RRB ALP CBT-II (Electrician) Official Paper (Held On: 02 May, 2025 Shift 1) (Previous Year Paper)

RRB Assistant Loco Pilot (ALP) • 2025 • 175 questions • 150 minutes • Answer key

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Scan the QR code or click the link to open it.

1 question is in Hindi and not printed here. Each one links to the online version, where you can read it.

PART A

Q1. The resistivity of a conductor depends on which of the following factors?

(a) Area of the conductor
(b) Mass of the conductor
(c) Nature of the conductor
(d) Diameter of conductor

Q2. Which of the following statements is correct regarding negative work done?

(a) The work done cannot be negative.
(b) When the force is perpendicular to the displacement, the work done is negative.
(c) When the force acts opposite to the direction of displacement, the work done is negative.
(d) When the force and displacement are in the same direction, the work done is negative.

Q3. In areas with hot climate, white colour of the exterior walls of the house is preferred because

(a) White color keeps the interior environment of the house cool by reflecting sunlight.
(b) White color makes the wall more durable.
(c) White color makes the house brighter by absorbing more sunlight.
(d) The white color looks good.

Q4. The sum of Yash's and his father's ages is 90 years. When Yash's age equals his father's present age, he will be five times his son Suraj's present age. When Yash's age equals his father's present age, Suraj's age will be 12 years more than Yash's present age. Find Suraj's present age.

(a) 15 years
(b) 18 years
(c) 12 years
(d) 16 years

Q5. What should come in place of question mark (?) in the given alphanumeric series?

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

(a) W35
(b) V35
(c) V40
(d) U35

Q6. Which of the following is a supplementary protocol that allows non-ASCII data to be sent via e-mail?

(a) HTTPS
(b) Multipurpose Internet Mail Extensions (MIME)
(c) DNS
(d) Mailing Lists

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Q7. Which of the following options best describes the primary function of digital signatures in electronic communications?

(a) It automatically stores all electronic documents for future reference.
(b) It encrypts the entire message content to ensure confidentiality.
(c) It verifies the identity of the sender and ensures the integrity of the message.
(d) This allows the recipient to edit the document before adding the signature.

Q8. The areas of three adjacent faces of a solid cuboid are 216 cm^2, 114 cm^2 and 19 cm^2. Find the volume (in cm^3) of the cuboid.

(a) 684
(b) 955
(c) 532
(d) 880

Q9. Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it seems to be at variance from commonly known facts, decide which of the given conclusions logically follows from the statements.

Statements:

Some bananas are litchis.

All litchis are kiwis.

Some kiwis are strawberries.

Conclusions:

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

(a) Only conclusion 1 follows
(b) Only conclusion 2 follows
(c) Neither conclusion 1 nor 2 follows
(d) Both conclusions 1 and 2 follow

Q10. Which of the following ecosystems has very low temperatures and frozen soil?

(a) Desert
(b) Tropical rainforest
(c) Pasture
(d) Tundra

Q11. If A is an acute angle and p tan A = n sec A, then find the value of $(p^2 - n^2)/pn$.

(a) cot A .cos A
(b) sin A .cos A
(c) (tan A)/(sec A)
(d) None of the above.

Q12. A fruit vendor initially had a few apples. He sold 40% of them and still had 300 apples left. How many apples did he initially have?

(a) 750
(b) 450
(c) 600
(d) 500

Q13. Megha bought a bag for Rs. 1,271 after getting an 18% discount on the marked price. Find the marked price of the bag.

(a) 1,450
(b) 1,650
(c) 1,550
(d) 1,350

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Q14. Which of the following methods is the safest method for disposal of toxic dust?

(a) Leaving it in the air for dilution.
(b) Sweeping it in open areas.
(c) Using special hazardous waste disposal containers.
(d) Putting it in regular trash cans.

Q15. Vijay cycles 10 meters from home to tuition, then 5 meters to the shop. He returns home in the same way, covering the same distance. Find the total length of the path.

(a) 20 m
(b) 15 m
(c) Zero
(d) 30 m

Q16. A, B, C, D, E, and F live on six different floors of the same building. The ground floor is numbered 1, the floor immediately above it is numbered 2, and so on, until the topmost floor is numbered 6. D lives on an odd-numbered floor, but not 3. The sum of the floors on which D and E live is 7. A lives on the floor immediately below C. F lives on the topmost floor. How many people live between E and F?

(a) 4
(b) 1
(c) 3
(d) 2

Q17. Which of the following noise levels is considered potentially harmful to human health when experienced over a long period of time?

(a) 70 dB
(b) 90 dB
(c) 30 dB
(d) 50 dB

Q18. 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 letter-cluster pair is not based on the number of consonants/vowels or their position.)

(a) GN-PV
(b) JQ-SY
(c) HO-QW
(d) AH-JR

Q19. Which of the following relations is not correct?

(a) Electric power = $(\text{current})^2 \times \text{resistance}$
(b) Electric power = voltage × current
(c) Electric power = voltage/current
(d) Electric power = $(\text{voltage})^2$ / resistance

Q20. In the following triplet, each group of letters is related to the next group following a certain logic. Select the option from the given ones that follows the same logic.

TERM-ERTM-TMRE

(a) WHEN-HWEN-WENH
(b) ZERO-EZRO-ZREO
(c) VICE-ICVE-VECI
(d) USER-RESU-REUS

Q21. Which of the following options does not correctly represent the electric power P in a circuit (current, potential difference and resistance are symbolically written as I, V and R respectively.)

(a) $P = (V^2)/R$
(b) $P = I^2 R$

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(c) P = VI
(d) $P = IR^2$

Q22. In a certain code language, 'BARE' is coded as '8264' and 'RIDS' is coded as '3587'. What is the code for 'R' in the given code language?
(a) 3
(b) 8
(c) 6
(d) 5

Q23. Kinetic energy and potential energy together are called which form of energy?
(a) Mechanical
(b) Chemical
(c) Ionic
(d) Nuclear

Q24. If a circuit contains resistors of 10 Ω, 20 Ω and 60 Ω are connected in parallel, then find the total resistance of the circuit.
(a) 90 Ω.
(b) 60 Ω
(c) 6 Ω
(d) 20 Ω

Q25. What term is used to describe organisms in an ecosystem that produce their own food?
(a) Consumer
(b) Decomposer
(c) Vegetarian
(d) Producer

Q26. What should come in place of question mark (?) in the given series?
185 174 163 152 ? 130
(a) 144
(b) 142
(c) 143
(d) 141

Q27. What is the primary source of energy for most ecosystems?
(a) Soil
(b) Wind
(c) Sunlight
(d) Water

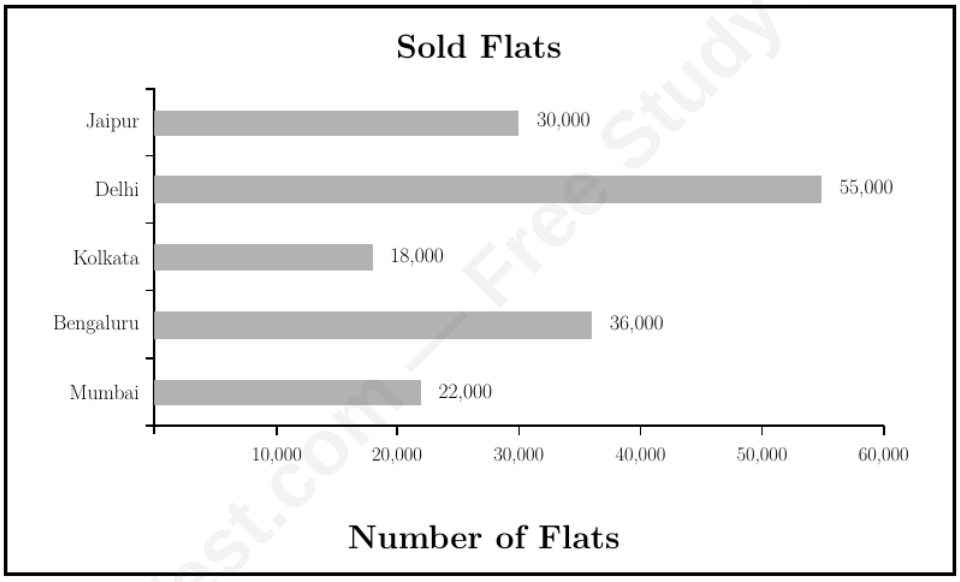
Q28. Potential energy falls under which of the following categories of energy?
(a) Thermal energy
(b) Light energy
(c) Chemical energy
(d) Mechanical energy

Q29. Two resistors of resistance 20 Ω and 30 Ω are connected in series in a circuit. If the supplied voltage is 250 V, find the current transmitted through the circuit.
(a) 8 A
(b) 12 A
(c) 5 A
(d) 20 A

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Q30. Study the given bar graph and answer the question below.

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



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

(a) 75%
(b) 125%
(c) 120%
(d) 150%

Q31. Which of the following instruments is used to measure temperature?

(a) Hygrometer
(b) Voltmeter
(c) Thermometer
(d) Odometer

Q32. Use of energy efficient machinery in industrial settings mainly helps in _____.

(a) increase energy consumption and consequently the cost of the product
(b) reducing industrial energy requirements and improve the competitiveness of products
(c) reducing operational efficiency
(d) extending the life of old equipment

Q33. A dozen pairs of jeans costing Rs. 3,520 are available at a discount of 35%. How many pairs of jeans can be purchased for Rs. 572?

(a) 2
(b) 5
(c) 1
(d) 3

Q34. Refer to the following letter and symbol series and answer the question that follows. Counting is to be done from left to right only.

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

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

(a) Two
(b) One
(c) Four
(d) Three

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Q35. In the SI system, which of the following options best describes the fundamental quantities?

(a) Distance, Speed, Acceleration
(b) Temperature, pressure, volume
(c) Force, power, energy
(d) Length, mass, time

Q36. An ammeter has 20 divisions between 0 and 2 A. The least count of an ammeter is _____.

(a) 0.2 A
(b) 0.1 A
(c) 1 A
(d) 2 A

Q37. If 'A' denotes '÷', 'B' denotes 'x', 'C' denotes '+' and 'D' denotes '-', then what will come in place of question mark (?) in the following equation?

38 C 32 A 4 D 5 B 7=?

(a) 10
(b) 8
(c) 11
(d) 9

Q38. If $x^3 + y^3 = 16$ and $x + y = 4$, then find the value of xy.

(a) 4
(b) 2
(c) 3
(d) 0

Q39. What is the average human body temperature?

(a) 40°C
(b) 32°C
(c) 42°C
(d) 37°C

Q40. Which of the following statements is true?

(a) In the kitchen, aluminium utensils are used because aluminium is a good conductor of heat.
(b) Both insulators and conductors allow heat to pass through them easily.
(c) Plastic is a good conductor of heat.
(d) Wood is a good conductor of heat.

Q41. Refer to the following letter and symbol series and answer the question that follows. Counting is to be done from left to right only.

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

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

(a) One
(b) Two
(c) Three
(d) Four

Q42. According to the SI system of units, how many fundamental units are used to measure physical quantities?

(a) 5
(b) 10
(c) 7
(d) 4

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Q43. Eight people are sitting in two parallel rows containing 4 people in each row, in such a way that there is an equal distance between adjacent persons. Row 1 contains A, B, C and D, all of whom are facing south. Row 2 contains P, Q, R and S, all of whom are facing north. Thus, each person faces another person in the other row. Only two people sit between P and Q. A faces the person sitting to the immediate left of P. R sits to the immediate left of S. D sits to the immediate right of C. Who among the following faces P?

(a) D
(b) C
(c) B
(d) A

Q44. Which of the following sequences of components primarily serves to execute instructions, store permanent firmware, temporarily store data during program execution, and provide a platform for interconnecting hardware components on a computer motherboard?

(a) RAM-ROM - CPU - PCB
(b) PCB-ROM-CPU-RAM
(c) CPU-RAM-ROM-PCB
(d) CPU-ROM-RAM- PCB

Q45. The area of a regular polygon with side 12 cm is 144 cm^2. If the perpendicular distance from the center to the side of the polygon is 6 cm, find the number of sides of the polygon.

(a) 5
(b) 7
(c) 6
(d) 4

Q46. A man purchased two varieties of pens at the rates of Rs. 8 for 9 pens and Rs. 8 per pen. If he purchased an equal number of pens of each of the two varieties and then sold all his pens at Rs. 6 per pen, what was his profit percentage?

(a) 33%
(b) 32%
(c) 45%
(d) 35%

Q47. Match the columns:

Engineering Applications	Types of Engineering Drawings
A) Plans, facade elevations, and foundation drawings of houses to be constructed.	P) Mechanical Engineering Drawings
B) Circuit Diagrams and Electrical Installation Drawings.	Q) Electronics Engineering Drawings
C) PCB Track Drawings.	R) Electrical Engineering Drawings
D) Riveted Joints and Welded Joints.	S) Civil Engineering Drawings

(a) A-P: B-R; C-Q; D-S
(b) A-S; B-P; C-Q; D-R
(c) A-S; B-R; C-Q; D-P
(d) A-S; B-R; C-P; D-Q

Q48. 6 men or 5 women can complete a task in 7 days. 6 men work for 5 days and then leave. Find the number of women needed to complete the remaining task in 5 days.

(a) 4
(b) 2
(c) 1
(d) 3

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Q49. Which of the following statements are correct regarding the use of a fire extinguisher?

Statement 1: It is safe to attempt to extinguish any type of fire, regardless of the presence of toxic fumes.

Statement 2: The P.A.S.S. technique, which stands for Pull, Aim, Squeeze, and Sweep, is recommended for effective use of a fire extinguisher.

(a) Neither statement 1 nor 2 is correct.
(b) Only statement 1 is correct.
(c) Both statements 1 and 2 are correct.
(d) Only statement 2 is correct.

Q50. Which of the following three-dimensional geometric figures has eight vertices and six rectangular faces?

(a) Pyramid
(b) Cylinder
(c) Parallelogram
(d) Cuboid

Q51. In a hospital, the ratio between the number of doctors and the number of nurses was 1 : 3. The addition of 12 new doctors and the departure of 24 nurses brings the ratio to 3 : 4. After k more nurses resign from the hospital, the ratio becomes 1 : 1. Find the value of k.

(a) 12
(b) 28
(c) 24
(d) 26

Q52. Which of the following statements is/are correct regarding functional dimension (F) in engineering drawings?

Statement 1: Functional dimensions are essential for the function of the component or space.

Statement 2: Functional dimensions are usually shown without any boundaries.

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

(a) Only statement 1 is true
(b) Only statement 3 is true
(c) Only statements 2 and 3 are true
(d) Only statements 1 and 2 are true

Q53. 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 from commonly known facts, decide which of the given conclusions logically follows from the given statements.

Statements:

1. Some desks are tables.

II. All tables are cabinets.

III. All cabinets are beds.

Conclusions:

I. Some beds are tables.

II. All cabinets are desks.

(a) Only conclusion I follows.
(b) Only conclusion II follows.
(c) Both conclusions I and II follow.
(d) Neither conclusion I nor conclusion II follows.

Q54. Ganpat starts from point A and walks 18 m west. He turns left, walks 32 m, then turns left again, walks 26 m, then turns left again, walks 61 m, and stops at point B. Meena starts from point Z, which is 22 m east of point A. She walks 42 m north, turns right, walks 35 m, turns right and walks 13 m, and stops at point Y. Find the shortest distance between point B and point Y. (All turns are 90-degree turns only.)

(a) 52 m
(b) 43 m
(c) 57 m

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(d) 49 m

Q55. Three circular plates of radii 3 m, 2 m, and 1 m are cut from a rectangular cardboard sheet 46 m long and 8 m wide. If the area of the remaining cardboard sheet is equal to the area of a square, find the length of each side of the square. (Use π = 22/7)

(a) 20 m
(b) 18 m
(c) 14 m
(d) 16 m

Q56. In a certain code language, 'CARD' is coded as '8674' and 'MICE' is coded as '3517'. What is the code for 'C' in the given code language?

(a) 8
(b) 7
(c) 1
(d) 6

Q57. When an object of mass 50 kg is moved from one point to another along a horizontal line, what is the work done by the force of gravity on the object? (g = 10 m / s^2)

(a) Zero
(b) 50 J
(c) 500 J
(d) -500 J

Q58. If 50 : x :: x : 32 and x > 0, then find the value of x.

(a) 45.8
(b) 40
(c) 38.7
(d) 40.6

Q59. Two plumbers, X and Y, are paid a total of Rs. 770 per day by their employer. If X is paid 140% of the amount paid to Y, how much is Y paid per day (in Rs. , rounded to two decimal places)?

(a) 320.83
(b) 220.83
(c) 270.83
(d) 370.83

Q60. What will be the value of 10 km/hr in SI units?

(a) 10 m/s
(b) 0.16 m/s
(c) 2.7 m/s
(d) 1000 m/s

Q61. In a certain code language,

'A + B' means 'A is the mother of B',

'A - B' means 'A is the brother of B',

'A × B' means 'A is the wife of B' and

'A & B' means 'A is the father of B'.

If 'E & F + G - H x T', then how is E related to T?

(a) Wife's mother's father
(b) Wife's brother
(c) Wife's father
(d) Wife's mother's brother

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Q62. If x = (7 + √5), y = (7 - √5), then find the value of $x^2 + y^2$.

(a) 96
(b) 137
(c) 124
(d) 108

Q63. Convert 1 kilowatt hour (kWh) to joule.

(a) 1 kWh = 3.6 × 10^6 J
(b) 1 kWh = 3.6 × 10^7 J
(c) 1 kWh = 3.6 × 10^5 J
(d) 1 kWh = 3.6 × 10^3 J

Q64. Which of the following letter-clusters should replace # and % so that the pattern and relationship followed between the letter-cluster pairs 4 to the left of :: is the same as the pattern and relationship followed between the letter-cluster pairs 4 to the right of ::?

: HDI :: MIN : %

(a) = JFI, % = KGL
(b) # = JFK, % = KGM
(c) # = JFK, % = KGL
(d) = JFK, % = KHL

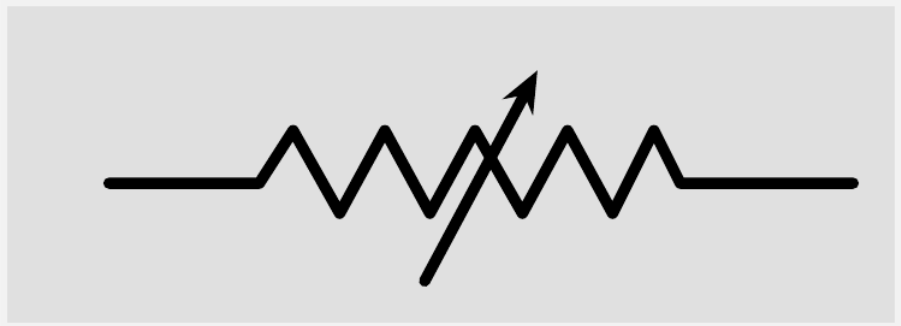
Q65. What is the designation of the trimmed sheet with dimensions 297 mm x 420 mm, as per the ISO-A size series?

(a) A1
(b) A2
(c) A4
(d) A3

Q66. Which of the following expressions is not correct for electric power?

(a) P = VI
(b) P= V^2/R
(c) P = I^2/R
(d) P = I^2R

Q67. What does the symbol given below in the circuit diagram represent?



(a) Voltmeter
(b) Voltage source
(c) Resistor
(d) Variable resistor

Q68. Preeti, Kiran, Grace, Ankit, Deepak, Nitin and Neelam each have an exam on a different day of the same week, starting from Monday and ending on Sunday. Preeti has an exam on Thursday. Only one person has an exam between Preeti and Nitin. Grace has an exam the day immediately before Nitin but not on Monday. Only two people have an exam between Grace and Deepak. Neelam has her exam before Ankit but after Kiran. Who among the following has an exam on Monday?

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(a) Nitin
(b) Neelam
(c) Kiran
(d) Deepak

Q69. If 5/9 of a number is 6 more than 1/2 of that number, then find that number.
(a) 104
(b) 108
(c) 106
(d) 102

Q70. What should be done immediately after a fuel spillage in a workshop?
(a) Cover it with plastic to prevent evaporation.
(b) Use water to wash it off
(c) Leave it as is and inform the supervisor later
(d) Empty the area and control overflow using absorbent materials

Q71. A cube of mass 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 _____.
(a) 4.7833
(b) 4.8
(c) 4.78
(d) 4.783

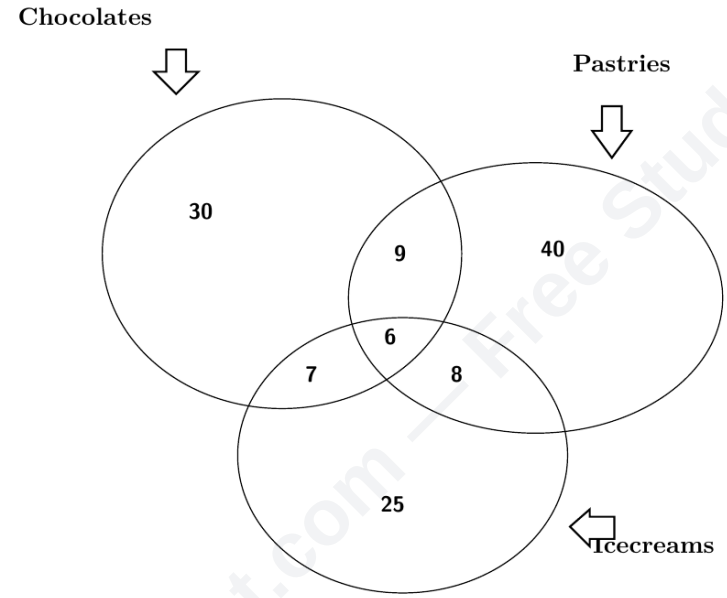
Q72. In science, work done is defined as:
(a) force / distance
(b) force / displacement
(c) force × displacement
(d) force × distance

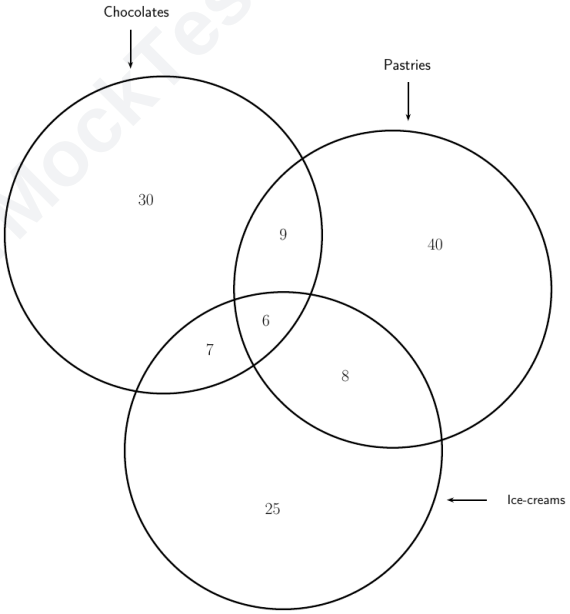
Q73. Simplify 976 × 265 + 976 × 735.
(a) 752800
(b) 976000
(c) 658200
(d) 876000

Q74. Which of the following is not an advantage of using mobile governance using ICT?
(a) Reduced costs for the government
(b) Better access to government services for citizens
(c) Increased transparency and accountability in government
(d) Increasing the efficiency of government processes

Q75. Study the given diagram carefully and answer the question given below. The numbers in different sections represent the number of children who like different desserts.

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How many children like both pastries and ice cream but not chocolate?

(a) 9
(b) 6
(c) 7
(d) 8

Q76. The rate of doing work is known as _____.

(a) Power
(b) Force
(c) Kinetic energy
(d) Potential energy

Q77. Which of the following actions help prevent injuries from slips and falls?

(a) Wearing loose shoes for comfort
(b) Walk carefully on wet floors
(c) Cleaning up spills immediately and using warning signs
(d) Ignoring clutter on the sidewalk

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Q78. In the following series, only one letter-cluster is wrong. Choose the wrong letter-cluster.

PCO MEM JGK GIJ DKG AME

(a) AME
(b) JGK
(c) DKG
(d) GIJ

Q79. Which of the following statements about geometric shapes is/are true?

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

(a) Only statement 1 is true
(b) Only statement 2 is true
(c) Both statements 1 and 2 are true
(d) Neither statement 1 nor 2 is true

Q80. A tank has two inlets, I1 and I2. I1 alone can fill it in 8 hours, and I2 alone can fill it in 4 hours. If both inlets are open, how long will it take to fill the tank?

(a) 2 hours
(b) 22/3 hours
(c) 32/3 hours
(d) 42/3 hours

Q81. A 280 m long train travelling at a speed of 72 km/hr crosses a platform in 30 seconds. Find the length (in m) of the platform.

(a) 335
(b) 280
(c) 300
(d) 320

Q82. Amit's income in 2019 was Rs. 27,000. His income increases by 10% each year. What was his income (in Rs.) in 2021?

(a) 32,400
(b) 29,700
(c) 32,670
(d) 27,000

Q83. Which of the following is the best way to identify hazards at the workplace?

(a) Waiting for an event to occur
(b) Performing regular safety inspections
(c) Relying on employees to report accidents
(d) Ignoring small risks

Q84. Given below are two sets of numbers. In each set, performing certain mathematical operations on the first number gives the second number. Similarly, performing certain mathematical operations on the second number gives the third number, and so on. Which of the given options follows the same set of operations as the given sets?

(Note: Operations must be performed on whole numbers without breaking the numbers into their component digits. For example, take 13. Operations such as addition, subtraction, multiplication, etc. can be performed on 13. Breaking 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not permitted.)

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

(a) 9-2-11-24
(b) 1-1-2-4
(c) 6-12-18-34
(d) 7-49-56-122

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Q85. Which of the following will verify the credentials and documents of applicants uploaded on the National Scholarship Portal?

(a) National Scholarship Portal
(b) The University/Institute in which the applicant is studying.
(c) Third Party
(d) Government

Q86. The average of three numbers is 20. If two numbers are 16 and 24, find the third number.

(a) 22
(b) 21
(c) 20
(d) 19

Q87. Which of the following statements is/are true?

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

Statement 2: All plastics are good conductors of heat.

(a) Only statement 1
(b) Only statement 2
(c) Neither statement 1 nor statement 2
(d) Both statement 1 and statement 2

Q88. In the following number-pairs, the second number is obtained by performing certain mathematical operations on the first number. What number should be replaced by X and Y so that the pattern followed by the two numbers to the left of :: is the same as the pattern followed by the two numbers to the right of ::?

(Note: Operations must be performed on whole numbers, without breaking the numbers into their component digits. For example, take 13. Operations such as addition/subtraction/multiplication can be performed on 13. Breaking 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not permitted.)

X: 85 :: 36: Y

(a) x = 44, Y = 73
(b) x = 42, Y = 73
(c) x = 43, Y = 77
(d) x = 42, Y = 71

Q89. Jaspreet deposited Rs. 58,550 at 20% annual interest rate compounded annually. What is the total amount (in Rs.) Jaspreet will receive after 2 years ?

(a) 84,700
(b) 84,312
(c) 84,735
(d) 83,876

Q90. Rinku travels 136 meters in his car in 17 seconds. Find his speed (in km/hr).

(a) 11.6
(b) 17
(c) 28.8
(d) 26

Q91. What should come in place of question mark (?) in the given series?

893 891 889 887 ? 883

(a) 986
(b) 885
(c) 985
(d) 886

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Q92. Ten people are sitting in two parallel rows, five in each row, in such a way that there is an equal distance between adjacent persons.

Row I contains A, B, C, D, and E, all of whom are facing south. Row II contains R, S, T, U and V, all of whom are facing north. Thus, each person faces a person from the other row. A sits at the right end of his row and faces U. R sits in the middle of his row and faces C. E sits between C and D, facing T. S sits at the right end of his row.

Who sits exactly opposite B?

(a) T
(b) R
(c) U
(d) V

Q93. What type of thermometer is used to measure the internal temperature of ice?

(a) Digital thermometer
(b) Clinical thermometer
(c) Infrared thermometer
(d) Laboratory Thermometer

Q94. An ammeter with a range of 0 to 10 A reads a current of 7.5 A. If its actual value is 6.2 A, the relative error is _____.

(a) 13%
(b) 17.33%
(c) 20.96%
(d) 4.8%

Q95. The average of 5 results is 51 and the average of the first 4 of them is 50. The 5th result is.

(a) 55
(b) 50
(c) 51
(d) 54

Q96. A copper spoon is dipped in hot water. What happens to the other end?

(a) It gets heated by conduction.
(b) It cools down by conduction.
(c) It gets heated by convection.
(d) It cools down by convection.

Q97. 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 of the given letter-clusters does not belong to that group? (Note: The odd letter-cluster is not based on the number of consonants/vowels or their position in the letter-cluster.)

(a) GMOT
(b) FLNS
(c) NTVB
(d) LRTY

Q98. A rod of length 8/9 meters breaks into two pieces. If one piece is 1/3 meters long, find the length (in m) of the other piece.

(a) 2/9
(b) 7/9
(c) 5/9
(d) 4/9

Q99. This question is in Hindi. Read it online.

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Q100. An object weighs 60 N on Earth. What will be its weight on the surface of the Moon?

(a) 600 N
(b) 10 N
(c) 6 N
(d) 60 N

PART B

Q101. What is the main purpose of continuity test in DC generator?

(a) Checking Voltage Regulation
(b) Measuring current flow
(c) Testing the insulation resistance
(d) Detecting open or broken windings

Q102. If Sin θ= 3/5, then find the value of cosθ.

(a) 3/4
(b) 3/5
(c) 4/5
(d) 5/4

Q103. What type of components are used for tapping in a ring main system?

(a) through fuses and control switches
(b) through capacitors
(c) directly from the mains supply
(d) by using transformers

Q104. What is the phase difference between the line voltage and the phase voltage in a star-connected load?

(a) 0°
(b) 120°
(c) 30°
(d) 90°

Q105. Low speed diesel engine alternators employ rotor of _____ type.

(a) salient pole construction
(b) rotating armature construction
(c) cylindrical stator construction
(d) slip ring construction

Q106. Which of the following organizations is responsible for enforcing workplace safety regulations in India?

(a) Food and Drug Administration (FDA)
(b) Environmental Protection Agency (EPA)
(c) Directorate General of Factory Advice Services and Labour Institutes (DGFASLI)
(d) World Health Organization (WHO)

Q107. Made using gaskets, seals and spacers.

(a) centre punch
(b) hollow punch
(c) pin punch
(d) prick punch

Q108. The field resistance of a 220 V shunt generator is 110 Ω. Find the field current.

(a) 5A
(b) 2 A
(c) 20 A
(d) 10 A

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Q109. Which of the following is the characteristic of SCR?

(a) It is a four-layer, three-joint device.
(b) This is a two-terminal device.
(c) It does not have any gate terminals.
(d) It cannot control the flow of current.

Q110. At what percentage overload does the solenoid completely attract the armature towards itself, causing instantaneous tripping of the 0 MCB?

(a) 700%
(b) 300%
(c) 130%
(d) 1000%

Q111. Transformer open circuit test is used to determine _____.

(a) copper loss
(b) stray loss
(c) windage loss
(d) core losses and no load current

Q112. For what purpose are pins and clips used in engineering drawings?

(a) Draws horizontal lines, parallel lines and operates/holds set scraper.
(b) Transferring dimensions and dividing lines into equal parts
(c) Keep the drawing sheet firmly fixed on the drawing board so that it does not move.
(d) Supporting drawing paper or tracing paper for making drawings

Q113. What type of device is UJT?

(a) Optical device
(b) metal-oxide-semiconductor device
(c) Unipolar junction device
(d) bipolar junction device

Q114. Where are Kit-Kat type fuses usually used?

(a) In domestic and small industrial electrical circuits
(b) in power generation plants
(c) in high-voltage transmission systems
(d) in electronic circuits

Q115. The magnitude of the EMF induced by an alternator is given as _____.

(Given: B is the flux density, is the length of the conductors, is the velocity of rotation and θ is the angle at which the conductor cuts the line of force.)

(a) (BL Sing)/V
(b) (BV Cosq)L
(c) BLV Sinθ
(d) BLV Cosq

Q116. If the current flowing in a conductor is 5A and the resistance of the conductor is 10 ohms, then according to Ohm's law, what will be the voltage across the conductor?

(a) 50 V
(b) 5 V
(c) 15 V
(d) 10 V

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Q117. Which of the following instruments is used to test the earth resistance of the earthing system?

(a) Clamp meter
(b) Oscilloscope
(c) Multimeter
(d) Megger

Q118. Which of the following options best describes the construction of a mica capacitor?

(a) A ceramic disc with metallic coating
(b) Alternate layers of metal foil and mica sheets
(c) polar electrolyte between two aluminum plates
(d) A thin polymer film is rolled into a cylinder

Q119. What will happen if the gate current is removed during the TRIAC conduction?

(a) The TRIAC will not be affected.
(b) The TRIAC will behave as if it is short circuited.
(c) The TRIAC will continue to conduct until the current falls below the holding current.
(d) The TRIAC will stop conducting.

Q120. In a velocity-time graph, represents negative slope.

(a) Distance
(b) Retardation
(c) Displacement
(d) Acceleration

Q121. What is the primary use of a single junction transistor (UJT) in electronic circuits?

(a) Frequency modulation
(b) Voltage regulation
(c) Amplification of signals
(d) Triggering of SCRS and TRIACS

Q122. A circular hole of radius 3 cm is cut out of a rectangular sheet of dimensions 12 cm × 10 cm. Find the remaining area.

(Take ? = 3.14)

(a) 95.86 cm^2
(b) 91.74 cm^2
(c) 75.74 cm^2
(d) 1.00 cm^2

Q123. When using a multimeter to measure current, which of the following options is correct?

(a) The multimeter is connected in parallel with the load.
(b) The multimeter is connected only between resistive components.
(c) The multimeter is connected in series with the load.
(d) The multimeter is connected directly to the power source.

Q124. IEEE 80 provides recommendations for _____.

(a) Voltage regulation in power systems
(b) Standards for Insulating Materials
(c) Proper installation of grounding and bonding systems in electrical installations
(d) Measurement of electrical energy consumption

Q125. As per BIS SP 46-2003, which of the following applications is correctly represented by a chain-thin line in engineering drawing?

(a) Center lines
(b) Visible edges
(c) Dimension lines

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(d) Hidden edges

Q126. What is the main cause of electric shock when a person comes in contact with electrical equipment?

(a) The current flows through the body causing damage.
(b) Electrical equipment is not properly earthed.
(c) Electrical appliances are very powerful.
(d) The devices are used for a very long time.

Q127. A 20 kVA, 2500/250 V, 50 Hz, single-phase transformer gave open circuit test results (on the low voltage side) of 250 V, 1.6 A and 100 W; what is the no-load power factor?

(a) 0.1
(b) 0.25
(c) 0.15
(d) 0.2

Q128. While installing the earthing system, which of the following is the major safety measure to be followed?

(a) Use thin copper wires for earthing to reduce cost.
(b) Ensure the earthing system is designed for maximum efficiency.
(c) Ensure that the earthing system is properly inspected and tested for safety compliance.
(d) Use flexible conductors for earthing connections.

Q129. Which of the following factors does not affect the fuse rating?

(a) Ambient temperature
(b) Cross-sectional area of the conductor
(c) Fuse holder color
(d) Type of electrical load

Q130. Why is armature resistance control not suitable for speed control in high-power DC motors?

(a) This field increases the current.
(b) This causes high torque oscillations.
(c) It cannot reduce the speed of the motor.
(d) This results in low efficiency due to high power losses.

Q131. If two inductors are connected in series with mutual inductance M (aid), then what will be the equivalent inductance?

(a) L_(eq) = (L1 + L2)/(L1 * L2)
(b) L_(eq) = L1 + L2 + 2M
(c) L_(eq) = L1 + L2 - 2M
(d) L_(eq) = (L1 + L2)/2

Q132. In a 3-phase, balanced system, if the load is purely resistive, the line current _____

(a) is unrelated to line voltage
(b) leads the line voltage by 90°
(c) is in phase with the line voltage
(d) lags the line voltage by 90°

Q133. What happens when a strong magnet is placed near a weak magnet?

(a) A strong magnet will induce magnetism in a weak magnet.
(b) The weak magnet will disappear.
(c) A weak magnet will repel a strong magnet.
(d) A strong magnet will lose its magnetism.

Q134. Which of the following parts of the file is fitted to the tang to hold the file?

(a) Tip or Point
(b) Handle
(c) Edge

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(d) Tang

Q135. Why is it important for everyone to follow safety procedures in the workplace?

(a) To reduce risks and avoid accidents
(b) To limit the need for constant supervision
(c) To significantly reduce operating costs
(d) To increase overall production efficiency

Q136. In rotating armature type alternator, magnetic field is produced by:

(a) Commutator
(b) Slip rings and brushes
(c) Slip rings on rotor
(d) DC electromagnets placed on stator

Q137. Which of the following files is used for filing narrow grooves and angles greater than 10°?

(a) Hemispherical file
(b) Flat file
(c) Knife file
(d) Triangle file

Q138. In a balanced star-connected system, the neutral point is _____.

(a) carries current even under balanced loading conditions
(b) occurs at a high constant voltage with respect to ground
(c) occurs at zero potential with respect to all phases
(d) always at equal voltage on any phase

Q139. Drawing instrument box is used to carry all _____ instruments.

(a) drawing
(b) screening
(c) drilling
(d) casting

Q140. Alternators run at _____ speed than synchronous speed.

(a) less or more
(b) equal
(c) Only less
(d) only more

Q141. Which of the following is an important safety measure during a power failure?

(a) Ignoring the alarm system.
(b) Ensuring that all machinery and electrical equipment are switched off.
(c) Continuing to use appliances without verifying the electrical status.
(d) Using candles for lighting.

Q142. Which of the following types of pliers is used to shape loops in wires and to make curves in two strips of light metal?

(a) Round nose pliers
(b) Flat nose pliers
(c) End cutting pliers
(d) Slip-joint pliers

Q143. Non-functional dimensions are _____.

(a) essential to the function of the location or component
(b) derived from the values of the corresponding attributes of the drawing
(c) not essential to the function of the space or component
(d) derived directly from the values given on the drawing

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Q144. In a lead-acid battery, what is the chemical composition of the material used for the positive plate during discharge?

(a) H2SO4
(b) Pb
(c) PbO2
(d) PbSO4

Q145. In electronic circuits, what is the main advantage of using MOSFETs over other types of transistors?

(a) Ability to handle higher voltages and currents than BJTs.
(b) High frequency response.
(c) High input impedance and low power consumption.
(d) Capable of amplifying both AC and DC signals.

Q146. 20 kVA, 2500/250 V, 50 Hz, single-phase transformer gives an open circuit test result (on the low voltage side) of 250 V and 100 W; what will be the core loss current?

(a) 0.1 A
(b) 0.2 A
(c) .0.3 A
(d) 0.4 A

Q147. A circuit contains three resistors: 15 ohms, 10 ohms, and 20 ohms. The 15-ohm resistor is in series with a parallel combination of 10-ohm and 20-ohm resistors. If a 24 V battery is connected to the circuit, find the total current flowing through the circuit.

(a) 1.1 A
(b) .0.1 A
(c) 3.1 A
(d) 2.1A

Q148. What will be the sum of (3/8) + (5/12) ?

(a) 19/24
(b) 8/20
(c) 17/24
(d) 7/12

Q149. What is the advantage of heat treating a substance?

(a) To lower the melting point of a substance
(b) To make sharp-edged surgical knives
(c) To convert it from one element to another
(d) To increase the weight of the substance

Q150. Air-core inductors are generally used in circuits operating in _____.

(a) over the audio frequency range (20 Hz-20 kHz)
(b) on DC power supply circuit
(c) at high frequencies from 1 MHz to several hundred megahertz (MHz)
(d) at frequencies below 50 Hz

Q151. What is the effect of increasing the field current in a DC shunt motor?

(a) The speed of the motor decreases.
(b) The motor stops immediately.
(c) The torque decreases.
(d) The speed of the motor increases.

Q152. Which component holds the iron sinker in a magnetic hydraulic MCB?

(a) A bimetallic strip
(b) A fuse element
(c) A thermal coil

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(d) A non-ferrous tube

Q153. Which of the following options is correct?

Statement 1: In a balanced three-phase system, the power delivered to the load depends on both the phase current and the phase voltage.

Statement 2: In a star-connected system, the line voltage is always greater than the phase voltage by a factor of √3.

(a) Statement 1 is false, and statement 2 is true.
(b) Both statement 1 and statement 2 are false.
(c) Statement 1 is true, and statement 2 is false.
(d) Both statement 1 and statement 2 are true.

Q154. In open circuit test of transformer, the supply frequency should be _____.

(a) exceeding the prescribed frequency
(b) less than the prescribed frequency
(c) equal to the set frequency
(d) independent of set frequency

Q155. A 3-phase AC circuit is connected to a 100 ohm star-connected balanced load. If the phase voltage of each phase is 200 V, the current in each phase will be _____.

(a) 4 A
(b) 1A
(c) 2A
(d) 0.5 A

Q156. TRIAC (Triode for Alternating Current) is _____.

(a) Two-terminal device
(b) One-terminal device
(c) Unilateral device
(d) Bilateral device

Q157. What is the unit of specific gravity?

(a) g/cm^3
(b) m/s^2
(c) Has no units (dimensionless)
(d) kg/m^3

Q158. When choosing the sheet size for an original drawing, what should be primarily considered?

(a) Required clarity and resolution.
(b) The orientation of the drawing (horizontal or vertical).
(c) Standard size of drawing office.
(d) Reproduction size.

Q159. Which of the following vices has a handle and a small collet chuck at one end?

(a) Hand vice
(b) Pipe vice
(c) Toolmaker's vice
(d) Pin vice

Q160. In a star connected alternator, the relation between line voltage, E1 and phase voltage Eph is given by _____.

(a) E_L = 1/3 E_(ph)
(b) E_L = √3 E_(ph)
(c) E_L = E_(ph)
(d) E_L = 3 E_(ph)

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Q161. What is the purpose of an emergency evacuation plan?

(a) Increase productivity
(b) Facilitating early departure of workers
(c) Ensuring safe and orderly evacuation during an emergency
(d) Neglecting safety practices

Q162. Where are ceramic capacitors commonly used?

(a) TV circuit
(b) High power motors
(c) Mobile phone
(d) Transformer

Q163. What is the basic working principle of a DC generator?

(a) Electrostatic induction
(b) Laze's Law
(c) Faraday's law of electromagnetic induction
(d) Mutual induction

Q164. What is the primary material used in the resistance wire of wire-wound resistors?

(a) Silver
(b) Aluminum
(c) Copper
(d) Nicrome

Q165. The permeability of an ideal transformer core is equal to _____.

(a) zero
(b) low value
(c) infinite
(d) unit

Q166. Read the given statements carefully and choose the correct option.

Statement 1: Plate earthing ensures a low resistance path for the fault current to flow safely to the ground.

Statement 2: The resistance of the earthing system is not affected by the type of soil or its moisture content.

(a) Statement 1 is incorrect, but statement 2 is correct.
(b) Both statement 1 and statement 2 are correct.
(c) Statement 1 is correct, but statement 2 is incorrect.
(d) Both statement 1 and statement 2 are incorrect.

Q167. A DC generator is running at constant speed. If the load current is increased, what will be the effect on the terminal voltage?

(a) increases
(b) decreases
(c) increases and decreases gradually
(d) remains unchanged

Q168. When measuring the resistance of a resistor using an ohmmeter, what does a reading of zero resistance indicate?

(a) The resistor is open circuited.
(b) The resistor is short-circuited.
(c) The resistor is functioning normally.
(d) The ohmmeter is faulty.

Q169. If the no load secondary voltage is 250 V and the full load secondary voltage is 200 V, calculate the voltage regulation (in percentage) of the transformer.

(a) 25%
(b) 100%

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(c) 50%
(d) 20%

Q170. In the context of earthing in a power system, _____ has the greatest effect on earth resistance.
(a) voltage applied to ground
(b) soil resistivity
(c) length of earth conductor
(d) material of earthing rod

Q171. When a current twice its rated current flows through a fuse element, how much time does it take to melt?
(a) 5 minute
(b) 30 second
(c) 2 minute
(d) 1 minute

Q172. Which of the following hand-operated drilling machines is used to drill small diameter holes up to 6 mm?
(a) Ratchet drilling machine
(b) Bevel gear type drilling machine
(c) Breast drilling machine
(d) Electric hand drill

Q173. If an electrical system is not properly earthed, which of the following statements is not true?
(a) It provides a voltage-constant supply isolated from perturbations on the load side.
(b) This may increase the risk of electric shock.
(c) This can cause the electric current to flow in an uncontrolled manner.
(d) This may damage electrical equipment.

Q174. What should you do to ensure your personal safety at work?
(a) Work in a hurry without checking the equipment.
(b) Wear personal protective equipment.
(c) Take risks to complete tasks quickly.
(d) Ignore warning signs and instructions.

Q175. Arrange the following steps in the correct order to make an equilateral triangle with each side of 35 mm.
1. Join CA and CB.
2. Draw a line and mark AB as the side of the triangle at 35 mm.
3. With radius AB and centers A and B, draw an arc intersecting at 8.
4. ABC is the required triangle.

(a) 1, 2, 4, 3
(b) 2, 3, 1, 4
(c) 3, 2, 1, 4
(d) 2, 1, 3, 4

ANSWER KEY

1	a	2	a	3	a	4	a	5	a	6	a	7	a	8	a	9	a	10	a
11	a	12	a	13	a	14	a	15	a	16	a	17	a	18	a	19	a	20	a
21	a	22	a	23	a	24	a	25	a	26	a	27	a	28	a	29	a	30	a
31	a	32	a	33	a	34	a	35	a	36	a	37	a	38	a	39	a	40	a
41	a	42	a	43	a	44	a	45	a	46	a	47	a	48	a	49	a	50	a
51	a	52	a	53	a	54	a	55	a	56	a	57	a	58	a	59	a	60	a
61	a	62	a	63	a	64	a	65	a	66	a	67	a	68	a	69	a	70	a

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71 a	72 a	73 a	74 a	75 a	76 a	77 a	78 a	79 a	80 a
81 a	82 a	83 a	84 a	85 a	86 a	87 a	88 a	89 a	90 a
91 a	92 a	93 a	94 a	95 a	96 a	97 a	98 a	99 a	100 a
101 a	102 a	103 a	104 a	105 a	106 a	107 a	108 a	109 a	110 a
111 a	112 a	113 a	114 a	115 a	116 a	117 a	118 a	119 a	120 a
121 a	122 a	123 a	124 a	125 a	126 a	127 a	128 a	129 a	130 a
131 a	132 a	133 a	134 a	135 a	136 a	137 a	138 a	139 a	140 a
141 a	142 a	143 a	144 a	145 a	146 a	147 a	148 a	149 a	150 a
151 a	152 a	153 a	154 a	155 a	156 a	157 a	158 a	159 a	160 a
161 a	162 a	163 a	164 a	165 a	166 a	167 a	168 a	169 a	170 a
171 a	172 a	173 a	174 a	175 a					

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