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

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

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3 questions are in Hindi and not printed here. Each one links to the online version, where you can read it.

PART A

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Statements:

Some bananas are litchis.

All litchis are kiwis.

Some kiwis are strawberries.

Conclusions:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Q18. Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which letter-cluster pair does not belong to that group? (Note: The odd letter-cluster pair is not based on the number of consonants/vowels or their position.)

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

Q19. Which of the following relations is not correct?

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

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

TERM-ERTM-TMRE

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

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

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

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

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

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

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

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

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

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

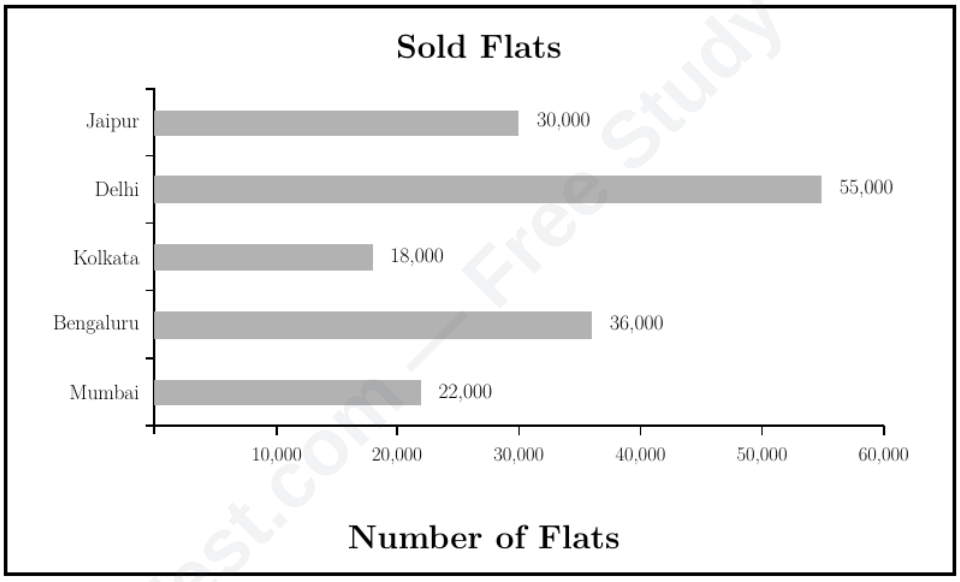
Q28. Potential energy falls under which of the following categories of energy?
(a) Thermal energy
(b) Light energy
(c) Chemical energy
(d) Mechanical energy

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

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

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



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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

38 C 32 A 4 D 5 B 7=?

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

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

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

Q39. What is the average human body temperature?

(a) 40°C
(b) 32°C
(c) 42°C
(d) 37°C

Q40. Which of the following statements is true?

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Q47. Match the columns:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Q53. Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance from commonly known facts, decide which of the given conclusions logically follows from the given statements.

Statements:

1. Some desks are tables.

II. All tables are cabinets.

III. All cabinets are beds.

Conclusions:

I. Some beds are tables.

II. All cabinets are desks.

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

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

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

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(d) 49 m

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

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

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

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

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

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

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

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

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

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

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

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

Q61. In a certain code language,

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

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

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

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

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

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

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

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

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

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

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

: HDI :: MIN : %

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

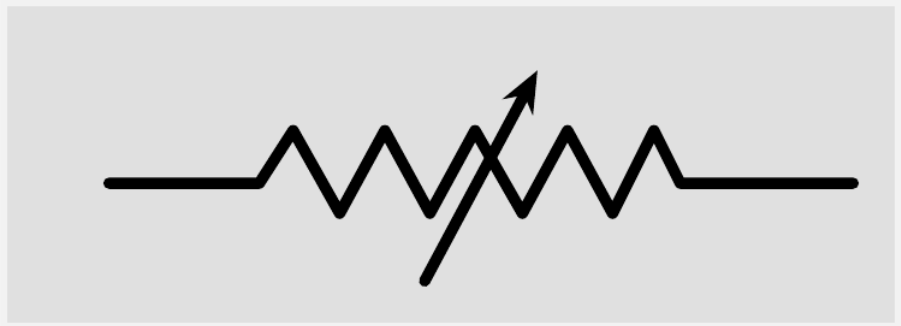
Q65. What is the designation of the trimmed sheet with dimensions 297 mm x 420 mm, as per the ISO-A size series?

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

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

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

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



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

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

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

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

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

Q71. A cube of mass 5.74 g occupies a volume of 1.2 cm^3. The density (in g/cm^3) expressed with the correct number of significant figures is _____.
(a) 4.7833
(b) 4.8
(c) 4.78
(d) 4.783

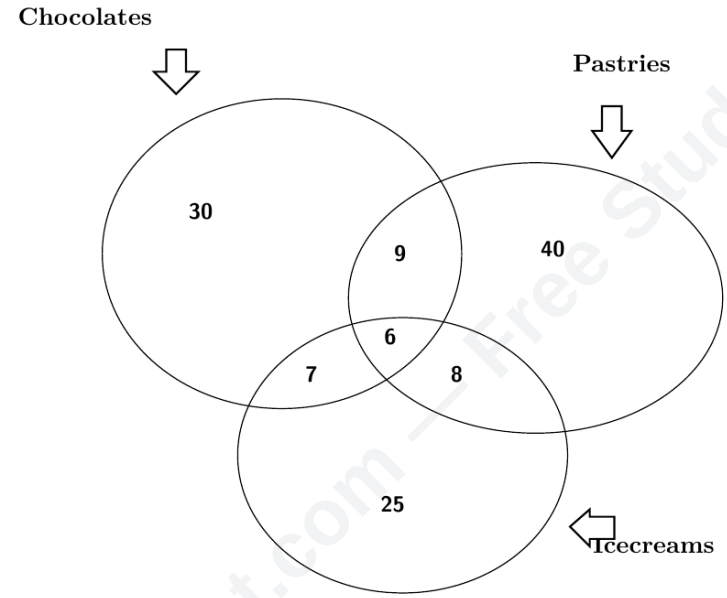
Q72. In science, work done is defined as:
(a) force / distance
(b) force / displacement
(c) force × displacement
(d) force × distance

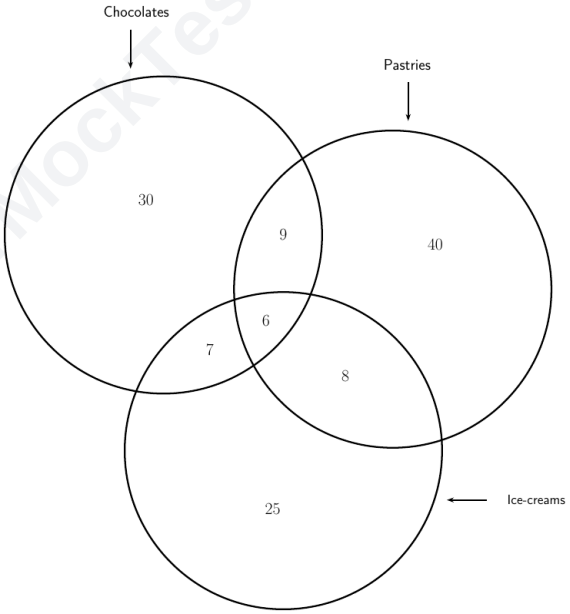
Q73. Simplify 976 × 265 + 976 × 735.
(a) 752800
(b) 976000
(c) 658200
(d) 876000

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

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

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

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

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

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

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

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

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

PCO MEM JGK GIJ DKG AME

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Statement 2: All plastics are good conductors of heat.

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

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

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

X: 85 :: 36: Y

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

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

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

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

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

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

893 891 889 887 ? 883

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

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

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

Who sits exactly opposite B?

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

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

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

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

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

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

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

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

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

Q97. Based on the English alphabetical order, three of the following four letter-clusters are alike in a certain way and thus form a group. Which of the given letter-clusters does not belong to that group? (Note: The odd letter-cluster is not based on the number of consonants/vowels or their position in the letter-cluster.)

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

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

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

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

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

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

PART B

Q101. Which of the following characteristics of the I-head combustion chamber used in petrol engines is NOT correct?

(a) I- Larger valves or valve lift in the head result in higher volumetric efficiency
(b) I-head is better than L-head engine at higher compression ratio
(c) I - The top has a higher surface to volume ratio and hence higher heat loss
(d) I-head has shorter flame catch length and hence greater freedom from shock

Q102. A mechanism that can split the power of a propeller shaft to the rear axle and produce variation in the speed of rear wheels when the vehicle takes a turn is called a/an:

(a) differential unit
(b) integral unit
(c) torque convertor
(d) automatic clutch unit

Q103. What is the advantage of heat treating a substance?

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

Q104. As per BIS SP 46-2003, which of the following applications is correctly represented by a chain-thin line in engineering drawing?

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

Q105. Drawing instrument box is used to carry all _____ instruments.

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

Q106. This question is in Hindi. Read it online.

Q107. What is the limiting value of compression ratio at which a petrol engine normally operates?

(a) Compression ratio = 8
(b) Compression ratio = 6
(c) Compression ratio = 14
(d) Compression ratio = 22

Q108. When the position of the pressure plate is such that the cushion spring of the clutch is not compressed, which of the following options is correct?

(a) The clutch opens
(b) This occurs in the partial attachment phase
(c) This occurs in the attachment phase
(d) The clutch disengages

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Q109. Which of the following designs effectively prevents contact slip and axial misplacement of the connecting rod cover and connecting rod body?

(a) Obliquely cut design
(b) Curvilinear cut design)
(c) Oval cut design
(d) Straight cut design

Q110. In an F-shaped combustion chamber, which of the following parts is generally NOT located on the extended side of the combustion chamber in a petrol engine?

(a) Camshaft
(b) Outlet valve
(c) Spark plug
(d) Inlet valve

Q111. When does a vacuum enhancer create a vacuum?

(a) When the brakes are applied
(b) When the fuel level is low
(c) When the engine is off and the brakes are applied
(d) When the engine is running and the brakes are not applied

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

(a) Transferring dimensions and dividing lines into equal parts
(b) Drawing horizontal lines, parallel lines and handling/holding set squares
(c) Keeps drawing sheet firmly fixed on drawing board so that it does not move
(d) Supporting drawing paper or tracing paper for making drawings

Q113. How does the piston-and-rod assembly move in a single-acting cylinder during the working stroke?

(a) By gravity
(b) By an external mechanical force
(c) By hydraulic pressure
(d) By spring force

Q114. When choosing a sheet size for an original drawing, what should be primarily considered?

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

Q115. Which of the following hand-operated drilling machines is used to drill small diameter holes up to 6 mm?

(a) Bevel gear type drilling machine
(b) Breast drilling machine
(c) Electric hand drill
(d) Ratchet drilling machine

Q116. What is the full form of NVH in Quiet diesel technology of engine technology?

(a) Non-Volatile Heat
(b) Noise, Vibration, Harshness
(c) Normal Vibration Handlin
(d) Noise, Velocity, Heat

Q117. Which of the following types of lubricants is used in the form of solid particles?

(a) Silica
(b) Greece
(c) Graphite
(d) Solid wax

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Q118. Which material is used to make cellular radiator core?

(a) Steel
(b) Copper and brass
(c) Plastic
(d) Aluminum

Q119. Which of the following measuring instruments works on the principle of magnification of small movements of a plunger or stylus, which is converted into rotational motion of a pointer on a circular scale?

(a) Pressure gauge
(b) Vernier caliper
(c) Dial test indicator
(d) Micrometer

Q120. In a diesel engine, heat is supplied in which of the following thermodynamic processes?

(a) In the adiabatic compression process
(b) In the constant volume process
(c) In the constant pressure process
(d) In a constant temperature process

Q121. Which of the following parts of the file is fitted to the tang to hold the file?

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

Q122. This question is in Hindi. Read it online.

Q123. In a velocity-time graph, represents negative slope.

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

Q124. What is the unit of specific gravity?

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

Q125. When the engine is running and the clutch is engaged, and the clutch shaft gear drives the drive gear of the lay shaft and thus the lay shaft also rotates and the main shaft remains stationary because no gear in the main shaft is engaged with the lay shaft gear, then what type of gear is used in the car?

(a) Reverse gear
(b) Top gear
(c) Neutral gear
(d) First gear

Q126. Which of the following expressions is correct for the power developed at the crankshaft in terms of mechanical efficiency?

Let BP be the braking power, IP be the indicated power.

(a) IP = Mechanical efficiency × PB

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(b)

$$BP = \frac{(\qquad\qquad + IP)}{100}$$

(c)

$$\text{BP} = \frac{\text{वस्तु का प्रतिबिम्ब}}{\text{IP}}$$

(d) BP = IP × Mechanical efficiency

Q127. Which part of the diesel intake system routes clean airflow from the air cleaner to the engine cylinders?

(a) Turbocharger
(b) Induction manifold
(c) Inlet valve
(d) Intake port

Q128. What is the main cause of electric shock when a person comes in contact with electrical equipment?

(a) Current flows through the body causing injury
(b) Electrical equipment is not properly earthed
(c) Electrical appliances are very powerful
(d) Appliances are used for too long

Q129. If sin θ = 3/5, then find cos θ.

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

Q130. How does water circulate in the thermosyphon cooling system of an engine?

(a) Due to pump pressure
(b) Due to engine speed
(c) Causes of the radiator fan
(d) Due to the difference in density between hot and cold water

Q131. What is the name of the tool used for force amplification?

(a) Lever
(b) Allen key
(c) Screw driver
(d) Wheel

Q132. What will be the sum of (3/8) + (5/12) ?

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

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Q133. Which of the following metals is not used for the manufacture of piston bearings?

(a) Cast iron
(b) Silicon
(c) Lead
(d) Copper

Q134. When using a multimeter to measure current, which of the following options is correct?

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

Q135. Which gas remains unaffected in the process of 'complete' combustion?

(a) Oxygen
(b) Nitrogen
(c) Water vapor
(d) Carbon dioxide

Q136. What is the purpose of an emergency evacuation plan?

(a) Increasing productivity
(b) Ensuring safe and orderly evacuation during an emergency
(c) Ignoring safety practices
(d) Providing early departure facilities to workers

Q137. Which of the following vices has a handle and a small collet chuck at one end?

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

Q138. According to Boyle's law, if the absolute pressure of a gas increases at a constant temperature, what effect does it have on its volume?

(a) It remains the same
(b) It decreases
(c) It fluctuates unexpectedly
(d) It grows

Q139. In electronic circuits, what is the main advantage of using MOSFETs over other types of transistors?

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

Q140. Which of the following systems is used to transmit engine torque to the driving wheels for road driving?

(a) Four bar chain mechanism
(b) Transmission system
(c) Differential gear mechanism
(d) Steering system

Q141. If the current flowing in a conductor is 5A and the resistance of the conductor is 10 ohms, then what will be the voltage in the conductor according to Ohm's law?

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

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Q142. In a lead-acid battery, which material is used for the positive plate during discharge?

(a) Sulfuric acid (H2SO4)
(b) Lead sulphate (PbSO4)
(c) Lead dioxide (PbO2)
(d) Lead (Pb)

Q143. Which of the following instruments is used to measure the piston ring end gap in a cylinder?

(a) Micrometer
(b) Feeler gauge
(c) Vernier Caliper
(d) Dial gauge

Q144. What is the correct name of the top part of the valve that interacts with the camshaft during engine operation?

(a) Mushroom
(b) Butterfly
(c) Puppet
(d) Tip

Q145. When measuring the resistance of a resistor using an ohmmeter, what does a reading of zero resistance indicate?

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

Q146. What is the solution for engine overheating due to excessive carbon deposits?

(a) Decarbonize the engine
(b) Repair valve installation (seating)
(c) Replace the gasket
(d) Clean the rectum

Q147. Which of the following types of pliers is used for forming loops in wires and for cutting light metals?

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

Q148. Which of the following types of lubricating oils is used in airline industries?

(a) Synthetic varnish
(b) Grease and beeswax lubricants
(c) Natural petroleum products
(d) Biodiesel Lubricants

Q149. The crucial component of a car's clutch system, located in the clutch housing, which slides along a hollow shaft and moves the clutch fork with the help of hydraulic or cable pressure, is called _____.

1. cushion spring
2. lever
3. fork arm
4. clutch release bearing

(a) cushion spring
(b) lever
(c) fork arm
(d) clutch release bearing

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Q150. What should you do to ensure your personal safety at work?

(a) Take risks to complete tasks quickly
(b) Wear personal protective equipment
(c) Work in a hurry without checking the equipment
(d) Ignore warning signs and instructions

Q151. Arrange the following steps in the correct order to construct an equilateral triangle with each side 35 mm.

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

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

Q152. A type of internal spring force that expands the piston ring, depending on the design and properties of the material used, is determined by _____.

(a) Propelled piston ring interval
(b) Compressed ring interval
(c) Free piston ring interval
(d) Compression spring ring interval

Q153. Which of the following statements is incorrect regarding four-stroke diesel engine?

(a) In a C.I. engine, the air-fuel mixture is sucked in during the stroke and the fuel is injected into the cylinder near the end of the compression stroke.
(b) In both petrol and diesel engines, the cycles include suction, compression, ignition, expansion and exhaust.
(c) The operation of a C.I. engine (or Diesel engine) is practically the same as that of an S.I. engine.
(d) In a C.I. engine, only air is sucked in during the stroke and fuel is injected into the cylinder near the end of the compression stroke.

Q154. Gaskets, seals and spacers are made using _____.

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

Q155. What is the recommended remedy for low oil pressure due to low oil viscosity?

(a) Replace the oil.
(b) Clean the oil strainer.
(c) Tighten the strainer pipe mounting.
(d) Replace the oil pump gear.

Q156. Which of the following organizations is responsible for enforcing workplace safety regulations in India?

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

Q157. Which of the following statements is correct about engine valves?

(a) The valve head is perfectly positioned at a 30-45 degree angle that fits ideally with the valve seat, creating a strong seal.
(b) Poppet or mushroom valves are commonly found in two-stroke engines due to their remarkable characteristics.
(c) The camshaft and its related parts control the ignition of the spark during engine ignition.
(d) Conical shaped valves control the flow of gases entering the engine.

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Q158. A circular hole of radius 3 cm is cut out of a rectangular sheet of dimensions 12 cm × 10 cm. Find the remaining area. (Take ? = 3.14)

(a) 95.86 cm²
(b) 91.74 cm²
(c) 100 cm²
(d) 75.74 cm²

Q159. What is the main function of the master cylinder in the braking system?

(a) Absorbing vibrations from the road
(b) Measuring the brake fluid level
(c) Control engine speed
(d) Builds up hydraulic pressure to operate the brakes

Q160. Which of the following is an important safety measure during a power failure?

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

Q161. Non-functional dimensions are _____.

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

Q162. Why is it important for everyone to follow safety procedures in the workplace?

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

Q163. Which component operates the shift lever in a solenoid switch?

(a) A solid core
(b) The plunger
(c) Electrical relay
(d) Hold-in winding

Q164. Which of the following methods helps in easy adjustment and disassembly in internal combustion engines, especially in compact engine bays, by providing a more efficient way to fit the connecting rod around the crankshaft journal?

(a) Big end split orthogonally on the connecting rod
(b) Big and split diagonally on the connecting rod
(c) Small end union linearly on the connecting bar
(d) Linear small end trimming on the connecting rod

Q165. How do electronic mufflers achieve noise cancellation?

(a) By physically blocking sound waves
(b) By redirecting the sound waves
(c) By producing opposite sound waves
(d) By absorbing sound waves

Q166. Which of the following verifies that a double-acting hydraulic cylinder can operate in both directions?

(a) Air instead of hydraulic fluid
(b) A large piston
(c) Only one oil port

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(d) Two oil gates, one at each end

Q167. In some systems, the fuel feed pump is also known as the _____ pump.

(a) pressure
(b) cooling
(c) electric
(d) lift

Q168. Which of the following files is used for filing narrow grooves and angles greater than 10°?

(a) Hemisphere file
(b) Triangle-file
(c) Square file
(d) Knife edge file

Q169. Which of the following ingredients is used as an anti-wear additive in lubricating oil?

(a) Barium (Ba)
(b) Boron (B)
(c) Copper (Cu)
(d) Calcium (Ca)

Q170. A circuit contains three resistors: 15 ohms, 10 ohms, and 20 ohms. The 15-ohm resistor is in series with a parallel combination of the 10-ohm and 20-ohm resistors. If a 24 V battery is connected to the circuit, find the total current flowing through the circuit.

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

Q171. The percentage of energy loss per unit deformation due to friction within the rubber, which produces heat in the rubber, and is measured in terms of temperature, is known as _____.

(a) resilience
(b) creep
(c) stress-strain test
(d) hysteresis

Q172. Which of the following steps for micrometer adjustment is incorrect?

(a) Open the micrometer using the friction stop.
(b) Find the set screw and loosen it.
(c) Insert the large end of the wrench into the hole on the outer cylinder.
(d) Use the reciprocating wheel to rotate the cylinder until the zeros align.

Q173. What special tool is used to fit piston pins during piston pin assembly?

(a) Hydraulic press
(b) Copper drift
(c) Arbor press
(d) Piston ring compressor

Q174. In which part of the IC engine are the cylinder liners fitted?

(a) Piston
(b) Cylinder head
(c) Frankcase
(d) Cylinder block

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Q175. Air temperature after compression stroke in CI engine _____.

(a) Only the ambient temperature

(b) The temperature becomes so high that it can ignite the fuel spontaneously, even without an external ignition source.

(c) The temperature is high, but not high enough to ignite the fuel, so a spark plug is used to ignite the fuel.

(d) The temperature is lower than the ambient temperature.

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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