RRB ALP CBT-II (Electrician) Official Paper (Held On: 06 May, 2025 Shift 2) (Previous Year Paper)

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

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PART A

Q1. A can complete a work in 14 hours, while B can do the same work in 21 hours. A started working alone. After how many hours should B join A so that the total work is completed in 10 hours?

(a) 3
(b) 4.5
(c) 3.5
(d) 4

Q2. Why is regular maintenance of HVAC systems considered a medium ECO?

(a) It decreases the system's energy consumption.
(b) It prevents overheating of the system.
(c) It increases the cost of energy.
(d) It speeds up system breakdowns.

Q3. The speed of a train is 144 km/hr. The distance covered by the train in 12 seconds is:

(a) 480 m
(b) 103 m
(c) 518 m
(d) 78 m

Q4. 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?

(a) 8
(b) 4
(c) 3
(d) 2

Q5. 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?

(a) 6
(b) 5
(c) 3
(d) 8

Q6. 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:

(a) 47
(b) 37
(c) 44
(d) 45

Q7. 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?

(a) 342/8
(b) 342/7
(c) 322/7
(d) 343/7

Q8. Which of the following actions involves scientific work?

(a) Spending time conversing with friends
(b) Climbing up the stairs
(c) Watching a film
(d) Holding a large load on one's head while standing motionless

Q9. How is a voltmeter connected in a circuit to measure potential difference?

(a) In parallel across the points where potential difference is to be measured
(b) In series with the circuit
(c) Neither in series nor in parallel
(d) Directly to the power source only

Q10. Find the minimum value of $2x^2 - 5x - 3$ and also find x.

(a) • 6.125 and x = 1.25
(b) -6.125 and x = 0.25
(c) 6.125 and x = 1.25
(d) 6.125 and x = 1.2

Q11. 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.)

(a) CGXF
(b) UYPW
(c) QULS
(d) JNEL

Q12. Which of the following letter-number clusters will replace the question mark (?) in the given series to make it logically complete?

AD8, FI16, KN24, ?

(a) OS32
(b) OR35
(c) PS35
(d) PS32

Q13. 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

(a) MEL: HZN
(b) SZN: QBP
(c) QEB: NBD
(d) KXF: HZH

Q14. By how much is 60% of 50 greater than 4/5 of 35?

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

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(d) 1

Q15. Which of the following is NOT an SI unit?

(a) Hour
(b) Metre
(c) Mole
(d) Kilogram

Q16. The speed of a bus is 6 metres/second. The distance (in kilometres) travelled by the bus in 8 hours and 20 minutes is:

(a) 185
(b) 180
(c) 184
(d) 175

Q17. 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?

(a) 165 :273 :140
(b) 96: 135: 101
(c) 3:5:8
(d) 21:35:44

Q18. T-Square is used to _____in engineering drawings.

(a) support the drawing paper/tracing paper for making drawings
(b) draw curved lines on drawing sheets
(c) draw horizontal lines, parallel lines and to guide/hold the setsquares
(d) transfer dimensions and dividing lines into a number of equal parts

Q19. Which of the following features is unique to Telegram compared to WhatsApp and Facebook Messenger?

(a) Voice and video calling capabilities
(b) End-to-end encryption for all messages
(c) Ability to create channels for broadcasting messages to large audiences
(d) Integration with Facebook for seamless sharing

Q20. Calculate the resistance of the bulb filament if it draws 200 mA current from 220 V source.

(a) 0Ω
(b) 1100 Ω
(c) 220 Ω
(d) 44 Ω

Q21. Which of the following processes causes accumulation of heavy metals such as lead and mercury in soil?

(a) Ozone layer depletion
(b) Improper disposal of industrial wastes
(c) Water evaporation
(d) Natural soil formation

Q22. What should come in place of the question mark (?) in the given series?

WU5, SQ7, NL11, ?

(a) GE17
(b) HF13
(c) GE13
(d) HE15

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Q23. Which of the following statements is correct?

(a) All metals are poor conductors of heat.
(b) Plastic and wood allow heat to pass through them easily.
(c) Dry air is a good conductor of heat.
(d) Copper and aluminium are good conductors of heat

Q24. 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?

(a) 2 V
(b) 12 V
(c) 24 V
(d) 48 V

Q25. The two sides CB and BA of triangle ABC are produced to CE and BD, respectively, in such a way that angle DAC = 110° ; and angle ABE = 130°. Which of the following options is true?

(a) AC <AB < BC
(b) BC <AC <AB
(c) AB <AC <BC
(d) BC <AB < AC

Q26. The marked price of an item is Rs. 27,500. The shopkeeper gave two successive discounts: the first discount was 20%, and the second was 30% of the first discount rate. What is the selling price of the item (in rupees)?

(a) 1,26,080
(b) 20,860
(c) 20,086
(d) 20,680

Q27. 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: %

(a) #LIN, % = NKO
(b) #LIN, % = NLP
(c) #LIN, %= NKP
(d) #LIM, % = NKP

Q28. Which of the following statements is INCORRECT?

(a) In solids, heat transfer is typically carried out through conduction.
(b) Burning of feet on hot sand is an example of heat transfer by conduction.
(c) Conduction is the process of heat transfer that does not require any medium to transfer heat
(d) Conduction is the process of heat transfer from hotter body to colder body.

Q29. A man rides a bicycle from Point A to Point B in 10 minutes and comes back to Point A along the same path in 10 minutes. If the distance between Points A and B is 1 km, calculate his average velocity?

(a) 3.3 m/s
(b) 1.6 m/s
(c) 0 m/s
(d) 0.1 m/s

Q30. What is the dimensional equation of mass density (p)?

(a) [ML-3T2]
(b) [M0 L^3 T0]
(c) [ML-3T0]
(d) [M L-2 T0]

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Q31. What is the kinetic energy possessed by an object having mass 25 kg and moving with a uniform velocity of 2 m s^{-1}?

(a) 80 J
(b) 50 J
(c) 120 J
(d) 100 J

Q32. What is the value of 100 g in Sl units?

(a) 1 kg
(b) 0.1 kg
(c) 100 kg
(d) 10 kg

Q33. 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?

(a) 2K
(b) K
(c) 4 K
(d) K/2

Q34. Which of the following is a main greenhouse gas that is responsible for global warming?

(a) Nitrogen
(b) Helium
(c) Carbon Dioxide
(d) Oxygen

Q35. Which of the following tools is commonly used to support the 'Standardize' step in the 5S methodology?

(a) Labels and signs
(b) Cleaning supplies
(c) Floor markings
(d) Job cycle charts

Q36. 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.)

(a) GMKT
(b) EKJR
(c) VBZI
(d) IOMV

Q37. What should come in place of the question mark (?) in the given alpha-numeric series?

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

(a) 22
(b) A1
(c) Z1
(d) Y1

Q38. 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

(a) 123 - 146 - 171 - 198 - 227
(b) 38 - 51 - 66 - 83 - 102
(c) 3-10-29-66-127
(d) 3 - 6 - 11 - 18 - 27

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Q39. 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

(a) 138 - 69 - 14 - 98
(b) 226 - 113 - 144 - 268
(c) 586 - 293 - 244 - 328
(d) 682-341-291-381

Q40. What is the first step to take in case of a power failure in a workshop?

(a) Continue working as usual
(b) Check if emergency lighting and backup power are functional
(c) Panic and leave the premises immediately
(d) Ignore the situation and wait for power to return

Q41. Which of the following is an ethical concern related to Information Technology?

(a) Enhancement of communication channels
(b) Privacy violations and data breaches
(c) Reduction in administrative costs
(d) Increased accessibility to educational resources

Q42. Which term is used to describe the closeness of the measured value to the standard or true value?

(a) Mean
(b) Precision
(c) Approximate
(d) Accuracy

Q43. Which of the following is NOT correct about Joule's law of heating?

(a) Heat produced in a resistor is directly proportional to the square of the current for a given resistance.
(b) Heat produced in a resistor is directly proportional to the time for which the current flows through the resistor.
(c) Heat produced in a resistor is directly proportional to the resistance for a given current.
(d) Heat produced in a resistor is inversely proportional to the square of the current for a given resistance.

Q44. Which of the following terms is used to describe the pollutants that originate from identifiable sources, such as factories or vehicles?

(a) Non-point Source Pollution
(b) Random Pollution
(c) Point Source Pollution
(d) Radicle Pollution

Q45. How does installing energy-efficient windows in an old building affect energy consumption?

(a) It has no effect on fuel consumption.
(b) It causes indoor temperatures to rise.
(c) It reduces heating and cooling costs in the building.
(d) It increases the need for artificial lighting.

Q46. Which of the following is generally the temperature range in a laboratory thermometer?

(a) -10°C to 110°C
(b) -10°C to 150°C
(c) -100°C to 130°C
(d) 35°C to 42°C

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Q47. A refrigerator seller offers a discount of 10% on its listed price of Rs. 57,500 and still earns a profit of 15%. The cost price of the refrigerator is:

(a) Rs. 45,000
(b) Rs. 42,000
(c) Rs. 40,000
(d) Rs. 48,000

Q48. A person saves 50% of his income. If his expenditure is 440, then his income (in Rs.) is:

(a) 600
(b) 880
(c) 920
(d) 560

Q49. Which of the following is the correct statement of Ohm's Law?

(a) 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 20.
(b) The potential difference across the ends of a conductor is inversely proportional to the current flowing through it.
(c) The potential difference across the ends of a conductor is directly proportional to the current flowing through it.
(d) Current through a resistor is directly proportional to its resistance.

Q50. 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 2/3 %. What is the value of y?

(a) 600
(b) 720
(c) 800
(d) 750

Q51. What is the SI unit for solid angle?

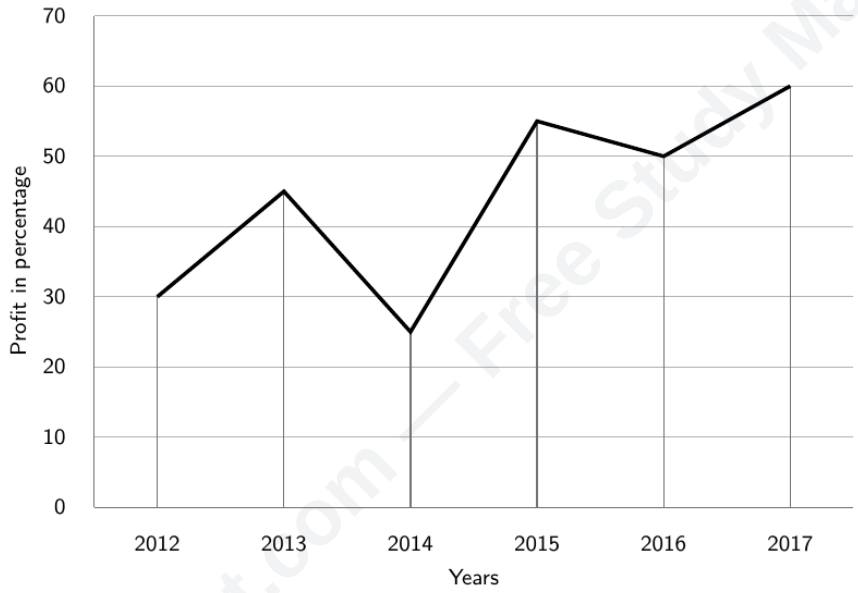
(a) Metre
(b) Candela
(c) Radian
(d) Steradian

Q52. 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?

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

Q53. Study the given graph and answer the question that follows.

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What is the average profit percentage of the given years?

(a) 44%
(b) 43.4%
(c) 44.1%
(d) 45%

Q54. 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.

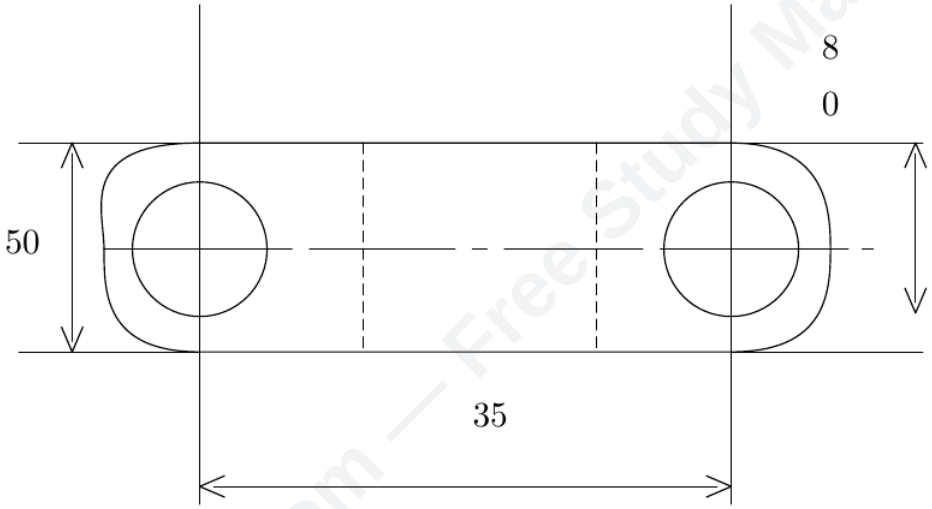
II. Some cardboards are books.

III. Some notebooks are books.

(a) Only conclusions I and II follow.
(b) All conclusions I, II and III follow
(c) Only conclusions I and III follow.
(d) Only conclusions II and III follow.

Q55. What type of view is represented of the given machine component?

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(a) Oblique view
(b) Orthographic view
(c) Perspective view
(d) Isometric view

Q56. 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?

(a) Cyber Appellate Tribunal
(b) National Cybercrime Reporting Station
(c) Cybercrime Reporting Tribunal
(d) Internet Crime Complaint Center

Q57. When reporting a fire in an emergency, what is the most critical information to provide to emergency services?

(a) The weather conditions at the time of the fire
(b) How the fire started and if someone is injured or missing
(c) The likely cause of the fire and the building owner's name
(d) The colour of the smoke and the direction it is moving

Q58. Why does a combination of two thin blankets keep you warmer in the winter than a single thick blanket?

(a) Two thin blankets allow more heat to escape, keeping you warmer.
(b) Two blankets create an additional insulating layer of air, reducing heat loss
(c) Two thin blankets generate more heat than one thick blanket.
(d) Two thin blankets absorb more heat from the surroundings than one thick blanket.

Q59. What is necessary for a circuit to have electric current flowing through it?

(a) A closed conducting path with a voltage source
(b) Only wire
(c) Only switch
(d) Only bulb

Q60. Which of the following is NOT correct?

(a) An object moving with a constant velocity represents uniform motion.
(b) The motion of satellite around Earth in a circular orbit is uniform circular motion.
(c) A person jogging in the park is not an example of uniform circular motion.
(d) The distance-time graph of an object moving with uniform speed is not a straight line:

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Q61. 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)?

(a) 9,166
(b) 8,666
(c) 11,666
(d) 10,166

Q62. 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?

(a) H
(b) R
(c) G
(d) P

Q63. The cost of painting a spherical ball at the rate of Rs. 2.50 per cm^2 is 13,860. What is the diameter of the ball? (Use $\pi = 22/7$)

(a) 40 cm
(b) 48 cm
(c) 21 cm
(d) 42 cm

Q64. In an electrical circuit, 'n' number of 10 Ohm resistors are connected in parallel. When one of the resistors is eliminated, the overall resistance of the circuit is _____.

(a) $1/(n^2)$
(b) Zero
(c) 1/n
(d) 1/(n-1)

Q65. What is the ratio of areas between two consecutive format sheet sizes created by halving the length or doubling the width?

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

Q66. 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 D 25 A 5C2B9=?

(a) 62
(b) 60
(c) 58
(d) 56

Q67. What is the primary purpose of netiquette in online communication?

(a) To ensure polite and respectful interactions
(b) To enhance internet connection speed
(c) To improve typing speed
(d) To increase the number of followers on social media

Q68. 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?

(a) 171 mm
(b) 0.057 mm

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(c) 0.57 mm
(d) 0.09 mm

Q69. The interest of $(10r)^2$ in r time at rate r/10 % is _____.
(a) (r^4)/10
(b) 10r^4
(c) (r^4)/20
(d) (r^4)/5

Q70. 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?
(a) 25 J
(b) 12 J
(c) 3 J
(d) 10 J

Q71. If 21.6: x:: x: 29.4, and x > 0 then find the value of x.
(a) 23.9
(b) 23.3
(c) 25.4
(d) 25.2

Q72. Which of the following statements is NOT true?
(a) Clinical thermometer should not be used to measure the temperature of boiling water.
(b) Clinical and laboratory thermometers are the same.
(c) The range of clinical thermometer is 35 to 42°C.
(d) Laboratory thermometer cannot be used to measure body temperature.

Q73. Which of the following options is NOT a necessary characteristic of a kite?
(a) At least one diagonal is bisected by the other diagonal.
(b) The diagonals are perpendicular to each other.
(c) The pairs of opposite angles are bisected by the corresponding diagonals.
(d) At least one pair of opposite angles is congruent.

Q74. 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 = 10m s^(- 2))
(a) 200 J
(b) 100 J
(c) 250 J
(d) 250 N

Q75. What should come in place of the question mark (?) in the given series?
179 171 163? 147 139
(a) 155
(b) 157
(c) 151
(d) 153

Q76. If x + y + z = 0 then find the value of $(x^2)/2yz + (y^2)/2xz + (z^2)/2xy$
(a) 2/5
(b) 3/2
(c) 3/5
(d) 2/3

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Q77. In a certain code language, 'WIDE' is coded as '8694' and 'INKS' is coded as '3917', 7 What is the code for 'I' in the given code language?

(a) 8
(b) 3
(c) 7
(d) 9

Q78. 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.

(a) Rs. 3,200
(b) Rs. 3,350
(c) Rs. 3,460
(d) Rs. 3,500

Q79. Which is the least number that must be subtracted from 5563 to make it exactly divisible by 18?

(a) 5
(b) 7
(c) 3
(d) 1

Q80. 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?

(a) 21
(b) 31
(c) 28
(d) 33

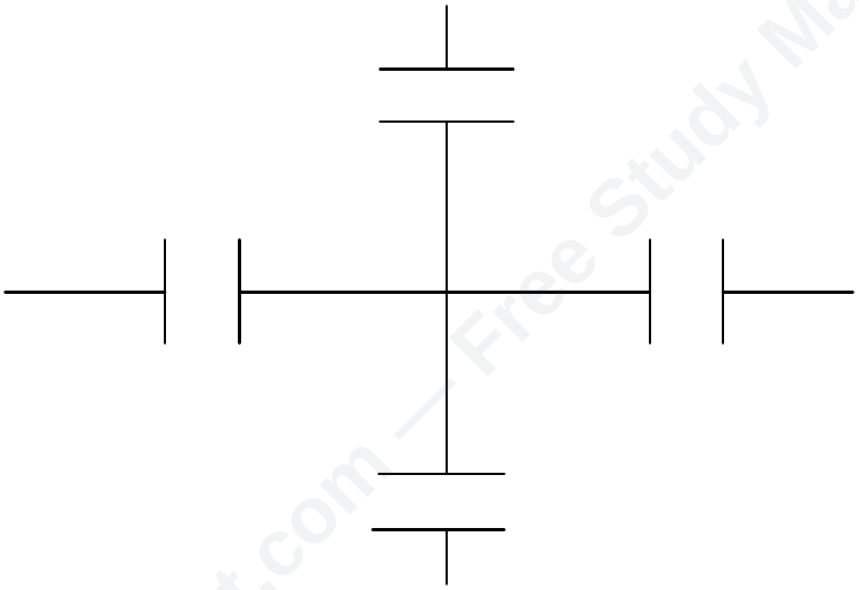
Q81. Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which letter-cluster pair DOES NOT belong to that group?

(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster pair)

(a) QL-NT
(b) BW-YE
(c) KF-HM
(d) DY-AG

Q82. Identify the orthographic symbol of a pipe fitting shown in the figure.

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(a) Tee
(b) Cross
(c) Union
(d) Bend

Q83. Read the given statement and conclusions carefully. Assume that the information given in the statement is true, even if it appears to be at variance with commonly known facts, and decide which of the given conclusion(s) logically follow(s) from the statement.

Statement:

Over the past year, respiratory illnesses have increased significantly in city W. According to a public health study, this increase is linked to the increase in the number of cars, which raises air pollution levels on the roads.

Conclusions:

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

II. Improving public transportation will reduce respiratory illnesses in city W.

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

Q84. An object's potential energy is equal to _____.

(a) Change in velocity
(b) Change in acceleration
(c) Transfer of energy
(d) Loss of energy

Q85. Which of the following is the primary reason for adopting scientifically designed methods for safely disposing of toxic waste from automobiles?

(a) To improve vehicle lifespan by minimising mechanical wear
(b) To increase vehicle performance by optimising engine efficiency
(c) To reduce fuel consumption and improve overall efficiency
(d) To protect human health from harmful fumes and dust in the air

Q86. 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?

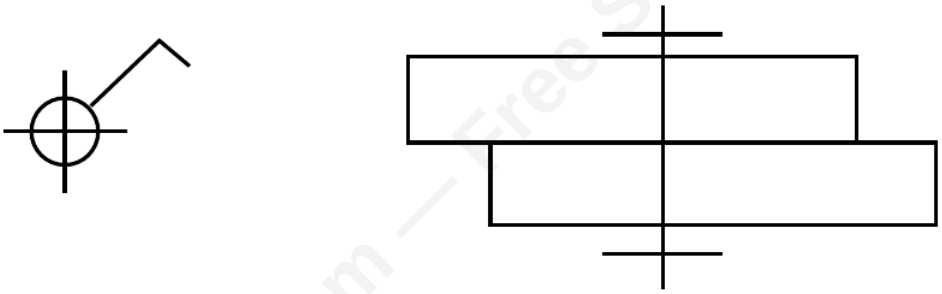
4-9-25-64-169; 16-49-121-324-841

(a) 64 - 100 - 144 - 196 - 256

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(b) 16 - 36 - 64 - 100 - 144
(c) 4 - 16 - 36 - 64 - 100
(d) 64-225-529-1444-3721

Q87. Examine the symbolic representation of the hole and rivet provided below. According to BIS SP 46-2003, what does this symbol represent?



(a) Drilled in the workshop
(b) Fitted in the workshop
(c) Drilled and fitted on-site
(d) Drilled on-site

Q88. The ABC Association meeting will be held on the 2nd Sunday of next month. The registration fee is Rs. 50 per person. Participants will be provided meals at an additional cost of Rs. 24. If the number of people who paid for meals is 100 more than those who did not pay for meals, and the total amount collected from registrations and meals is Rs. 69,400, then how many people registered and how many meals should be prepared?
(a) 1100 and 1100
(b) 1100 and 600
(c) 1100 and 50
(d) 500 and 600

Q89. What should come in place of the question mark (?) in the given series?
62 73 87 104 124 ?
(a) 142
(b) 147
(c) 134
(d) 153

Q90. What should come in place of the question mark (?) in the given alpha-numeric series?
Q16, O14, M12, K10, I8, ?
(a) G4
(b) H6
(c) G6
(d) J6

Q91. Which element is used in thermometers?
(a) Bromine
(b) Mercury
(c) Gallium
(d) Lead

Q92. 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:
(a) 75 km/hr
(b) 90 km/hr
(c) 85 km/hr
(d) 80 km/hr

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Q93. If the length, the breadth, and the height of a cuboid are 5 m, 2 m, and 50 cm, respectively, then find its volume.

(a) 500 m^3
(b) 20 m^3
(c) 50m^3
(d) 5 m^3

Q94. 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.

(a) 1.25x10^(20)
(b) 0.25 x 1019
(c) 0.25 x 1020
(d) 1.25 x1019

Q95. An electric heater of resistance 50 uses a current of 3 A. Determine the heat generated in 20 seconds.

(a) 5000 J
(b) 1000 J
(c) 9000 J
(d) 60 J

Q96. Which of the following keyboard shortcuts on a Windows 10 home screen opens the item's properties?

(a) Insert + Alt
(b) F2 + Alt
(c) Tab + Del
(d) Alt + Enter

Q97. Which of the following is NOT a good heat conductor?

(a) Fur
(b) Copper
(c) Iron
(d) Aluminum

Q98. A, B, C, D, E, and F live on six different floors of the same building. The lowest floor of the building is numbered 1, the floor above it is numbered 2, and the top floor is numbered 6. E lives on an even-numbered floor but not on floor 4. The sum of the floor numbers where E and B live is 9. Only three people live between A and C. The sum of the floor numbers where F and C live is 3. What is the sum of the floor numbers where B and F live?

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

Q99. Under which Section of the Factories Act, of 1948, is the employment of women and children near cotton openers prohibited?

(a) Section 25
(b) Section 21
(c) Section 27
(d) Section 29

Q100. Four chairs and a table set up cost 22,000. Determine the table's cost, if it is Rs. 2,000 more expensive than the chair.

(a) Rs. 6,000
(b) Rs. 5,000
(c) Rs. 4,000
(d) Rs. 6,500

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PART B

Q101. Rotating field type alternator is generally used for rating of up to _____.

(a) 250 KVA
(b) 100 kVA
(c) 1000 MVA
(d) 1000 VA

Q102. Which of the following statements is NOT correct for using scribers?

(a) While scribing lines, the scriber is used like a pencil.
(b) Do not put the scriber in your pocket.
(c) Scriber points are very sharp, so they are to be handled very carefully.
(d) Place a cork on the point when in use to prevent accidents.

Q103. The function of slots on stator is to:

(a) excite the field system
(b) provide effective cooling
(c) house the armature conductors
(d) strengthen the core

Q104. 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?

(a) 0
(b) Undefined
(c) 1
(d) 2

Q105. What is the typical temperature range of a mercury-based clinical thermometer?

(a) −10°C to 110°C
(b) 0°C to 50°C
(c) 0°C to 100°C
(d) 35°C to 42°C

Q106. Which of the following information is necessary to construct a rectangle?

(a) Only the length of the diagonal
(b) Only the length of one side
(c) Length of two adjacent sides
(d) Length of one side and the area of the rectangle

Q107. What is NOT an advantage of using plate earthing over other types of earthing?

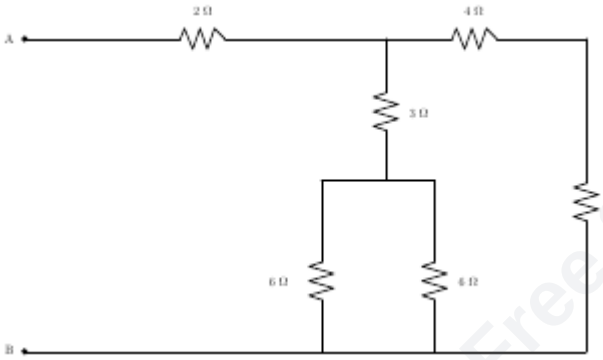
(a) Low installation cost
(b) Requires less maintenance
(c) Provides low resistance in high-resistivity soil
(d) More suitable for high-voltage systems

Q108. In a three-phase system, if the phase current is 20 A in a delta connection, what is the line current?

(a) 20 A
(b) $20\sqrt{3}$A
(c) $20/\sqrt{3}$A
(d) 10 A

Q109. After solving the series and parallel combinations, what is the final equivalent resistance between A and B?

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(a) 10 Ω
(b) 8 Ω
(c) 6 Ω
(d) 4 Ω

Q110. What does the term 'Ferreed' in Ferreed relay stand for?
(a) A thermally operated relay
(b) A voltage stabiliser component
(c) A combination of ferrite and reed switch
(d) A type of current sensing relay

Q111. Which of the following characteristics of a GTO is most important for its use in highpower switching applications?
(a) Its ability to handle very low currents.
(b) Its fast switching speed.
(c) Its ability to be turned off by a gate signal.
(d) Its high thermal stability.

Q112. Who is authorised to conduct road tests on workshop vehicles?
(a) The company accountant
(b) Only trained and certified personnel
(c) Any employee
(d) Visitors to the workshop

Q113. The SI unit of temperature is/are _____.
(a) both kelvin and celsius
(b) fahrenheit
(c) celsius
(d) kelvin

Q114. In a long-shunt compound DC generator, the shunt field winding is connected _____.
(a) only to the load
(b) between the series field and load
(c) in series with the armature
(d) in parallel with both armature and series field winding

Q115. Which of the following colours is commonly used for caution signs?
(a) Green
(b) Red
(c) Yellow
(d) Blue

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Q116. Which of the following is the primary reason why copper is widely used as a conductor in electrical wiring?

(a) Copper is abundant and inexpensive.
(b) Copper has low resistance and high conductivity
(c) Copper has high resistance to electricity.
(d) Copper has a low melting point.

Q117. What is the main purpose of the field winding in a DC generator?

(a) To produce the required magnetic field
(b) To conduct load current
(c) To convert AC to DC
(d) To reduce armature reaction

Q118. For which purpose is mineral oil provided in an oil-filled transformer?

(a) Cooling purpose only
(b) Both cooling and insulation purpose
(c) Prevent moisture
(d) Insulation purpose only

Q119. 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?

(a) 4 mA
(b) 5 mA
(c) 2 mA
(d) 1 mA

Q120. What is the SI unit of 'volume'?

(a) Cubic centimetre
(b) Cubic metre
(c) Millilitres
(d) Litres

Q121. Convert 8.5% into a decimal.

(a) 0.85
(b) 0.085
(c) 8.5
(d) 85

Q122. How does an Earth Leakage Circuit Breaker (ELCB) work in an electrical system?

(a) It compares the incoming and outgoing currents to detect imbalance, indicating leakage to earth.
(b) It regulates the current flowing to the earth electrode.
(c) It detects high current flow and trips to prevent overloads.
(d) It monitors the voltage drop in the system.

Q123. The wave set of hacksaw teeth set has a pitch of _____.

(a) 1.0 mm
(b) 2.0 mm
(c) 0.8 mm
(d) 0.5 mm

Q124. Which type of line is used to represent hidden edges or surfaces in a technical drawing, as per BIS SP 46-2003?

(a) Dashed thin line
(b) Continuous thick line
(c) Chain thin line
(d) Continuous thin line

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Q125. 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.

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

Q126. If a DC motor fails to start, what should be checked first?

(a) Commutator polishing
(b) Power supply connections and voltage
(c) Motor shaft alignment
(d) Field winding resistance

Q127. In a four-band resistor, what does the third band represent?

(a) First significant digit
(b) Tolerance
(c) Second significant digit
(d) Multiplier

Q128. Which of the following switch types is required along with an intermediate switch to control a lamp from three or more positions?

(a) Push-button switches
(b) One-way switches
(c) Dimmer switches
(d) Two-way switches

Q129. Which component in a thermal relay is responsible for detecting temperature changes?

(a) Transformer
(b) Resistor
(c) Bimetallic element
(d) Electromagnet

Q130. Which parameters of two identical transformers are determined using Back-to-back test?

(a) Efficiency and voltage regulation
(b) Friction loss and inductance
(c) Friction loss and resistance
(d) Mechanical loss and inductance

Q131. Increasing which of the following will decrease the inductance of a solenoid?

(a) Cross-sectional area
(b) Length of the coil
(c) Core permeability
(d) Number of turns

Q132. Which of the following types of chisels is used for separating metals after chain drilling?

(a) Cross-cut chisel
(b) Diamond point chisel
(c) Web chisel
(d) Flat chisel

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Q133. What is the main reason for using a snubber circuit in IGBT-based circuits?

(a) To protect the IGBT from voltage spikes during switching
(b) To minimise the switching losses
(c) To reduce the gate charge
(d) To increase the switching speed

Q134. 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.

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

Q135. Which of the following terms in the 5S concept refers to making a habit of maintaining the established procedures?

(a) Sort
(b) Set
(c) Shine
(d) Sustain

Q136. Toroidal inductors are shaped like a:

(a) ring
(b) cube
(c) cone
(d) cylinder

Q137. Which of the following is the most common application of an Earth Leakage Circuit Breaker (ELCB)?

(a) Detecting voltage fluctuations in the system
(b) Protecting high-voltage transmission lines
(c) Preventing electrical fires in buildings
(d) Protecting electrical appliances from overload

Q138. What is the formula for the total capacitance of capacitors connected in parallel?

(a) 1/(C_(TOTAL)) = 1/C1 + 1/C2 + 1/C3 + …
(b) C_(TOTAL) = (C1 + C2)²
(c) C_(TOTAL) = (C1 * C2)/(C1 + C2)
(d) C_(Total) = C1 + C2 + C3 + …

Q139. Which component(s) is/are required to obtain a proportional DC voltage for a voltage sensing relay?

(a) Capacitor and diode
(b) Motor and generator
(c) Resistor and inductor
(d) Transformer and rectifier

Q140. For a DC motor installation with explosion-proof certification, which standard must be followed for enclosure and wiring compliance?

(a) NFPA 70
(b) ISO 9001
(c) ANSI C84.1
(d) IEC 60034-1

Q141. The insulation resistance of any wiring installation should NOT be less than _____ for operating voltage 1000 volt.

(a) 100 ohm
(b) 10 ohm
(c) 1 mega ohm

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(d) 1 kilo ohm

Q142. In a three-phase system with a line-to-line voltage of 400 V and a line current of 10 A, what is the total real power in Watt, delivered to the load if the power factor is 0.9?

(a) 45000√3 W
(b) 3600√3 W
(c) 3000√3 W
(d) 4000√3 W

Q143. If 50 W of power is applied to the primary of an ideal transformer with a turns ratio of 10, the power delivered to the secondary load is:

(a) 5 W
(b) 500 W
(c) 100 W
(d) 50 W

Q144. The typical switching speed of GTOs is _____.

(a) relatively slow
(b) high
(c) infinity
(d) very fast

Q145. Which of the following statements about earth resistance in context of earthing is true?

(a) Earth resistance does not affect electrical safety.
(b) Earth resistance only affects power transmission efficiency.
(c) Higher earth resistance increases the effectiveness of grounding.
(d) Lower earth resistance improves the performance of an electrical system.

Q146. Which of the following statements is INCORRECT about end standard?

(a) It measures the distance between two parallel flat surfaces.
(b) It is slower but more accurate.
(c) Faces are subject to wear.
(d) It is used to measure the distance between two engraved lines.

Q147. The key feature of an IGBT is that it combines the characteristics of _____.

(a) a diode and a transistor
(b) a diode and a capacitor
(c) a transistor and an amplifier
(d) a BJT and a MOSFET

Q148. According to IEEE 80, the resistance of the ground system should be _____.

(a) as high as possible to ensure efficient operation
(b) moderate to prevent excessive current flow
(c) low enough to allow fault currents to safely dissipate into the earth
(d) equal to the system's total load current

Q149. Select the INCORRECT statement with regards to a three-phase star-connected AC circuit.

(a) The phase voltage is higher than the line voltage.
(b) The line voltage is higher than the phase voltage.
(c) The phase voltage is the voltage between the neutral point and any phase of the circuit.
(d) The line voltage is the voltage between any two line of the circuit.

Q150. When creating 10 mm single-stroke capital letters in vertical style, what does the 10 mm distance between horizontal parallel lines represent?

(a) Interline spacing
(b) Stroke thickness

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(c) Letter height
(d) Letter width

Q151. Which DC motor is preferred in steel rolling mills and elevators?
(a) Permanent Magnet DC Motor
(b) DC Shunt Motor
(c) Cumulative Compound Motor
(d) DC Series Motor

Q152. Which of the following metals has the lowest melting point?
(a) Mercury
(b) Gold
(c) Lead
(d) Iron

Q153. Apart from lamp holders, where else is a cord grip or underwriter's knot used?
(a) Pull switches
(b) Circuit breaker panels
(c) High-voltage substations
(d) Earthing systems

Q154. Which of the following best describes the working of a TRIAC?
(a) It is a current-controlled device.
(b) It is a voltage-controlled device.
(c) It is a device used to store energy.
(d) It switches both AC and DC currents.

Q155. 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?
(a) 10 ohms
(b) 30 ohms
(c) 40 ohms
(d) 20 ohms

Q156. Match the following types of lines with their correct descriptions according to their orientation and characteristics.

Description
A. A line that is neither parallel to a horizontal plane nor perpendicular to it.
B. A line that is perpendicular to horizontal lines.
C. A line that changes its direction continuously.
D. A line that is parallel to a horizontal plane.

Line Types:
1. horizontal line
2. vertical line
3. inclined line
4. Curved line

(a) A - 1, B - 2, C - 3, D - 4
(b) A - 2, B - 1, C - 4, D - 3
(c) A - 3, B - 2, C - 4, D - 1
(d) A - 2, B - 3, C - 4, D - 1

Q157. If the length of a resistor is doubled, what happens to its resistance, assuming all other factors remain constant?
(a) The resistance is doubled.
(b) The resistance is halved.
(c) The resistance remains the same.

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(d) The resistance quadruples.

Q158. Which of the following calipers are used for marking lines, parallel to inside and outside edges and for locating the centre of round bars?

(a) Leg and point calipers
(b) Spring joint calipers
(c) Firm joint calipers
(d) Simple calipers

Q159. In electrodynamometer type synchroscope, moving coil is connected:

(a) in series with inductance across two phases of busbar
(b) in series with resistance across busbars
(c) between two pressure coils
(d) in parallel with capacitor across terminals of incoming machines

Q160. Transformer is a _____.

(a) synchronous motor as a rotating transformer
(b) rotating device
(c) moving device
(d) static device

Q161. 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.

(a) pedestrians; right; distance
(b) vehicles; right; gap
(c) drivers; left; space
(d) cyclists; left; interval

Q162. In a balanced three-phase system, the power delivered by the system depends on _____.

(a) power factor only
(b) phase voltage only
(c) phase current only
(d) phase voltage, phase current and power factor

Q163. If inductance (L) is doubled, what happens to inductive reactance?

(a) It becomes zero.
(b) It remains the same.
(c) It doubles.
(d) It becomes half.

Q164. Find the lateral surface area of a cube with side length 5 cm.

(a) 125 cm^2
(b) 200 cm^2
(c) 150 cm^2
(d) 100 cm^2

Q165. The gate current in an ideal FET is _____.

(a) very high
(b) equal to the drain current
(c) zero
(d) Very Low

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Q166. What is the minimum age for employment in factories or mines or other hazardous employment, according to Article 24 of the Indian Constitution?

(a) 12 years
(b) 18 years
(c) 14 years
(d) 16 years

Q167. What may happen if a flexible cable in a pendant lamp is not secured with a cord grip or underwriter's knot?

(a) The lamp will consume more power.
(b) The cable connection may come out, leading to a shock hazard.
(c) The lamp will emit dim light.
(d) The ceiling will overheat.

Q168. Which of the following 'V' blocks will have one 'V' groove and two grooves (slots) on either side for clamping in two positions?

(a) Matched pair 'V' block
(b) Single level double groove 'V' block
(c) Double level single groove 'V' block
(d) Single level single groove 'V' block

Q169. According to Faraday's law, the magnitude of induced EMF in a DC generator depends on the _____.

(a) material of the conductor
(b) length of the conductor only
(c) resistance of the conductor
(d) rate of change of magnetic flux

Q170. Consider the following statements for a three phase AC circuit.

Statement 1: In a balanced three-phase system, the line current is always equal to the phase current in a star-connected load. Statement 2: In a delta-connected system, the phase voltage is equal to the line voltage.

Select the correct option based on above statements.

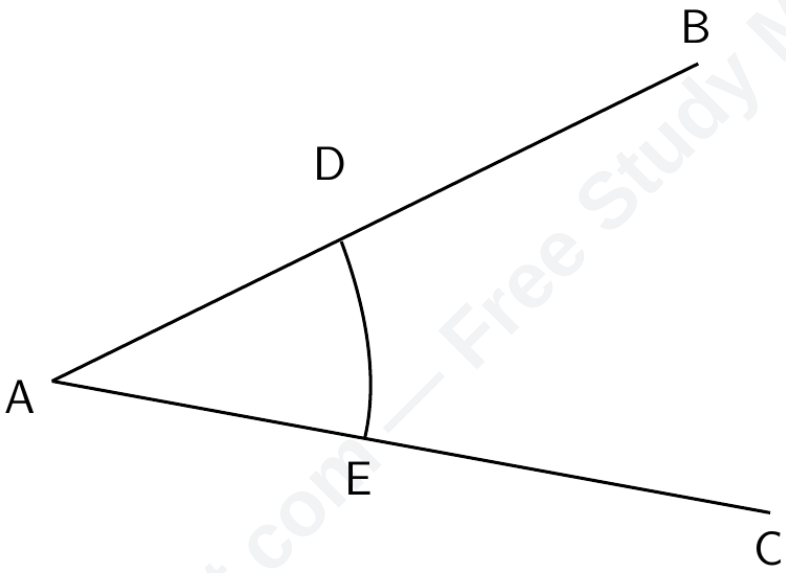
(a) Both Statement 1 and Statement 2 are false.
(b) Statement 1 is false, and Statement 2 is true.
(c) Both Statement 1 and Statement 2 are true.
(d) Statement 1 is true, and Statement 2 is false.

Q171. When should the measurement of electrode resistance be conducted during the installation of an earthing system?

(a) At the time of initial design
(b) Only when the earthing system shows signs of malfunction
(c) After backfilling the earth electrode
(d) Before backfilling the earth electrode

Q172. In the process of bisecting angle BAC in the given figure, why do we draw arcs from points D and E?

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(a) To find midpoint AB
(b) To intersect line AC
(c) To mark equal lengths
(d) To intersect above A

Q173. A 100-mm prick punch with a 7-mm diameter body could have a 2.5-mm diameter point ground to an angle of _____.
(a) 30°
(b) 90°
(c) 120°
(d) 45°

Q174. Which of the following conditions is NOT required for parallel operation of alternator?
(a) They may have different frequency.
(b) Prime movers of alternator should have the same speed load characteristics.
(c) Alternator should be of the same type.
(d) Alternator should be the different type

Q175. In an ideal transformer, the primary and secondary windings resistance is:
(a) 1000000 ohm
(b) 0 ohm
(c) 100 ohm
(d) 1000 ohm

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
71	a	72	a	73	a	74	a	75	a	76	a	77	a	78	a	79	a	80	a

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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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