 1, C - 4, D - 3

Q.112 टेलीविज़न रिसीवर के साउंड सिस्टम में उपयोग किए जाने वाले पावर एम्पलीफायरों में _____ और _____ इसके महत्वपूर्ण पैरामीटर हैं। **HINDI**

- Ans **X** 1. वोल्टता लब्धि; क्षरण धारा
X 2. DC क्लैम्पिंग; DC धारा लब्धि
✓ 3. पावर दक्षता; दक्षतांक
X 4. ऊष्मा अंतरण; DC लब्धि

Q.113 Which of the following colours is commonly used for caution signs?

- Ans **X** 1. Blue
✓ 2. Yellow
X 3. Red
X 4. Green

Q.114 Identify the block that is NOT a part of the radio receiver.

- Ans **X** 1. Local oscillator
X 2. RF amplifier
✓ 3. All-pass filter
X 4. AGC

Q.115 ट्रांजिस्टर प्रवर्धक परिपथ पर आवधिक अनुरक्षण करते समय निम्नलिखित में से कौन-सा एक महत्वपूर्ण कारक विचारणीय है? **HINDI**

- Ans **✓** 1. अभिनतीकरण नेटवर्क (biasing network) का स्थायित्व
X 2. परिपथ पट्ट (circuit board) का भौतिक स्वरूप
X 3. ट्रांजिस्टर का शक्ति सीमांक
X 4. ट्रांजिस्टर आवरण का रंग

Q.116 The SI unit of temperature is/are _____.

- Ans **X** 1. both kelvin and celsius
X 2. celsius
✓ 3. kelvin
X 4. fahrenheit

Q.117 Which of the following is the correct implementation of the Boolean equation $F = (A \cdot B) + (C \cdot D)$ using only AND and OR gates?

- Ans
- ☒ 1. One AND gate and two OR gates
 - ☒ 2. Two OR gates followed by one AND gate
 - ☒ 3. Two AND gates followed by one OR gate
 - ☒ 4. One AND gate followed by one OR gate

Q.118 What is the purpose of using a transistor in a relay driver circuit?

- Ans
- ☒ 1. To filter out noise
 - ☒ 2. To amplify the input signal
 - ☒ 3. To switch on the relay coil
 - ☒ 4. To provide high input impedance in ON state

Q.119 GSM मोबाइल संचार के लिए यूरोप में आमतौर पर किस आवृत्ति बैंड का उपयोग किया जाता है? HINDI

- Ans
- ☒ 1. 900 MHz
 - ☒ 2. 800 MHz
 - ☒ 3. 3600 MHz
 - ☒ 4. 2100 MHz

Q.120 What is the primary disadvantage of using a digital frequency counter in high-frequency measurements?

- Ans
- ☒ 1. Increased power consumption
 - ☒ 2. Inability to measure AC voltages
 - ☒ 3. Limited resolution at very high frequencies due to counting limitations
 - ☒ 4. High sensitivity to temperature variations

Q.121 In a logic circuit, two inputs A and B are applied to an AND gate, and the output of the AND gate is connected to the input of a NOT gate. If the inputs A and B are both at logic 0, what will be the output of the entire circuit?

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

Q.122 Which of the following types of chisels is used for separating metals after chain drilling?

- Ans
- ☒ 1. Cross-cut chisel
 - ☒ 2. Flat chisel
 - ☒ 3. Web chisel
 - ☒ 4. Diamond point chisel

Q.123 Find the lateral surface area of a cube with side length 5 cm.

- Ans
- ☒ 1. 125 cm^2
 - ☒ 2. 150 cm^2
 - ☒ 3. 200 cm^2
 - ☒ 4. 100 cm^2

Q.124 रेडार प्रणालियों में, रव व्यतिकरण (noise interference) को कम करके डिटेक्शन रेंज (detection range) में सुधार करने के लिए निम्नलिखित में से कौन-सी विधि मुख्य रूप से उपयोग की जाती है? HINDI

- Ans
- ☒ 1. आयाम मॉडुलन (Amplitude Modulation)
 - ☒ 2. आवृत्ति मॉडुलन (Frequency Modulation)
 - ☒ 3. काल विभाजन बहुसंकेतन (Time Division Multiplexing)
 - ☒ 4. स्पंद संपीड़न (Pulse Compression)

Q.125 When passing stationary vehicles, keep a watch on _____ who may come out suddenly from the front of the stationary vehicle. While overtaking, it should be done on the _____ side. Always keep a good _____ between your vehicle and others.

- Ans
- ☒ 1. cyclists; left; interval
 - ☒ 2. vehicles; right; gap
 - ☒ 3. drivers; left; space
 - ☒ 4. pedestrians; right; distance

Q.126 किसी विशिष्ट आवृत्ति के लिए RF कॉइल को वाइंडिंग करते समय बहुत अधिक टर्न का उपयोग करने का क्या प्रभाव होता है? **HINDI**

- Ans
- ☒ 1. Q फैक्टर और बैंडविड्थ में वृद्धि
 - ☒ 2. कुंडली और परिपथ के बीच बेहतर मिलान
 - ☒ 3. प्रेरकत्व और आवृत्ति अनुक्रिया में कमी
 - ☒ 4. प्रेरकत्व में वृद्धि और परिपथ का संभावित विस्वरण

Q.127 What are the two main outputs of a half adder?

- Ans
- ☒ 1. Sum and Carry
 - ☒ 2. Carry and Borrow
 - ☒ 3. Sum and Difference
 - ☒ 4. Sum and Quotient

Q.128 Which of the following statements is NOT correct for using scribes?

- Ans
- ☒ 1. Scriber points are very sharp, so they are to be handled very carefully.
 - ☒ 2. While scribing lines, the scriber is used like a pencil.
 - ☒ 3. Do not put the scriber in your pocket.
 - ☒ 4. Place a cork on the point when in use to prevent accidents.

Q.129 Which of the following information is necessary to construct a rectangle?

- Ans
- ☒ 1. Length of two adjacent sides
 - ☒ 2. Length of one side and the area of the rectangle
 - ☒ 3. Only the length of one side
 - ☒ 4. Only the length of the diagonal

Q.130 Which type of semiconductor has an excess of holes?

- Ans
- ☒ 1. p-type semiconductor
 - ☒ 2. n-type semiconductor
 - ☒ 3. Intrinsic semiconductor
 - ☒ 4. Pure conductor

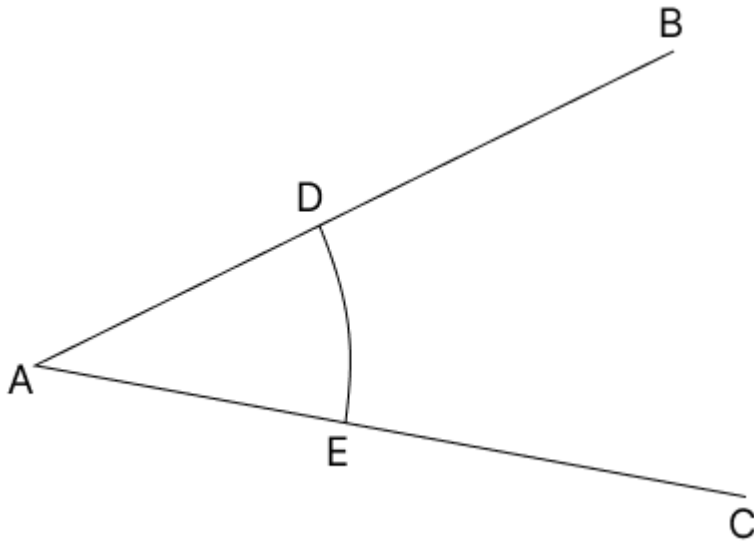
Q.131 हाइब्रिड टेलीविजन रिसीवर में प्रयुक्त आईसी (IC) _____। **HINDI**

- Ans
- ☒ 1. सभी अर्थात ध्वनि आईएफ सीमक-एम्पलीफायर, FM संसूचक और ऑडियो पूर्व-एम्पलीफायर का कार्य करने में सक्षम हैं
 - ☒ 2. केवल FM संसूचक का कार्य करने में सक्षम हैं
 - ☒ 3. केवल ध्वनि आईएफ सीमक-एम्पलीफायर का कार्य करने में सक्षम हैं
 - ☒ 4. केवल ऑडियो पूर्व-एम्पलीफायर का कार्य करने में सक्षम हैं

Q.132 What is the effect of increasing the base current on the collector current in a transistor amplifier?

- Ans
- ☒ 1. The collector current increases.
 - ☒ 2. The collector current becomes zero.
 - ☒ 3. The collector current decreases.
 - ☒ 4. The collector current remains constant.

Q.133 In the process of bisecting angle BAC in the given figure, why do we draw arcs from points D and E?



- Ans
- ☒ 1. To find midpoint AB
 - ☒ 2. To mark equal lengths
 - ☒ 3. To intersect line AC
 - ☒ 4. To intersect above A

Q.134 What is the advantage of using a differential amplifier in a voltage amplifier circuit?

- Ans
- ☒ 1. It decreases the power consumption of the amplifier.
 - ☒ 2. It increases the common-mode rejection ratio (CMRR) of the amplifier.
 - ☒ 3. It increases the gain of the amplifier.
 - ☒ 4. It increases the noise sensitivity of the amplifier.

Q.135 DTH का उपयोग करने वाले उपभोक्ताओं को सीधे टेलीविजन सेवाओं के लिए लंबी दूरी के प्रसारण हेतु विश्वसनीय और उच्च गुणवत्ता वाले संकेत प्रदान करने के लिए उपयोग की जाने वाली संचार प्रौद्योगिकी की पहचान कीजिए। **HINDI**

- Ans
- ☒ 1. उपग्रह संचार
 - ☒ 2. दृष्टि रेखा संचार
 - ☒ 3. रडार संचार
 - ☒ 4. ब्लूटूथ संचार

Q.136 Convert 8.5% into a decimal.

- Ans
- ☒ 1. 0.85
 - ☒ 2. 8.5
 - ☒ 3. 0.085
 - ☒ 4. 85

Q.137 Which of the following statements is INCORRECT about end standard?

- Ans
- ☒ 1. It measures the distance between two parallel flat surfaces.
 - ☒ 2. Faces are subject to wear.
 - ☒ 3. It is slower but more accurate.
 - ☒ 4. It is used to measure the distance between two engraved lines.

Q.138 स्विच, प्लग, सॉकेट और विशेष रूप से हेडफोन के लीड में शॉर्ट और टूटे हुए तारों (shorts and broken wires) को खोजने के लिए _____ बहुत सुविधाजनक है। **HINDI**

- Ans
- ☒ 1. सिग्नल अंतःक्षेपित्र (Signal Injector)
 - ☒ 2. समाक्ष केबल (Coaxial cable)
 - ☒ 3. दोलित्र (Oscillator)
 - ☒ 4. CRO

Q.139 विद्युत-रोधी परीक्षक सामान्यतः सामग्री की _____ का परीक्षण और मापन करने के लिए _____ वोल्टता का उपयोग करता है। **HINDI**

- Ans ☒ 1. सांद्रता ; अति निम्न
☒ 2. प्रतिरोध ; अति उच्च
☒ 3. सांद्रता ; अति उच्च
☒ 4. प्रतिरोध ; अति निम्न

Q.140 In a series circuit, three resistors of 10 ohms, 20 ohms, and R ohms are connected in series with a 12 V battery. What is the value of resistance R if current flowing in the circuit is 0.2 A?

- Ans ☒ 1. 10 ohms
☒ 2. 20 ohms
☒ 3. 30 ohms
☒ 4. 40 ohms

Q.141 What happens to the conductivity of a semiconductor when it is heated?

- Ans ☒ 1. Conductivity decreases
☒ 2. Conductivity becomes zero
☒ 3. Conductivity remains constant
☒ 4. Conductivity increases

Q.142 Where should the probes be connected when measuring voltage in a circuit?

- Ans ☒ 1. In series with the circuit
☒ 2. Across the circuit breaker only
☒ 3. In parallel with the circuit
☒ 4. Across the fuse only

Q.143 If a potential transformer has a turns ratio of 100 : 1 and the primary voltage is 11 kV, what will be the secondary voltage?

- Ans ☒ 1. 110 V
☒ 2. 11 V
☒ 3. 1.1 V
☒ 4. 1,100 V

Q.144 निम्नलिखित में से कौन-सा पैरामीटर दोलित्र (oscillator) में क्रिस्टल परीक्षण से संबंधित नहीं है? **HINDI**

- Ans ☒ 1. अनुनाद
☒ 2. रेनॉल्ड संख्या
☒ 3. बैंड चौड़ाई
☒ 4. हार्मोनिक आवृत्ति

Q.145 Why is an electrodynamicometer-type power factor meter preferred in AC circuits?

- Ans ☒ 1. It can measure both single-phase and three-phase power factors.
☒ 2. It does not require voltage connections.
☒ 3. It can measure DC power factor accurately.
☒ 4. It has a faster response time.

Q.146 What is the primary function of a NOT gate in a digital circuit?

- Ans ☒ 1. To combine multiple input signals
☒ 2. To amplify the input signal
☒ 3. To invert the input signal
☒ 4. To delay the input signal

Q.147 A voltmeter with a resistance of 10,000 ohms is connected across a circuit that has a voltage of 50 V. What is the current flowing through the voltmeter?

- Ans
- ☒ 1. 2 mA
 - ☒ 2. 1 mA
 - ☒ 3. 5 mA
 - ☒ 4. 4 mA

Q.148 Which logic gate configuration can be used to implement the Boolean function $F = \overline{A.(B + C)}$?

- Ans
- ☒ 1. NOT gate, followed by one AND gate and one OR gate
 - ☒ 2. One AND gate, followed by a NOT gate
 - ☒ 3. One AND gate, followed by a NOT gate and one OR gate
 - ☒ 4. One OR gate, followed by one AND gate and one NOT gate

Q.149 What is the typical temperature range of a mercury-based clinical thermometer?

- Ans
- ☒ 1. 0°C to 100°C
 - ☒ 2. 35°C to 42°C
 - ☒ 3. 0°C to 50°C
 - ☒ 4. -10°C to 110°C

Q.150 Which of the following statements about title block is/are true?

Statement 1: The title block is situated in the bottom right-hand corner of the drawing sheet.
Statement 2: The contents of the title block are standardised and cannot be modified to suit individual company needs.

- Ans
- ☒ 1. Both statements are false
 - ☒ 2. Statement 1 is false, but statement 2 is true
 - ☒ 3. Statement 1 is true, but statement 2 is false
 - ☒ 4. Both statements are true

Q.151 How can a NOT gate be implemented using a 2-input NOR gate?

- Ans
- ☒ 1. By connecting both inputs of the NOR gate to the same input signal
 - ☒ 2. By connecting two NOR gates in parallel
 - ☒ 3. It is not possible to create a NOT gate using a NOR gate.
 - ☒ 4. By connecting two NOR gates in series

Q.152 Which of the following metals has the lowest melting point?

- Ans
- ☒ 1. Mercury
 - ☒ 2. Iron
 - ☒ 3. Lead
 - ☒ 4. Gold

Q.153 A voltage amplifier has a gain of 20 and an input resistance of 1 kΩ. If the input signal is 0.1 V, what is the output voltage and the current drawn from the input signal source?

- Ans
- ☒ 1. Output voltage = 2 V, Input current = 3 mA
 - ☒ 2. Output voltage = 2 V, Input current = 1 mA
 - ☒ 3. Output voltage = 5 V, Input current = 0.1 mA
 - ☒ 4. Output voltage = 2 V, Input current = 0.1 mA

Q.154 Which of the following terms in the 5S concept refers to making a habit of maintaining the established procedures?

- Ans
- ☒ 1. Shine
 - ☒ 2. Set
 - ☒ 3. Sort
 - ☒ 4. Sustain

Q.155 A 100-mm prick punch with a 7-mm diameter body could have a 2.5-mm diameter point ground to an angle of _____.

- Ans ☒ 1. 90°
☒ 2. 30°
☒ 3. 120°
☒ 4. 45°

Q.156 Which of the following Boolean expressions represents the behaviour of a 3-input AND gate?

- Ans ☒ 1. $A + B + C$
☒ 2. $A * B * C$
☒ 3. $(A * B) + C$
☒ 4. $(A + B) * C$

Q.157 Which of the following calipers are used for marking lines, parallel to inside and outside edges and for locating the centre of round bars?

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

Q.158 पहचानें कि परीक्षण जिग (test jig) से संबंधित दिए गए कथन सही हैं या नहीं।

कथन:

I. कुछ सेकंड से अधिक समय लेने वाले परीक्षणों के लिए, परीक्षक डिज़ाइन में एक क्लैंप जोड़ने से आपके बोर्ड के परीक्षण के दौरान अन्य काम करने के लिए आपके हाथों को फ्री करके प्रक्रिया में काफी तेजी आ सकती है।

II: परीक्षण जिग में पीज़ो बज़र (piezo buzzer) और LED लाइट का उपयोग किया जा सकता है। **HINDI**

- Ans ☒ 1. केवल कथन II सही है
☒ 2. कथन I और II दोनों गलत हैं
☒ 3. केवल कथन I सही है
☒ 4. कथन I और II दोनों सही हैं

Q.159 What does 'traceability' in calibration mean?

- Ans ☒ 1. The calibration process is linked to an internationally recognised standard
☒ 2. The ability to track past measurements
☒ 3. The instrument's accuracy depends on user experience
☒ 4. The ability to repeat measurements consistently

Q.160 What is the purpose of negative feedback in a voltage amplifier?

- Ans ☒ 1. To increase the gain of the amplifier
☒ 2. To increase the noise sensitivity of the amplifier
☒ 3. To decrease the gain of the amplifier
☒ 4. To decrease the bandwidth of the amplifier

Q.161 What happens when both the Set (S) and Reset (R) inputs of an RS Flip-Flop are 0?

- Ans ☒ 1. The output remains unchanged.
☒ 2. The output is reset to 0.
☒ 3. The flip-flop is in an invalid state.
☒ 4. The output is set to 1.

Q.162 Which of the following 'V' blocks will have one 'V' groove and two grooves (slots) on either side for clamping in two positions?

- Ans ☒ 1. Double level single groove 'V' block
☒ 2. Matched pair 'V' block
☒ 3. Single level double groove 'V' block
☒ 4. Single level single groove 'V' block

Q.163 What precaution should be taken when measuring resistance in a circuit with capacitors?

- Ans
- ☐ 1. Reverse the test leads multiple times.
 - ☐ 2. Use the highest resistance range.
 - ☐ 3. Measure resistance in AC mode.
 - ☒ 4. Discharge the capacitors before testing.

Q.164 Which of the following is the primary reason why copper is widely used as a conductor in electrical wiring?

- Ans
- ☒ 1. Copper has low resistance and high conductivity.
 - ☐ 2. Copper has a low melting point.
 - ☐ 3. Copper is abundant and inexpensive.
 - ☐ 4. Copper has high resistance to electricity.

Q.165 What is the SI unit of 'volume'?

- Ans
- ☐ 1. Litres
 - ☐ 2. Cubic centimetre
 - ☒ 3. Cubic metre
 - ☐ 4. Millilitres

Q.166 If the length of a resistor is doubled, what happens to its resistance, assuming all other factors remain constant?

- Ans
- ☒ 1. The resistance is doubled.
 - ☐ 2. The resistance remains the same.
 - ☐ 3. The resistance is halved.
 - ☐ 4. The resistance quadruples.

Q.167 When creating 10 mm single-stroke capital letters in vertical style, what does the 10 mm distance between horizontal parallel lines represent?

- Ans
- ☐ 1. Letter width
 - ☒ 2. Letter height
 - ☐ 3. Stroke thickness
 - ☐ 4. Interline spacing

Q.168 Which of the following configurations is commonly used in Darlington amplifier circuits due to its high current gain and low input impedance?

- Ans
- ☒ 1. Common Emitter with a Common Base stage (CE-CB)
 - ☐ 2. Common Base (CB)
 - ☐ 3. Common Collector (CC)
 - ☐ 4. Common Emitter (CE)

Q.169 An AND gate is used in a digital circuit to enable a certain function. Under what condition will the function be enabled?

- Ans
- ☐ 1. When all the inputs are low
 - ☐ 2. When any one of the inputs is high
 - ☒ 3. When all the inputs are high
 - ☐ 4. When any one of the inputs is low

Q.170 Which type of line is used to represent hidden edges or surfaces in a technical drawing, as per BIS SP 46-2003?

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

Q.171 For your safety at work, which of the following should be ensured?

1. All the required protective clothing and equipment are used.
2. Training and instruction necessary for performing tasks safely have been received.

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

Q.172 Which of the following types of errors can be minimised by proper instrument calibration?

Ans ☒ 1. Random error
☒ 2. Gross error
☒ 3. Systematic error
☒ 4. Observational error

Q.173 The wave set of hacksaw teeth set has a pitch of _____.

Ans ☒ 1. 2.0 mm
☒ 2. 0.5 mm
☒ 3. 0.8 mm
☒ 4. 1.0 mm

Q.174 What is the significance of the cut-off region in the output characteristic of a transistor?

Ans ☒ 1. It indicates the region where the transistor is fully turned off.
☒ 2. It indicates the minimum collector-emitter voltage.
☒ 3. It indicates the maximum collector current.
☒ 4. It indicates the region where the transistor is fully turned on.

Q.175 What is the minimum age for employment in factories or mines or other hazardous employment, according to Article 24 of the Indian Constitution?

Ans ☒ 1. 14 years
☒ 2. 12 years
☒ 3. 16 years
☒ 4. 18 years
