# RRB ALP CBT-II (Electronic Mechanic) Official Paper (Held On: 06 May, 2025 Shift 1) (Previous Year Paper)

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

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## PART A

**Q1.** In this question, a statement is given followed by two courses of action, numbered I and II. You must assume everything in the statement to be true, and on the basis of the information given in the statement, decide which of the given courses of action logically follow(s) for pursuing.

Statement:

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

Courses of Action:

The police must check to see if the fire safety regulations were followed by the mall.

Traffic police must divert traffic away from the fire site, to enable evacuation of people.

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

**Q2.** The taxi charges in a city consist of a fixed charge together with the charge per kilometre for the distance covered. For a distance of 35 km, the charge paid is Rs. 375 and for a distance of 48 km, the charge paid is Rs. 427. Find the fixed charges and the charge per km (in Rs. ), respectively.

**(a)** 220 and 6
**(b)** 227 and 5
**(c)** 235 and 4
**(d)** 275 and 3

**Q3.** Which technology operates through an electrochemical process that transforms the energy stored in hydrogen gas (H2) and oxygen into electrical power without combustion?

**(a)** Hydroelectric power
**(b)** Solar thermal power
**(c)** Hydrogen fuel cells
**(d)** Wind power

**Q4.** Seema is twice as old as Alka. If nine years is subtracted from Alka's age and six years is added to Seema's age, then Seema will be four times Alka's age. How old was Alka three years ago?

**(a)** 18 years
**(b)** 21 years
**(c)** 16 years
**(d)** 20 years

**Q5.** Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusion(s) logically follow(s) from the statements.

Statements:

Some ships are boats.

All boats are submarines.

Some submarines are yachts

Conclusions:

(I) Some yachts are boats.

(II) Some yachts are ships.

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

**Q6.** Eight people are sitting in two parallel rows containing 4 people each in such a way that there is equal distance between adjacent persons. In row 1 – A, B, C and D are seated and all of them are facing south. In row 2 – P, Q, R and S are seated and all of them are facing north. Thus each person faces another person from the other row. Only three people sit to the right of R. D faces the person who is the immediate neighbour of S and P. C faces the person who sits second to the left of S. R does not face A.

Who amongst the following faces B?

**(a)** R
**(b)** S
**(c)** P
**(d)** Q

**Q7.** In Engineering Drawing, which of the following is the correct definition of the term 'dimension'.

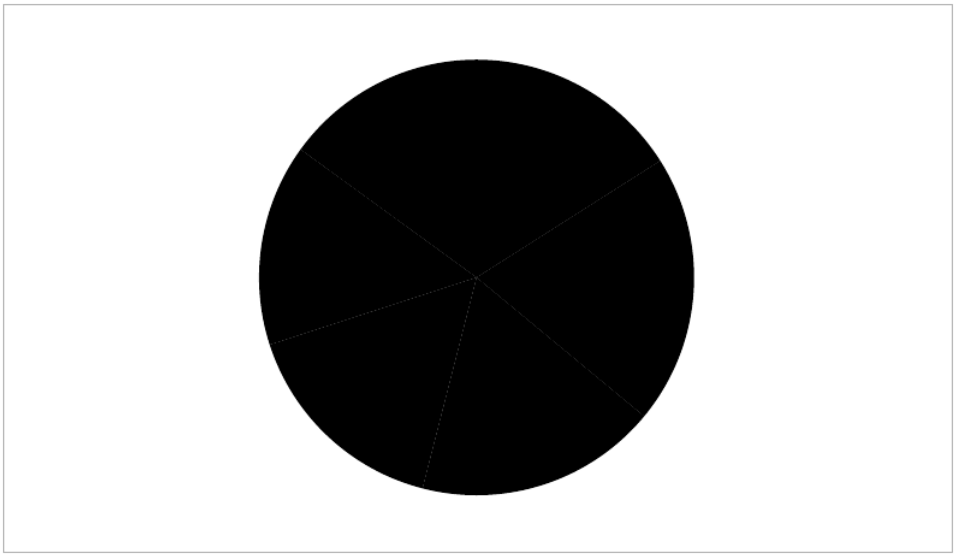
**(a)** The thickness of the line of a letter
**(b)** A continuous thick or wide line along which the prints are trimmed
**(c)** A line that is drawn to make a section evident
**(d)** A numerical value expressed in an appropriate unit of measurement

**Q8.** In a certain code language, ‘LOVE’ is coded as ‘8364’ and ‘EARS’ is coded as ‘3517’. What is the code for ‘E’ in the given code language?

**(a)** 7
**(b)** 5
**(c)** 3
**(d)** 4

**Q9.** Study the given pie chart and answer the question that follows.

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



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

**(a)** 15 : 14
**(b)** 15 : 16
**(c)** 14 : 15
**(d)** 16 : 15

**Q10.** Which of the following steps is essential when configuring a web browser to enhance both security and privacy for a user?

**(a)** Enabling pop-ups for all websites to improve user experience
**(b)** Setting the homepage to a frequently visited website for quick access
**(c)** Configuring the browser to block third-party cookies and enabling HTTPS-only mode
**(d)** Disabling the browser's cache to improve website loading times

**Q11.** Which of the following benefits can be obtained by conducting an energy audit in a commercial building?

**(a)** Increasing the cost of energy bills
**(b)** Identification of opportunities for energy savings
**(c)** Reduction in price of energy per its unit usage
**(d)** Reduced market value of building

**Q12.** What should come in place of the question mark (?) in the given series?

17 29 41 59 77 101 125 ?

**(a)** 175
**(b)** 161
**(c)** 155
**(d)** 149

**Q13.** Which of the following options is correct when two objects at the same temperature are kept in contact with each other?

**(a)** Both objects transfer heat to each other.
**(b)** Heat is transferred from object 2 to object 1.
**(c)** No heat is transferred.
**(d)** Heat is transferred from object 1 to object 2.

**Q14.** What will come in place of the question mark (?) in the following equation, if '+' and '−' are interchanged and '×' and '÷' are interchanged?

32 + 28 ÷ 3 × 4 − 15 = ?

**(a)** 32
**(b)** 26
**(c)** 29
**(d)** 20

**Q15.** Mangal starts from Point A and walks 14 m towards north. He takes a right turn, walks 9 m and then takes a right turn, walks 37 m, reaches Point B and stops. Jayanti starts from Point Z which is 15 m towards the east of Point B. She walks 11 m towards east, takes a left turn, walks 42 m, turns left and walks 63 m, turns left and walks 19 m and stops at Point Y. What is the shortest distance between Point A and Point Y? (All turns are 90 degree turns only.)

**(a)** 25 m
**(b)** 28 m
**(c)** 26 m
**(d)** 31 m

**Q16.** What is the amount of work done in moving a charge of 6 C from a point with a potential of 120 V to a point with a potential of 140 V?

**(a)** 840 J
**(b)** 120 J
**(c)** 720 J

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**(d)** 3.33 J

**Q17.** In a clearance sale of electronic items, an item whose marked price was Rs. 12,225 is now sold for Rs. 10,758, d% is the discount percentage on the item. The value of d is:

**(a)** 11%
**(b)** 14%
**(c)** 12%
**(d)** 13%

**Q18.** Which of the following is NOT a fundamental quantity in the SI system?

**(a)** Luminous intensity
**(b)** Amount of substance
**(c)** Time
**(d)** Force

**Q19.** Alloys are preferred over pure metals in electrical heating devices:

**(a)** because the resistivity of an alloy is generally higher than its constituent metals.
**(b)** because alloys oxidise (burn) readily at high temperatures.
**(c)** because the elasticity of an alloy is higher than that of its constituent metals.
**(d)** because the resistivity of an alloy is lower than that of its constituent metals.

**Q20.** Which of the following correctly describes the direction of electric current?

**(a)** From low potential to high potential
**(b)** Opposite to the direction of positive charge flow
**(c)** Same as the direction of electron flow
**(d)** Opposite to the direction of electron flow

**Q21.** Which of the following is an application of the 5S concept in a workshop?

**(a)** Increasing the number of safety supervisors
**(b)** Keeping tools and materials organised for easy access
**(c)** Removing safety protocols to improve efficiency
**(d)** Using extra tools without proper storage

**Q22.** Find the value of 96.86572 × 10^7.

**(a)** 96,86,57,200
**(b)** 0.9686572
**(c)** 96,86,572
**(d)** 9,68,65,720

**Q23.** Ampere is the SI unit of _____.

**(a)** electric current
**(b)** electric power
**(c)** electric charge
**(d)** mass

**Q24.** If a = 21 and b = 19, find the value of $(a^2 + b^2 + ab)/(a^3 - b^3)$.

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

**Q25.** What is the immediate action to take when a fire breaks out in a workplace?

**(a)** Ignore the fire and continue working
**(b)** Try to put it out using water without knowing the fire type
**(c)** Gather near the fire to observe the situation

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**(d)** Raise the alarm and evacuate the area

**Q26.** The floor of a rectangular hall is a square with a perimeter of 220 m. If the cost of painting the four walls at the rate of Rs. 10 per $m^2$ is Rs. 11,000, then find the volume of the hall.

**(a)** 15,125 $m^3$
**(b)** 19,200 $m^3$
**(c)** 19,520 $m^3$
**(d)** 18,250 $m^3$

**Q27.** The list price of an article is Rs. 5,000 and a discount of 70% is offered on the list price. What additional discount per cent on the already discounted price must be offered to a customer to bring the net selling price to Rs. 1,275?

**(a)** 10%
**(b)** 16%
**(c)** 18%
**(d)** 15%

**Q28.** Each of I, J, K, L, U, V and W has an exam on a different day of a week starting from Monday and ending on Sunday of the same week.J has the exam on Friday. Only two people have the exam between V and J. Only four people have the exam between L and V. U has the exam immediately after W. K does not have the exam on Monday.How many people have the exam before K and after I?

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

**Q29.** The median of the data 2, 6, 4, 8, 1, 2, 5, 8, 9, 10, 12, 9, 7, 8, 3, 1, 0, 9, 2, 5 is _____.

**(a)** 6
**(b)** 5.5
**(c)** 5
**(d)** 6.5

**Q30.** If an electric heater draws a current of 5 A when the potential difference across its terminals is 75 V, what current will it draw when the potential difference is increased to 150 V?

**(a)** 10 A
**(b)** 15 A
**(c)** 20 A
**(d)** 30 A

**Q31.** Two sets of numbers are given below. In each set of numbers, certain mathematical operation(s) on the first number results in the second number. Similarly, certain mathematical operation(s) on the second number results in the third number and so on. Which of the given options follows the same set of operations as in the given sets?

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

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

**(a)** 16 – 196 – 296 – 246
**(b)** 13 – 169 – 244 – 188
**(c)** 25 – 625 – 725 – 675
**(d)** 23 – 529 – 629 – 589

**Q32.** The HCF of two numbers is 62, and the other two factors of the LCM of these factors are 7 and 9. Which of the options given below can be a possible value of the smaller of the two numbers?

**(a)** 432
**(b)** 434
**(c)** 433
**(d)** 431

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**Q33.** If the sum of lengths of two adjacent sides of a parallelogram is 12 cm, then the perimeter of the parallelogram is:

**(a)** 34 cm
**(b)** 36 cm
**(c)** 20 cm
**(d)** 24 cm

**Q34.** How many base units are given in the SI system?

**(a)** 9
**(b)** 7
**(c)** 3
**(d)** 11

**Q35.** A is thrice as good a workman as B and together they can finish a piece of work in 12 days. In how many days can A alone finish the work?

**(a)** 14 days
**(b)** 12 days
**(c)** 16 days
**(d)** 18 days

**Q36.** Which of the following is NOT one of the 5S principles?

**(a)** Sustain
**(b)** Supervise
**(c)** Standardise
**(d)** Sort

**Q37.** 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)** DW – YA
**(b)** MF – HJ
**(c)** WP – RS
**(d)** SL – NP

**Q38.** Which of the following is a poor conductor of heat?

**(a)** Wool
**(b)** Steel spoon
**(c)** Copper
**(d)** Aluminium rod

**Q39.** Rakesh starts a business with a capital of Rs. 2,50,000. He incurs a loss of 5% during the first year. However, he makes a profit of 4% on his remaining investment during the second year. Finally, he makes a profit of 20% on his new capital during the third year. Find his total profit at the end of three years.

**(a)** Rs. 46,400
**(b)** Rs. 46,500
**(c)** Rs. 46,700
**(d)** Rs. 46,600

**Q40.** The resistances of 30 ohm, 20 ohm and 60 ohm are connected in parallel. The equivalent resistance of the combination is _____.

**(a)** 110 ohm
**(b)** 0.1 ohm
**(c)** 12 ohm
**(d)** 10 ohm

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**Q41.** What should come in place of the question mark (?) in the given series?

UT27, RQ25, NM23, ?

**(a)** IG21
**(b)** IH29
**(c)** JH19
**(d)** IH21

**Q42.** Refer to the following letter, number and symbol series and answer the question that follows. Counting to be done from left to right only.

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

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

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

**Q43.** Match the following.

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

**(a)** A-S, B-R, C-Q, D-P
**(b)** A-R, B-S, C-Q, D-P
**(c)** A-S, B-R, C-P, D-Q
**(d)** A-P, B-R, C-Q, D-S

**Q44.** Which of the following is an example of uniform motion?

**(a)** A vehicle moving through a crowded area
**(b)** A train moving at a constant speed on a straight track
**(c)** A sprinter running a 100-metre race with varying speed
**(d)** A ball rolling down a slope

**Q45.** Two sets of numbers are given below. In each set of numbers, certain mathematical operation(s) on the first number results in the second number. Similarly, certain mathematical operation(s) on the second number results in the third number and so on. Which of the given options follows the same set of operations as in the given sets?

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

24 – 48 – 108 – 36; 18 – 36 – 96 – 32

**(a)** 82 – 139 – 234 – 78
**(b)** 132 – 264 – 444 – 138
**(c)** 53 – 106 – 166 – 55
**(d)** 48 – 96 – 156 – 52

**Q46.** Match the following, according to lettering and numbering (uppercase lettering) as per BIS SP: 46-2003.

| Width (W) | Capital letters |
|---|---|
| (A) 5 | (I) W |
| (B) 6 | (II) A, M, Q, V, X, Y |
| (C) 7 | (III) B, D, G, H, K, N, O, P, R, S, T, U and Z |

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| | |
|---|---|
| (D) 9 | (IV) C, E, F, L |

**(a)** A-(I), B-(III), C-(II), D-(IV)
**(b)** A-(IV), B-(III), C-(II), D-(I)
**(c)** A-(IV), B-(III), C-(I), D-(II)
**(d)** A-(IV), B-(II), C-(III), D-(I)

**Q47.** An object of mass m is made to fall freely from a height h. As the object continues to fall, what will happen to its energy?
**(a)** The kinetic energy and potential energy will not change.
**(b)** The potential energy would decrease while the kinetic energy would increase.
**(c)** The potential energy would increase while the kinetic energy would decrease.
**(d)** The potential energy and kinetic energy will both increase.

**Q48.** A can complete a piece of work in 18 days. B can complete it in 14 days. With the assistance of C, they completed the work in 7 days. C alone can complete it in _____ days.
**(a)** 63
**(b)** 42
**(c)** 64
**(d)** 36

**Q49.** What should come in place of the question mark (?) in the given alpha-numeric series?
2M, 5O, 10R, 13T, 18W, 21Y, ?
**(a)** 26B
**(b)** 26C
**(c)** 24B
**(d)** 26A

**Q50.** The mode of 4, 6, 4, 6, 5, 7, 5, 7, 4, 6, 7, 6 is:
**(a)** 4
**(b)** 6
**(c)** 5
**(d)** 7

**Q51.** How fast should a cat of mass 15 kg run in order to have a kinetic energy of 120 J?
**(a)** 40 m/s
**(b)** 4 m/s
**(c)** 16 m/s
**(d)** 0.16 m/s

**Q52.** In a certain code language, ‘WILD’ is coded as ‘8164’ and ‘DOGS’ is coded as ‘3517’. What is the code for ‘D’ in the given code language?
**(a)** 4
**(b)** 1
**(c)** 3
**(d)** 5

**Q53.** Simran rides a distance of 60 m in one minute and then returns along the same straight path. The average velocity of her ride is _____.
**(a)** 0 m/s
**(b)** 2 m/s
**(c)** 1 m/s
**(d)** 60 m/s

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**Q54.** The resistance of a metallic wire is R. If the radius of the metallic wire is reduced to half of its initial value while keeping all other parameters the same, the new resistance becomes _____.

**(a)** R/4
**(b)** R/2
**(c)** 2R
**(d)** 4R

**Q55.** Select the pair that follows the same pattern as the one followed by the two sets of pairs given below. Both pairs follow the same pattern.

BSR : GQW

LOB : QMG

**(a)** RWH : WUM
**(b)** HVD : LTH
**(c)** KRW : NPZ
**(d)** QGT : TDW

**Q56.** If 11.6 : x :: x : 2.9, and x > 0, then find the value of x.

**(a)** 10.9
**(b)** 7.7
**(c)** 5.8
**(d)** 3.1

**Q57.** What is the first step when encountering a system failure in a workplace?

**(a)** Report the issue and follow the emergency protocol
**(b)** Ignore the failure and continue working
**(c)** Immediately restart all systems without inspection
**(d)** Disconnect all power sources permanently

**Q58.** What should come in place of the question mark (?) in the given series?

87 118 149 ? 211 242

**(a)** 188
**(b)** 171
**(c)** 180
**(d)** 199

**Q59.** Jaspreet deposited a sum of Rs. 12,800 at 5% rate of interest per annum, compounded annually. The total amount (in Rs. ) received by Jaspreet after 2 years will be:

**(a)** 13,997
**(b)** 14,112
**(c)** 14,512
**(d)** 14,442

**Q60.** Which key combination is commonly used for copying text in many text editing applications in Windows?

**(a)** Ctrl+V
**(b)** Ctrl+S
**(c)** Ctrl+C
**(d)** Tab

**Q61.** How many significant figures are there in 4.700 m?

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

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**Q62.** In a business, Tushar invests in Rs. 10,000 and Salil invests in Rs. 20,000. Tushar received 10% of the profit for managing the business and the rest of the profit is divided in the ratio of their capitals. Find Tushar's share of the profit (in Rs. ) in a profit of Rs. 14,400.

**(a)** 5,610
**(b)** 5,760
**(c)** 5,510
**(d)** 5,910

**Q63.** Which of the following correctly describes the role of DNS (Domain Name System) in internet architecture?

**(a)** DNS routes data packets to their destination across the internet.
**(b)** DNS translates domain names into IP addresses to allow browsers to locate web servers.
**(c)** DNS translates IP addresses into domain names to make them easier to remember.
**(d)** DNS secures the data transmitted over the internet by encrypting it.

**Q64.** Which of the following is an INCORRECT formula for power?

**(a)** VI
**(b)** $I^2R$
**(c)** $I^2Rt$
**(d)** $V^2/R$

**Q65.** A boy goes to school at a speed of 5 km/hr. He returns at a speed of 14 km/hr. He takes a total of 8 hours for both going to school and returning. The distance (in km) between his home and school is:

**(a)** 29.5
**(b)** 27
**(c)** 28.6
**(d)** 31

**Q66.** Which of the following features allows the user to quickly find emails received from a specific sender?

**(a)** Archive
**(b)** Draft
**(c)** Filter
**(d)** Sort

**Q67.** If ‘A’ stands for ‘÷’, ‘B’ stands for ‘×’, ‘C’ stands for ‘+’ and ‘D’ stands for ‘−’, then what will come in place of the question mark (?) in the following equation?

35 A 7 C 9 B 3 D 16 = ?

**(a)** 21
**(b)** 18
**(c)** 16
**(d)** 10

**Q68.** What is the main function of the Transport Layer in the internet architecture?

**(a)** Reliable data transfer and error correction
**(b)** Data encapsulation
**(c)** Routing of packets
**(d)** IP addressing

**Q69.** A line in an engineering drawing is the _____.

**(a)** one-dimensional figure, which has length but no width
**(b)** dimensionless location in space or on a drawing sheet that has no width, height, or depth
**(c)** three-dimensional object with length, breadth, and height
**(d)** closed curve where all points are the same distance from a fixed centre point

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**Q70.** The heat developed in a 5 ohm resistor in 2 minutes when a 2A current passes through it is _____.

**(a)** 2400 J
**(b)** 500 J
**(c)** 1000 J
**(d)** 40 J

**Q71.** The areas of three adjacent faces of a solid cuboid are 162 $cm^2$, 144 $cm^2$ and 50 $cm^2$. What is the volume (in $cm^3$) of the cuboid?

**(a)** 1080
**(b)** 805
**(c)** 833
**(d)** 1365

**Q72.** Pihu starts her car at 9 a.m. to reach her office, which is 20 km away. She covers the first 10 km in 30 minutes and reaches her office at 10 a.m. Pihu's motion is _____.

**(a)** retarded motion
**(b)** non-uniform motion
**(c)** accelerated motion
**(d)** uniform motion

**Q73.** How does turning off unused electrical devices contribute to energy conservation?

**(a)** By lowering utility bills
**(b)** By enhancing device performance
**(c)** By degrading electrical devices
**(d)** By increasing energy use

**Q74.** An electric lamp with a resistance of 35 ohms and a conductor with a resistance of 5 ohms are connected to an 8 V battery in series. Calculate the current flowing through the circuit.

**(a)** 0.2 A
**(b)** 1.82 A
**(c)** 40 A
**(d)** 2 A

**Q75.** Calculate the energy possessed by an object of mass 10 kg when it is raised to a height of 5 m from the ground. Given: g = 9.8 m s^(-2).

**(a)** 500 J
**(b)** 450 J
**(c)** 490 J
**(d)** 400 J

**Q76.** If $(\sin\theta+\cos\theta)/(\sin\theta-\cos\theta)=12$ then the value of $(121\tan^2\theta - 3)/(169\cot^2\theta + 1)$ is:

**(a)** -83/21
**(b)** -83/61
**(c)** 83/61
**(d)** 83/21

**Q77.** E, F, G, H, P, Q, and R, are sitting around a circular table facing the centre. F sits fourth to the right of E. Only R sits between F and H. H is NOT an immediate neighbour of E. Only P sits between E and G.

How many people sit between G and Q when counted from the right of G?

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

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**Q78.** Find the value of $x^2 + y^2$, given that, $x = 7 + \sqrt{1}$, $y = 7 - \sqrt{1}$.

**(a)** 56
**(b)** 69
**(c)** 100
**(d)** 98

**Q79.** How do we find absolute error?

**(a)** Absolute error = Actual value/observed value
**(b)** Absolute error = Actual value × observed value
**(c)** Absolute error = Actual value + observed value
**(d)** Absolute error = Actual value − observed value

**Q80.** What is the main advantage of using solar energy over fossil fuels?

**(a)** Greenhouse gas emission is higher when solar energy is used.
**(b)** Solar energy extraction requires high operational cost when compared to fossil fuels.
**(c)** Solar energy requires mining and extraction, whereas fossil fuels are free of cost.
**(d)** Solar energy is abundantly available and renewable in nature.

**Q81.** Which of the following is an effective way to prevent electrical accidents in the workplace?

**(a)** Working on live wires with bare hands
**(b)** Using water to cool overheated electrical equipment
**(c)** Using insulated tools and wearing rubber gloves
**(d)** Ignoring minor electrical faults

**Q82.** Which term describes the maximum amount of solar energy that a photovoltaic (PV) system can convert into electricity under standard test conditions?

**(a)** Nameplate capacity
**(b)** Rated capacity
**(c)** Effective capacity
**(d)** Peak load

**Q83.** Aditya is using two thin blankets instead of one thick blanket in winter to keep himself warm because _____.

**(a)** the friction between the two blankets produces heat
**(b)** the air trapped between the blankets is a poor conductor of heat
**(c)** the blankets are at a higher temperature than the surroundings
**(d)** two blankets are cheaper than one thick blanket

**Q84.** In a certain code language, ‘BORE’ is coded as ‘8624’ and ‘TABS’ is coded as ‘3217’. What is the code for ‘B’ in the given code language?

**(a)** 7
**(b)** 1
**(c)** 2
**(d)** 8

**Q85.** Two trains of lengths 155 m and 160 m are running at speeds of 74 km/hr and 52 km/hr, respectively, on parallel tracks in opposite directions. In how many seconds will they pass each other?

**(a)** 9 seconds
**(b)** 14 seconds
**(c)** 7 seconds
**(d)** 18 seconds

**Q86.** In winters, people wear jacket because _____.

**(a)** it looks good
**(b)** fabric of jacket is a conductor of heat so it traps body heat
**(c)** fabric of jacket is an insulator of heat so it traps body heat

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**(d)** jacket allows the heat to flow from our body to surroundings

**Q87.** Akshay gets 2% increase in his sale amount in the first year and 25% in the second year. With that his present sale is Rs. 1,42,800. What was his sale (in Rs. ) two years ago?

**(a)** 1,14,240
**(b)** 92,000
**(c)** 1,40,000
**(d)** 1,12,000

**Q88.** What is the scientific notation for 55,60,000 km?

**(a)** 5.56 × 10^6 km
**(b)** 5.56 × 10^4 km
**(c)** 55.6 × 10^4 km
**(d)** 556 × 10^6 km

**Q89.** Two containers, one painted black and the other painted white, have been kept in sunlight for one hour in the afternoon. Choose the correct observation.

**(a)** There is no effect on either container.
**(b)** The white container becomes hotter than the black container.
**(c)** The black container becomes hotter than the white container.
**(d)** Both containers become equally hot.

**Q90.** The energy possessed by an object by virtue of its motion is known as _____.

**(a)** kinetic energy
**(b)** potential energy
**(c)** heat energy
**(d)** light energy

**Q91.** Two sets of numbers are given below. In each set of numbers, certain mathematical operation(s) on the first number results in the second number. Similarly, certain mathematical operation(s) on the second number results in the third number and so on. Which of the given options follows the same set of operations as in the given sets?

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

4 – 8 – 18 – 9

6 – 12 – 22 – 11

**(a)** 8 – 16 – 26 – 13
**(b)** 3 – 15 – 12 – 20
**(c)** 9 – 18 – 28 – 20
**(d)** 11 – 13 – 22 – 63

**Q92.** Which of the following is the temperature range in a clinical thermometer?

**(a)** 30°C to 43°C
**(b)** 35°C to 42°C
**(c)** 10°C to 45°C
**(d)** 31°C to 44°C

**Q93.** Which of the following groups represents conductors of heat?

**(a)** Wood, paper, silver
**(b)** Paper, copper, plastic
**(c)** Aluminium, silver, copper
**(d)** Aluminium, plastic, wood

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**Q94.** Select the triad that follows the same pattern as that followed by the two triads given below. Both triads follow the same pattern.

JK - LM - NO

TU - VW - XY

**(a)** DE - FG - HI
**(b)** DE - FG - KL
**(c)** WE - DF - HI
**(d)** DE - FB - DF

**Q95.** In Engineering Drawing, principal lines are drawn to represent _____.

**(a)** interior or hidden edges
**(b)** axes of cylindrical, conical or spherical objects
**(c)** visible edges and surface boundaries of objects
**(d)** wide lines along which the prints are trimmed

**Q96.** A fruit seller had some apples. He sells 40% of the apples and now has 900 apples. How many apples did he originally have?

**(a)** 1800
**(b)** 2250
**(c)** 1500
**(d)** 1350

**Q97.** 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)** SA – WQ
**(b)** WE – AU
**(c)** DL – HB
**(d)** MU – QL

**Q98.** Which of the following represents an item with kinetic energy?

**(a)** An extended rubber band
**(b)** A stone in motion
**(c)** A book resting on a table
**(d)** A compressed spring

**Q99.** In a certain code language,

'A × B' means ‘A is the son of B’,

'A − B' means ‘A is the brother of B’,

'A + B' means ‘A is the wife of B’ and

'A % B' means ‘A is the father of B’.

How is M related to T if ‘M × N % P + S − T’?

**(a)** Brother's wife's brother
**(b)** Brother's wife's father
**(c)** Brother's wife's father's brother
**(d)** Brother's wife's father's father

**Q100.** A person saves 50% of his income. If his expenditure is Rs. 640, then his income (in Rs. ) is:

**(a)** 600
**(b)** 1,320
**(c)** 560
**(d)** 1,280

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## PART B

**Q101.** What is the function of a half-wave rectifier in a power supply?

**(a)** To convert AC voltage to DC voltage
**(b)** To regulate the output voltage
**(c)** To amplify the output voltage
**(d)** To filter the output voltage

**Q102.** In a JK flip-flop, if J = 0, K = 1 and the current state is Q = 1, what will be the next output after one clock pulse?

**(a)** Q will remain 1; Q' will remain 0
**(b)** Q will toggle to 0; Q' will toggle to 1
**(c)** Q will be reset to 0; Q' will be set to 1
**(d)** The output will be undefined.

**Q103.** What is the effect of temperature changes on the frequency stability of a crystal oscillator?

**(a)** The frequency stability is affected by temperature changes, but the effect is negligible.
**(b)** The frequency stability increases with increasing temperature.
**(c)** The frequency stability decreases with increasing temperature.
**(d)** The frequency stability remains constant with changing temperature.

**Q104.** How can you extend a half adder to handle multi-bit binary addition?

**(a)** By using multiple half adders in series
**(b)** By cascading half adders with carry propagation
**(c)** By combining half adders and full adders
**(d)** By adding more XOR gates

**Q105.** Why do cars have treaded tyres?

**(a)** To decrease friction
**(b)** To increase speed
**(c)** To reduce weight
**(d)** To increase friction and grip on the road

**Q106.** What is the output of an RS flip-flop when Set = 0 and Reset = 0?

**(a)** No change in output
**(b)** Q = 0, Q' = 1
**(c)** Q = 1, Q' = 0
**(d)** Invalid state

**Q107.** A 200 V voltmeter has an internal resistance of 20 kΩ. To extend its range to 1,000 V, what should be the value of the series multiplier resistance?

**(a)** 200 kΩ
**(b)** 80 kΩ
**(c)** 120 kΩ
**(d)** 100 kΩ

**Q108.** What is the impact of using a buffered parallel I/O port compared to a non-buffered one in terms of data transfer speed and reliability?

**(a)** Buffered I/O ports only work in unidirectional data transfer applications.
**(b)** Buffered I/O ports are slower but more reliable.
**(c)** Non-buffered I/O ports are faster but less reliable.
**(d)** Buffered I/O ports provide faster data transfer with a lower risk of data loss or corruption.

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**Q109.** Which type of circuit is used to convert both the half-cycles of an AC waveform into a pulsating DC waveform?

**(a)** Clippers circuit
**(b)** Clamper circuit
**(c)** Half-wave rectifier
**(d)** Full-wave rectifier

**Q110.** A statement and conclusion for pictorial drawing are given below. Determine the logical relationship between them.

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

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

**(a)** The conclusion does not logically follow from the statement.
**(b)** The conclusion is partially supported by the statement.
**(c)** The conclusion logically follows from the statement.
**(d)** The conclusion is unrelated to the statement.

**Q111.** What will happen if resistance is measured in a powered circuit?

**(a)** The resistance value will be higher than expected.
**(b)** The multimeter may get damaged.
**(c)** The reading will be accurate.
**(d)** The test leads will heat up.

**Q112.** In a logic circuit, three SPST (Single Pole Single Throw) switches are used to implement a logic gate. The switches are connected in series. What is the output of the circuit if all switches are closed?

**(a)** The output will depend on the type of gate used
**(b)** 1
**(c)** 0
**(d)** Undefined

**Q113.** What is the main advantage of using a crystal oscillator over an RC oscillator?

**(a)** Lower frequency stability
**(b)** Higher output amplitude
**(c)** Higher frequency stability
**(d)** Lower output amplitude

**Q114.** Which option shows the correct answer when 27°C is converted to the kelvin scale?

**(a)** – 246 K
**(b)** – 300 K
**(c)** 246 K
**(d)** 300 K

**Q115.** What is the working principle of an analogue vibrating reed frequency meter?

**(a)** Electromagnetic resonance
**(b)** Piezoelectric effect
**(c)** Thermal expansion
**(d)** Electrostatic attraction

**Q116.** Which of the following actions is a part of the emergency response team's responsibilities during an active emergency?

**(a)** Preparing reports on emergency incidents
**(b)** Conducting routine safety checks
**(c)** Rescuing persons in immediate danger
**(d)** Scheduling regular evacuation drills

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**Q117.** Which of the following statements is/are true about Non-Functional Dimensions (NF) in engineering drawing?

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

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

**(a)** Neither statement is true
**(b)** Only statement 1 is true
**(c)** Only statement 2 is true
**(d)** Both statements are true

**Q118.** Which of the following is the size of the internal RAM in the 'Standard 8051' microcontroller?

**(a)** 128 bytes
**(b)** 512 bytes
**(c)** 1 kilo bytes
**(d)** 256 bytes

**Q119.** What is the purpose of the feedback network in an oscillator circuit?

**(a)** To provide impedance matching
**(b)** To provide a stable output voltage
**(c)** To provide positive feedback to sustain oscillations
**(d)** To filter out unwanted frequencies

**Q120.** Which of the following is INCORRECT about line standard?

**(a)** Quick measurements over a wide range
**(b)** More accurate due to line thickness
**(c)** Subject to parallax error
**(d)** Used to measure the distance between two engraved lines

**Q121.** How much is the energy gap between the valence band and conduction band of silicon (Si)?

**(a)** 0.5 eV
**(b)** 2.5 eV
**(c)** 3.5 eV
**(d)** 1.1 eV

**Q122.** Which of the following care and maintenance of a marking table is INCORRECT?

**(a)** The marking table should be protected from damage.
**(b)** The surface of the marking table should not be given a thin layer of oil.
**(c)** After use, the marking table should be cleaned with a soft cloth.
**(d)** The marking table should be protected from rust.

**Q123.** The given equation represents the relationship between temperature and resistance of an RTD.

$R_t=R_{(ref)}(1+\alpha\Delta t)$

What does $\Delta t$ represent?

**(a)** Difference between operating and environmental temperature
**(b)** Operating temperature
**(c)** Difference between operating and reference temperature
**(d)** Reference temperature

**Q124.** A rectangular floor measuring 10 m × 8 m is to be tiled. If each tile covers 0.25 $m^2$, how many tiles are needed?

**(a)** 200
**(b)** 250
**(c)** 300
**(d)** 320

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**Q125.** What is the typical output of a Zero Crossing Detector using an op-amp if the input applied is a sinusoidal ac signal?

**(a)** A trapezoidal wave
**(b)** A triangular wave
**(c)** A square wave
**(d)** A sinusoidal wave

**Q126.** _____ recommend(s) 20 mm wide margins for sheet sizes AO and A1 in engineering drawings.

**(a)** Borders and frames: SP: 46 (2003)
**(b)** Custom grids
**(c)** Geographic coordinate systems
**(d)** Grid reference system

**Q127.** What is the primary function of the Program Status Word (PSW) SFR in the 8051?

**(a)** To control the timer modes
**(b)** To store the address of the next instruction
**(c)** To enable external interrupts
**(d)** To store arithmetic flags and register bank select bits

**Q128.** Match the following designations of sheets with their respective trimmed sizes in length and breadth.

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

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

**Q129.** If the multimeter reading shows '0.00' when measuring current, what could be the possible reason?

**(a)** The battery of the multimeter is low.
**(b)** The probes are reversed.
**(c)** The fuse in the multimeter is blown.
**(d)** The circuit has no current flow.

**Q130.** What is the primary function of a 1:4 demux?

**(a)** To combine multiple signals into one output
**(b)** To amplify an input signal
**(c)** To direct one input signal to four output lines
**(d)** To store input signals for later use

**Q131.** In a monostable multivibrator using IC 555, what triggers the output pulse?

**(a)** Connecting a capacitor to ground
**(b)** Resetting the flip-flop manually
**(c)** Applying a high voltage of value equal to Vcc at pin 5
**(d)** Applying a pulse with voltage going below 1/3 Vcc

**Q132.** What is the purpose of the resistor 'R' in an RC oscillator?

**(a)** To provide a means of filtering out all frequencies
**(b)** To provide a path for the output signal
**(c)** To provide a means of stabilising the supply votlage
**(d)** To provide a means of adjusting the frequency of oscillation

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**Q133.** What is the function of the resistor connected between Pin 7 (discharge) and Vcc in a monostable multivibrator?

**(a)** It sets the output frequency.
**(b)** It provides a feedback path.
**(c)** It controls the charging time of the capacitor.
**(d)** It limits the current through the IC.

**Q134.** How can an OR gate be implemented using only NAND gates?

**(a)** Use four NAND gates - 2 as NOT gates and 2 for the NAND operation.
**(b)** Use three NAND gates - 2 as NOT gates and 1 for the NAND operation.
**(c)** Use one NAND gate - 1 for the OR operation directly.
**(d)** Use two NAND gates - 1 as NOT gates and 1 for the OR operation.

**Q135.** What is the gain of a voltage amplifier if the input voltage is 2 V and the output voltage is 10 V?

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

**Q136.** In a circuit with a NTC type thermistor and a fixed resistor connected in series connected to a DC power supply, what will happen to the output voltage if there is a rise in temperature?

**(a)** The output voltage will remain constant.
**(b)** The output voltage will decrease.
**(c)** The output voltage will fluctuate depending on the resistor value.
**(d)** The output voltage will increase.

**Q137.** What will be the output of a Zero Crossing Detector if the input signal is a triangular wave instead of a sine wave?

**(a)** The output will remain at zero.
**(b)** The output will be a triangular waveform.
**(c)** The output will have multiple transitions at each crossing.
**(d)** The output will still be a square wave but maybe with unequal high and low periods.

**Q138.** Which of the following points is NOT relevant to a LVDT?

**(a)** Low sensitivity
**(b)** Low power consumption
**(c)** Less rugged
**(d)** Prone to more friction

**Q139.** The SI unit of 'ultimate stress' is _____.

**(a)** pascal (Pa)
**(b)** joule per square meter ($J/m^2$)
**(c)** newton (N)
**(d)** newton per meter (N/m)

**Q140.** What is the main advantage of using a Colpitts oscillator over a Hartley oscillator in terms of frequency stability?

**(a)** The frequency stability of both oscillators is dependent on the values of the components used.
**(b)** The Colpitts oscillator has a more stable frequency than the Hartley oscillator due to its capacitive voltage divider.
**(c)** The Hartley oscillator has a more stable frequency than the Colpitts oscillator due to its inductive voltage divider.
**(d)** The frequency stability of both oscillators is the same.

**Q141.** What is the primary reason for conducting a vehicle road test?

**(a)** To ensure the vehicle is functioning safely and correctly
**(b)** To increase fuel efficiency
**(c)** To test how fast the vehicle can go
**(d)** To avoid the need for inspections

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**Q142.** Natural rubber is soft at high temperatures and brittle at low temperatures; hence raw rubber is heated with sulphur and other additives at a temperature range between 373 – 415 K to make it strong. This process is called _____ of rubber.

**(a)** extrusion
**(b)** latex
**(c)** molding
**(d)** vulcanisation

**Q143.** Electrical energy is measured in which unit?

**(a)** Joule
**(b)** Ampere-hour (Ah)
**(c)** Watt
**(d)** Kilowatt-hour (kWh)

**Q144.** An angle greater than 180 degrees is referred to as _____.

**(a)** a right angle
**(b)** an acute angle
**(c)** a reflex angle
**(d)** an obtuse angle

**Q145.** What is the primary purpose of preventive maintenance?

**(a)** To increase the workload of employees
**(b)** To eliminate the need for regular inspections
**(c)** To delay repairs until breakdowns occur
**(d)** To reduce unexpected equipment failures

**Q146.** Match the following sensor selection criteria with their correct definitions.

| Criteria | Definion |
|---|---|
| I. Operang range | A. Chosen to allow sufficient output |
| II. Sensivity | B. Chosen to maintain range requirement |
| III. Frequency response | C. Flat over enre desired range |

**(a)** I-A, II- B, III-C
**(b)** I-B, II- A, III-C
**(c)** I-A, II- C, III-B
**(d)** I-B, II- C, III-A

**Q147.** What is the primary purpose of shielding in electrical cables?

**(a)** To protect the cable from external electromagnetic interference
**(b)** To increase the current-carrying capacity of the cable
**(c)** To increase the voltage capacity of the cable
**(d)** To prevent heat loss from the cable

**Q148.** For a JK flip-flop, if the J input is held at 1 and the K input is held at 0, what will happen?

**(a)** The output will be set to 1.
**(b)** The output will toggle on each clock pulse.
**(c)** The output will always be 1.
**(d)** The output will always be 0

**Q149.** Which of the following is a primary difference between a primary and a secondary electrochemical cell?

**(a)** A secondary cell produces more energy than a primary cell.
**(b)** A primary cell can be recharged, while a secondary cell cannot be recharged.
**(c)** There is no difference between primary and secondary cells.
**(d)** A primary cell cannot be recharged, while a secondary cell can be recharged.

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**Q150.** Which of the following is the primary advantage of using parallel I/O ports over serial I/O ports?

**(a)** They consume less power.
**(b)** They are more commonly used in modern systems than serial I/O ports.
**(c)** They are faster due to simultaneous transmission of data bits.
**(d)** They require fewer wires for data transmission.

**Q151.** Which of the following screwdrivers has cross-shaped tips that are unlikely to slip from the cruciform slots in Philips recessed head screws?

**(a)** Cross-recess screwdriver
**(b)** Stumpy screwdriver
**(c)** Ratchet screwdriver
**(d)** Offset screwdriver

**Q152.** Which parameter of the carrier pulse is impacted during pulse width modulation of pulse train due to continuous time varying analog signal?

**(a)** Duty cycle
**(b)** Only amplitude
**(c)** Both amplitude and frequency
**(d)** Only frequency

**Q153.** What is the output state of a JK flip-flop when J = 0 and K = 0?

**(a)** No change in output
**(b)** Output Q = 1, Q' = 1
**(c)** Output Q = 0, Q' = 1
**(d)** Output Q = 1, Q' = 0

**Q154.** Sine bars are used when a high degree of accuracy less than _____ is needed for measuring angles.

**(a)** 1 degree
**(b)** 30 degrees
**(c)** 30 minutes
**(d)** 1 minute

**Q155.** Identify the circuit most suitable for demodulating or processing the PAM signal at the receiver end.

**(a)** Attenuator
**(b)** Mixer
**(c)** Oscillator
**(d)** Low pass filter

**Q156.** The colour code of a resistor to be measured is yellow, violet, red and silver for the first, second, third and fourth bands, respectively. What is the maximum value of the resistor?

**(a)** 4,230 ohms
**(b)** 5,170 ohms
**(c)** 6,130 ohms
**(d)** 7,210 ohms

**Q157.** Which of the following is a key electrical safety tip in a workshop?

**(a)** Ignore frayed wires if the device is still working
**(b)** Operate machines with wet hands
**(c)** Ensure electrical equipment is properly grounded
**(d)** Use water to clean electrical panels

**Q158.** Why is a braking system used in an energy meter?

**(a)** To reduce the power consumption of the meter itself
**(b)** To increase the speed of the rotating disk
**(c)** To maintain a uniform rotation proportional to power consumption

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**(d)** To decrease the friction in the moving parts

**Q159.** What is the term used to describe programs that distinguish between uppercase and lowercase letters, treating "yes" and "YES" as different inputs?

**(a)** Numerical
**(b)** Alphabetical
**(c)** Case-sensitive
**(d)** Case-insensitive

**Q160.** What is the primary goal of the 5S concept?

**(a)** To eliminate the need for maintenance
**(b)** To replace traditional safety measures
**(c)** To improve workplace organisation and efficiency
**(d)** To increase the number of safety regulations

**Q161.** A 100-mm centre-punch could have a 10-mm diameter body and a 6-mm diameter point ground to an angle of _____.

**(a)** 60°
**(b)** 30°
**(c)** 90°
**(d)** 120°

**Q162.** What is the Boolean expression for the sum output of a full adder with inputs A, B and Carry-in (Cin)?

**(a)** A·B+A'.B
**(b)** A⊕B⊕Cin
**(c)** A*B*Cin
**(d)** A+B+Cin

**Q163.** What is the purpose of the two voltage coils in a power factor meter?

**(a)** To improve measurement accuracy in DC circuits
**(b)** To measure active and reactive power
**(c)** To measure power factor at two different frequencies
**(d)** To create a rotating field for phase angle measurement

**Q164.** For which of the following calipers, a screw and nut are provided for opening and closing the caliper legs?

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

**Q165.** What does 'OL' or '1' indicate when measuring voltage with a digital multimeter?

**(a)** The test leads are shorted.
**(b)** The voltage is too low.
**(c)** The voltage exceeds the selected range.
**(d)** The battery is low.

**Q166.** An LVDT has a secondary voltage of 5 V for a displacement of ±10 mm. Determine the output voltage for a core displacement of 6 mm.

**(a)** 3 V
**(b)** 0.5 V
**(c)** 1.5 V
**(d)** 4.5 V

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**Q167.** Which of the following conversions are correct?

**(a)** 1 L = 1 $dm^3$ and 1 mL = 1 $cm^3$
**(b)** 1000 L = 1 $dm^3$ and 1 mL = 1000 $cm^3$
**(c)** 1000 L = 1 $dm^3$ and 1000 mL = 1 $cm^3$
**(d)** 1 L = 1000 $dm^3$ and 1 mL = 1000 $cm^3$

**Q168.** How can an AND gate be implemented using only NAND gates?

**(a)** By connecting OR gate to NAND gate
**(b)** By inverting the output of a NAND gate
**(c)** By connecting the inputs of a NAND gate to logic 1
**(d)** By connecting two NAND gates in Parallel

**Q169.** Which of the following is a major risk associated with fuel spillage?

**(a)** Increased productivity
**(b)** Reduced need for ventilation
**(c)** Better lubrication for workshop floors
**(d)** Fire hazards and environmental contamination

**Q170.** What is the function of a 4-to-1 multiplexer?

**(a)** It multiplies four data inputs to one output.
**(b)** It selects one of four select lines based on two data inputs.
**(c)** It routes four data inputs to one output without selection.
**(d)** It selects one of four data inputs based on two select lines.

**Q171.** A multimeter's internal fuse is rated at 250 mA. If a circuit draws 1 A, what will happen when measuring current?

**(a)** The multimeter will read 1A accurately.
**(b)** The fuse will blow, and no current will be measured.
**(c)** The reading will be lower than expected.
**(d)** The multimeter will automatically adjust to the correct range.

**Q172.** The use of the modulation process helps in shifting the given message signal frequencies to a _____ range where it can occupy only ____ percentage of the spectrum.

**(a)** very low frequency; high
**(b)** very high frequency; high
**(c)** very low frequency; very small
**(d)** very high frequency; very small

**Q173.** In a positive feedback oscillator, what is the effect of increasing the gain of the amplifier (A) on the frequency of oscillation?

**(a)** The frequency of oscillation becomes unstable.
**(b)** The frequency of oscillation decreases.
**(c)** The frequency of oscillation remains unchanged.
**(d)** The frequency of oscillation increases.

**Q174.** What is the primary reason for the heating effect in a conductor when an electric current passes through it?

**(a)** The movement of electrons causes heat generation.
**(b)** The movement of protons causes heat generation.
**(c)** The electric field in the conductor causes heat generation.
**(d)** The conductor absorbs heat from the surrounding environment.

**Q175.** The accuracy of measurement by a try square is about:

**(a)** 0.001 mm per 10 mm length
**(b)** 0.002 mm per 10 mm length
**(c)** 0.004 mm per 10 mm length
**(d)** 0.02 mm per 10 mm length

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## 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 |
| 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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