



RRB ALP 2024 CBT 2

Assistant Loco Pilot · CEN 01/2024 · CBT 2 · Mechanic Tractor Trade · Question Paper

English

All 2 Shifts (Sets) · Official Answer Key

About this Compilation

This booklet contains all 2 shift papers of the RRB ALP 2024 CBT 2 (Mechanic Tractor) examination in English, with the correct option marked as per the official answer key.

✓ Correct option (highlighted green)

15 questions of 02 May 2025, 9:30 AM - 12:00 PM are not in our bank in any language (not saved from any response sheet), so this paper prints 160 of 175 questions.

15 questions of 06 May 2025, 2:30 PM - 5:00 PM are not in our bank in any language (not saved from any response sheet), so this paper prints 160 of 175 questions.

How to use

- Use the Index page to jump directly to any set (clickable).
- Questions appear section by section in the order of the paper, numbered 1 onward.
- Diagram and wide-table questions appear at full width at the end of their section.
- The correct answer is highlighted in green with a tick.

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Index — All Sets (click to open)

Set 1

02 May 2025
9:30 AM - 12:00 PM

Set 2

06 May 2025
2:30 PM - 5:00 PM

Part A

100 Questions • Answer Key

Q1 Part A

On which of the following factors does the resistivity of a conductor depend?

- A. Diameter of the conductor
- B. Area of the conductor
- C. Mass of the conductor
- D. Nature of the conductor



Q2 Part A

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

Statements:

Some bananas are litchis.
All litchis are kiwis.
Some kiwis are strawberries.

Conclusions:

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

- A. Neither conclusion 1 nor 2 follows
- B. Only conclusion 1 follows
- C. Only conclusion 2 follows
- D. Both conclusions 1 and 2 follow



Q3 Part A

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'.

How is E related to T if 'E & F + G - H × T'?

- A. Wife's mother's father
- B. Wife's brother
- C. Wife's mother's brother
- D. Wife's father



Q4 Part A

Which of the following best describes the primary function of a digital signature in electronic communication?

- A. It allows the recipient to edit the document before signing.
- B. It verifies the identity of the sender and ensures the integrity of the message.
- C. It automatically archives all electronic documents for future reference.
- D. It encrypts the entire message content to ensure privacy.



Q5 Part A

6 men or 5 women can complete a job in 7 days. 6 men work for 5 days and leave. The number of women required to complete the remaining work in 5 days is:

- A. 1
- B. 4
- C. 3
- D. 2



Q6 Part A

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

- A. 45.8
- B. 40.6
- C. 40
- D. 38.7



Q7 Part A

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

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

- A. GMOT
- B. LRTY
- C. FLNS
- D. NTVB



Q8 Part A

Which of the following relations is NOT correct?

- A. Electric Power = (Voltage)² / Resistance
- B. Electric Power = Voltage / Current** ✓
- C. Electric Power = Voltage × Current
- D. Electric Power = (Current)² × Resistance

Q9 Part A

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

In row I, A, B, C, D and E are seated and all of them are facing south.

In row II, R, S, T, U and V are seated and all of them are facing north.

Thus each person faces another person from the other row. A sits at the extreme right end of their row and is facing U. R sits at the centre of their row and is facing C. E sits between C and D and is facing T. S sits at the extreme right end of their row.

Who sits exactly opposite B?

- A. U
- B. V** ✓
- C. R
- D. T

Q10 Part A

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

: HDI :: MIN : %

- A. # = JFK, % = KGL** ✓
- B. # = JFI, % = KGL
- C. # = JFK, % = KHL
- D. # = JFK, % = KGM

Q11 Part A

Amit's income in 2019 was ₹27,000. He gets an increment of 10% every year. What was his income (in ₹) in 2021?

- A. 27,000
- B. 29,700
- C. 32,400
- D. 32,670** ✓

Q12 Part A

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

- A. It becomes hot by conduction.** ✓
- B. It becomes cold by convection.
- C. It becomes cold by conduction.
- D. It becomes hot by convection.

Q13 Part A

Which of the following is NOT a valid representation of electrical power P in a circuit? (The current, potential difference and resistance are written symbolically as I, V and R, respectively.)

- A. $P = IR^2$** ✓
- B. $P = V^2/R$
- C. $P = I^2R$
- D. $P = VI$

Q14 Part A

Simplify $976 \times 265 + 976 \times 735$.

- A. 752800
- B. 976000** ✓
- C. 658200
- D. 876000

Q15 Part A

The weight of an object on Earth is 60 N. What is its weight on the surface of the moon?

- A. 10 N** ✓
- B. 60 N
- C. 600 N
- D. 6 N

Q16 Part A

Potential energy belongs to which of the following categories of energy?

- A. Heat energy
- B. Light energy
- C. Mechanical energy** ✓
- D. Chemical energy



Q17 Part A

Rinku riding his car covers 136 metres in 17 seconds. What is his speed (in km/hr)?

- A. 11.6
- B. 17
- C. 26
- D. 28.8

**Q18 Part A**

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

- A. 32%
- B. 33%
- C. 35%
- D. 45%

**Q19 Part A**

What should be done immediately after a fuel spillage in a workshop?

- A. Use water to wash it away
- B. Evacuate the area and contain the spill using absorbent materials
- C. Leave it unattended and inform the supervisor later
- D. Cover it with plastic to prevent evaporation

**Q20 Part A**

The areas of three adjacent faces of a solid cuboid are 216 cm², 114 cm² and 19 cm². What is the volume (in cm³) of the cuboid?

- A. 955
- B. 532
- C. 684
- D. 880

**Q21 Part A**

In the following triad, each group of letters is related to the subsequent one following a certain logic. Select from the given options, the one which follows the same logic.

TERM-ERTM-TMRE

- A. ZERO-EZRO-ZREO
- B. WHEN-HWEN-WENH
- C. USER-RESU-REUS
- D. VICE-ICVE-VECI

**Q22 Part A**

Use of energy-efficient machineries in industrial settings primarily helps ____.

- A. reduce industrial energy requirement and improve products' competitiveness.
- B. decrease operational efficiency
- C. increase energy consumption and thereby product cost
- D. extend the lifespan of outdated equipment

**Q23 Part A**

Which of the following statements is/are true about Functional Dimensions (F) in engineering drawing?

Statement 1: Functional Dimensions are essential to the function of the component or space.
Statement 2: Functional Dimensions are typically shown without limits.
Statement 3: Functional Dimensions are only shown for reference purposes.

- A. Only statement 3 is true
- B. Only statement 1 is true
- C. Only statements 2 and 3 are true
- D. Only statements 1 and 2 are true

**Q24 Part A**

The area of a regular polygon with a side of 8 cm is 112 cm². If the perpendicular distance from the centre to the side of the polygon is 7 cm, then the number of sides of the polygon is:

- A. 6
- B. 5
- C. 7
- D. 4

**Q25 Part A**

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

- A. 0.2 A
- B. 1 A
- C. 0.1 A
- D. 2 A



Q26 Part A

Which of the following is true?

- A. Both insulators and conductors allow heat to pass through them easily.
- B. Wood is a good conductor of heat.
- C. In a kitchen, aluminium vessels are used because aluminium is a good conductor of heat. ✓
- D. Plastic is a good conductor of heat.

Q27 Part A

If $x^3 + y^3 = 16$ and $x + y = 4$, what is the value of xy ?

- A. 2
- B. 3
- C. 4 ✓
- D. 0

Q28 Part A

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

- A. Deepak
- B. Nitin
- C. Kiran ✓
- D. Neelam

Q29 Part A

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

- A. Grassland
- B. Tropical rainforest
- C. Desert
- D. Tundra ✓

Q30 Part A

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

- A. Multipurpose Internet Mail Extensions (MIME) ✓
- B. Mailing Lists
- C. DNS
- D. HTTPS

Q31 Part A

Four resistors of 4 ohm each are connected in parallel. Four such parallel combinations are then connected in series. The equivalent resistance is _____.

- A. 1 ohm
- B. 2 ohm
- C. 3 ohm
- D. 4 ohm ✓

Q32 Part A

Vijay rides a bicycle 10 m from home to his tuition, then 5 m to a shop. He travels back home the same way, covering the same distance. What is his total path length?

- A. 20 m
- B. 15 m
- C. 30 m ✓
- D. Zero

Q33 Part A

In the following series, only one letter-cluster is incorrect. Select the INCORRECT letter-cluster.

PCO MEM JGK GIJ DKG AME

- A. AME
- B. JGK
- C. GIJ ✓
- D. DKG

Q34 Part A

How many base units are used to measure the physical quantities, according to SI units system?

- A. 5
- B. 7 ✓
- C. 10
- D. 4



Q35 Part A

Convert 1 kilowatt hour (kW h) into joule.

- A. $1 \text{ kW h} = 3.6 \times 10^3 \text{ J}$
- B. $1 \text{ kW h} = 3.6 \times 10^7 \text{ J}$
- C. $1 \text{ kW h} = 3.6 \times 10^5 \text{ J}$
- D. $1 \text{ kW h} = 3.6 \times 10^6 \text{ J}$ ✓

Q36 Part A

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

- A. 320.83 ✓
- B. 220.83
- C. 270.83
- D. 370.83

Q37 Part A

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

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

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

- A. Four
- B. One
- C. Two ✓
- D. Three

Q38 Part A

Which of the following is NOT a benefit of use of mobile governance using ICT?

- A. Increased transparency and accountability in the government
- B. Increased efficiency in government processes
- C. Reduced costs for the government ✓
- D. Improved access to government services for citizens

Q39 Part A

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

- A. 2
- B. 3 ✓
- C. 4
- D. 1

Q40 Part A

Which of the following orders of components is primarily responsible for executing instructions, storing permanent firmware, temporarily storing data during program execution and providing a platform for interconnecting hardware components on a computer motherboard?

- A. RAM - ROM - CPU - PCB
- B. CPU - ROM - RAM - PCB
- C. CPU - RAM - ROM - PCB ✓
- D. PCB - ROM - CPU - RAM

Q41 Part A

In a hospital, the ratio between the number of doctors and the number of nurses was 1 : 3. When 12 new doctors joined the hospital and 24 nurses left the hospital, the ratio became 3 : 4. After the resignation of k more nurses from the hospital, the ratio becomes 1 : 1. Find the value of k.

- A. 28
- B. 26
- C. 12 ✓
- D. 24

Q42 Part A

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

- A. 22
- B. 19
- C. 21
- D. 20 ✓



Q43 Part A

In the following number-pairs, the second number is obtained by applying certain mathematical operations to the first number. Which numbers should replace X and Y so that the pattern followed by the two numbers on the left side of :: is same as that on the right side of ::?

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

X : 85 :: 36 : Y

A. X = 42, Y = 71

B. X = 43, Y = 77

C. X = 42, Y = 73



D. X = 44, Y = 73

Q44 Part A

Which of the following statements about geometric figures is/are true?

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

A. Both statements 1 and 2 are true

B. Only statement 2 is true

C. Neither statement 1 nor 2 is true

D. Only statement 1 is true

**Q45 Part A**

What is the total circuit resistance if it contains resistors 10 Ω , 20 Ω and 60 Ω , connected in parallel?

A. 60 Ω

B. 90 Ω

C. 20 Ω

D. 6 Ω

**Q46 Part A**

Match the columns.

Engineering Applications Type of Engineering Drawings

- A) Plan, front elevation of homes to be built, foundation drawings P) Mechanical Engineering Drawings
B) Circuit diagrams and Electrical installation drawings Q) Electronics Engineering drawings
C) PCB tracks drawings R) Electrical Engineering drawings
D) Riveted joints and Welded joints S) Civil Engineering drawings

A. A-S ; B-R ; C-Q ; D-P



B. A-S ; B-R ; C-P ; D-Q

C. A-P ; B-R ; C-Q ; D-S

D. A-S ; B-P ; C-Q ; D-R

Q47 Part A

Jaspreet deposited a sum of ₹58,550 at 20% rate of interest per annum, compounded annually. The total amount (in ₹) received by Jaspreet after 2 years will be:

A. 84,312



B. 83,876

C. 84,735

D. 84,700

Q48 Part A

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. 6

B. 3

C. 5

D. 8

**Q49 Part A**

A dozen pairs of jeans quoted at ₹3,520 are available at a discount of 35%. How many pairs of jeans can be bought for ₹572?

A. 1

B. 3



C. 5

D. 2



Q50 Part A

The sum of the ages of Yash and his father is 90 years. When Yash is as old as his father's present age, he will be five times as old as his son Suraj's present age. Suraj will be 12 years older than Yash's present age, when Yash is as old as his father at present. How old is Suraj at present?

- A. 15 years
- B. 18 years
- C. 12 years
- D. 16 years

**Q51 Part A**

Which of the following statements regarding the use of a fire extinguisher is/are correct?

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

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

- A. Only Statement 2 is correct.
- B. Neither Statement 1 nor 2 is correct.
- C. Only Statement 1 is correct.
- D. Both Statements 1 and 2 are correct.

**Q52 Part A**

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

- A. Ignoring small risks
- B. Waiting for an incident to occur
- C. Conducting regular safety inspections
- D. Relying on employees to report accidents

**Q53 Part A**

What is the primary source of energy for most of the ecosystems?

- A. Water
- B. Soil
- C. Wind
- D. Sunlight

**Q54 Part A**

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

- A. B



- B. C
- C. A
- D. D

Q55 Part A

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. 7
- B. 1
- C. 8
- D. 6

**Q56 Part A**

In the SI system, which of the following options best describes the base quantities?

- A. Length, mass, time
- B. Distance, speed, acceleration
- C. Force, power, energy
- D. Temperature, pressure, volume



Q57 Part A

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

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

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

A. 1 - 1 - 2 - 4



B. 9 - 2 - 11 - 24

C. 6 - 12 - 18 - 34

D. 7 - 49 - 56 - 122

Q58 Part A

If 'A' stands for '÷', 'B' stands for '×', 'C' stands for '+' and 'D' stands for '-', what will come in place of the question mark (?) in the following equation?

38 C 32 A 4 D 5 B 7 = ?

A. 10

B. 11



C. 8

D. 9

Q59 Part A

An ammeter of range 0 to 10 A shows a current of 7.5 A. If its true value is 6.2 A, the relative error is _____.

A. 17.33%

B. 13%

C. 20.96%



D. 4.8%

Q60 Part A

What is the term used to describe organisms that produce their own food in an ecosystem?

A. Herbivores

B. Consumers

C. Producers



D. Decomposers

Q61 Part A

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

185 174 163 152 ? 130

A. 143

B. 144

C. 142

D. 141

**Q62 Part A**

Which of the following is a geometrical figure with a three-dimensional geometry that has eight vertices and six rectangular faces?

A. Cylinder

B. Cuboid



C. Parallelogram

D. Pyramid

Q63 Part A

According to the ISO-A size series, what is the designation of a trimmed sheet with dimensions 297 mm × 420 mm?

A. A1

B. A2

C. A3



D. A4

Q64 Part A

Which type of thermometer is used for measuring the internal temperature of ice?

A. Digital thermometer

B. Laboratory thermometer



C. Clinical thermometer

D. Infrared thermometer

Q65 Part A

A fruit seller initially had some apples. He sold 40% of those and still had 300 apples. How many apples did he initially have?

A. 450

B. 750

C. 600

D. 500



Q66 Part A

Which of the following devices is used to measure temperature?

- ☒ A. Thermometer
- ☐ B. Hygrometer
- ☐ C. Odometer
- ☐ D. Voltmeter

Q67 Part A

The rate of doing work is known as _____.

- ☐ A. kinetic energy
- ☐ B. potential energy
- ☒ C. power
- ☐ D. force

Q68 Part A

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.)

- ☐ A. GN – PV
- ☒ B. AH – JR
- ☐ C. JQ – SY
- ☐ D. HO – QW

Q69 Part A

Which of the following is the work done by the gravitational force on the object of mass 50 kg when the object is moved from one point to another point along a horizontal line ($g = 10 \text{ m/s}^2$)?

- ☒ A. Zero
- ☐ B. 500 J
- ☐ C. 50 J
- ☐ D. -500 J

Q70 Part A

In hot climate regions, the outer walls of the house are preferred to be white in colour because _____.

- ☒ A. white colour reflects sunlight to make the interior of the house cool
- ☐ B. white colour looks good
- ☐ C. white colour absorbs more sunlight to make the house bright
- ☐ D. white colour makes the wall more durable

Q71 Part A

Which of the following statements is correct about negative work done?

- ☐ A. Work done is negative when the force and displacement are in the same direction.
- ☐ B. Work done cannot be negative.
- ☐ C. Work done is negative when the force is perpendicular to the displacement.
- ☒ D. Work done is negative when the force acts opposite to the direction of displacement.

Q72 Part A

Ganpat starts from Point A and walks 18 m towards west. He takes a left turn, walks 32 m, takes a left turn, walks 26 m, turns left, walks 61 m and stops at Point B. Meena starts from Point Z, which is 22 m towards the east of Point A. She walks 42 m towards north, takes a right turn, walks 35 m, turns right and walks 13 m and stops at Point Y. What is the shortest distance between Point B and Point Y? (All turns are 90-degree turns only.)

- ☐ A. 52 m
- ☐ B. 57 m
- ☒ C. 49 m
- ☐ D. 43 m

Q73 Part A

The average of 5 results is 51 and that of the first 4 is 50. The 5th result is _____.

- ☒ A. 55
- ☐ B. 51
- ☐ C. 50
- ☐ D. 54

Q74 Part A

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

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

- ☐ A. W35
- ☐ B. V40
- ☐ C. U35
- ☒ D. V35



Q75 Part A

Which of the following actions can help prevent slip and fall injuries?

- A. Walking on wet floors carefully
- B. Ignoring clutter in walkways
- C. Cleaning up spills immediately and using warning signs ✓
- D. Wearing loose footwear for comfort

Q76 Part A

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

- A. 2.7 m/s ✓
- B. 1000 m/s
- C. 10 m/s
- D. 0.16 m/s

Q77 Part A

Kinetic energy and potential energy together are called which form of energy?

- A. Thermal
- B. Mechanical ✓
- C. Nuclear
- D. Chemical

Q78 Part A

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

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

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

- A. Three
- B. One
- C. Four ✓
- D. Two

Q79 Part A

Which of the following is the safest method for disposing of toxic dust?

- A. Sweeping it into open areas
- B. Releasing it into the air for dilution
- C. Using specialised hazardous waste disposal containers ✓
- D. Dumping it in regular trash bins

Q80 Part A

A cube with a mass of 5.74 g occupies a volume of 1.2 cm^3 . The density (in g/cm^3) expressed with the correct number of significant figures is _____.

- A. 4.8 ✓
- B. 4.7833
- C. 4.78
- D. 4.783

Q81 Part A

What is the average human body temperature?

- A. 42°C
- B. 40°C
- C. 37°C ✓
- D. 32°C

Q82 Part A

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

- A. 320 ✓
- B. 335
- C. 300
- D. 280



Q83 Part A

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

Statements:

- I. Some desks are tables.
- II. All tables are cabinets.
- III. All cabinets are beds.

Conclusions:

- I. Some beds are tables.
- II. All cabinets are desks.

- A. Neither conclusion I nor conclusion II follows.
- B. Both conclusions I and II follow.
- C. Only conclusion II follows.
- D. Only conclusion I follows. ✓

Q84 Part A

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. Neither statement 1 nor 2
- B. Both statements 1 and 2
- C. Only statement 2
- D. Only statement 1 ✓

Q85 Part A

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

893 891 889 887 ? 883

- A. 886
- B. 986
- C. 885 ✓
- D. 985

Q90 Part A

If $\frac{5}{9}$ of a number is 6 more than $\frac{1}{2}$ of the number, then what is the number?

- A. 102
- B. 104
- C. 108 ✓
- D. 106

Q86 Part A

Two resistors of resistance $20\ \Omega$ and $30\ \Omega$ are connected in series in a circuit. What is the current flow in the circuit if the voltage given is 250 V ?

- A. 5 A ✓
- B. 20 A
- C. 8 A
- D. 12 A

Q87 Part A

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

- A. ₹1,550 ✓
- B. ₹1,650
- C. ₹1,350
- D. ₹1,450

Q88 Part A

Which of the following noise levels is considered potentially harmful to human health if experienced over extended periods?

- A. 30 dB
- B. 70 dB
- C. 90 dB ✓
- D. 50 dB

Q89 Part A

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

- A. Third party
- B. National Scholarship Portal
- C. Government
- D. University/Institute in which applicant is studying ✓



Q91 Part A

From a rectangular cardboard sheet of length 46 m and breadth 8 m, three circular plates of radii 3 m, 2 m and 1 m are cut out. If the area of the remaining part of the cardboard sheet is equal to the area of a square, then find the length of each side of the square (use $\pi = \frac{22}{7}$).

A. 16 m

B. 20 m

C. 18 m



D. 14 m

Q92 Part A

A piece of rod $\frac{8}{9}$ metre long is broken into two pieces. If one piece is $\frac{1}{3}$ metre long, find the length (in m) of the other piece.

A. $\frac{7}{9}$ B. $\frac{5}{9}$ C. $\frac{2}{9}$ D. $\frac{4}{9}$ **Q93 Part A**

Find the value of $x^2 + y^2$, given the following.

$$x = 7 + \sqrt{5}, y = 7 - \sqrt{5}$$

A. 96

B. 108



C. 124

D. 137

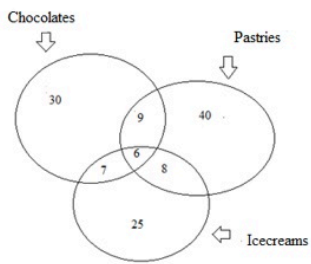
Q94 Part A

Work done is defined in science as _____.

A. 1. force $\times$ distanceB. $\frac{\text{force}}{\text{distance}}$ C. 3. force $\times$ displacementD. $\frac{\text{force}}{\text{displacement}}$ 

Q95 Part A

Study the given diagram carefully and answer the question that follows. The numbers in different sections indicate the number of children preferring different desserts.



How many children prefer both pastries and ice creams but NOT chocolates?

A. 8



B. 7

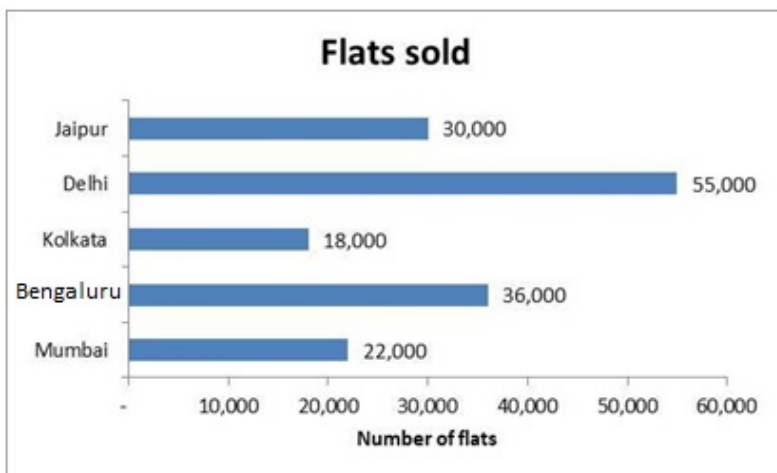
C. 6

D. 9

Q96 Part A

Study the given bar-graph and answer the question that follows.

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



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

A. 120%

B. 75%

C. 125%

D. 150%



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Q97 Part A

$$\frac{p^2 - n^2}{pn}$$

A. $\sin A \cdot \cos A$ ✓

B. $\cot A \cdot \cos A$

C. $\frac{\tan A}{\sec A}$

D. $= \cos A \cot A$

Q98 Part A

Which of the following expressions is NOT correct for electric power?

A. $P = \frac{V^2}{R}$

B. $P = VI$

C. $P = \frac{I^2}{R}$ ✓

D. $4. P = I^2 R$

Q99 Part A

A cistern has two inlets I_1 and I_2 . I_1 alone can fill it in 8 hours and I_2 in 4 hours. If both the inlets are open, what will be the time required to fill the cistern.

A. 2 hours

B. $4\frac{2}{3}$ hours

C. $2\frac{2}{3}$ hours ✓

D. $3\frac{2}{3}$ hours

Q100 Part A

What does the symbol given below denote in a circuit diagram?



A. Variable resistor ✓

B. Resistor

C. Voltmeter

D. Voltage source



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Q101 Part B (Mechanic Tractor)

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

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

A. 2, 3, 1, 4



B. 1, 2, 4, 3

C. 2, 1, 3, 4

D. 3, 2, 1, 4

Q102 Part B (Mechanic Tractor)

Non-functional dimensions are _____.

A. not essential for the function of the space or component



B. essential for the function of the space or component

C. derived from the values of the related features of a drawing

D. directly derived from the values given on a drawing

Q103 Part B (Mechanic Tractor)

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

A. Using candles for lighting

B. Continuing to use equipment without verifying power status

C. Ensuring all machines and electrical equipment are turned off



D. Ignoring alarm systems

Q104 Part B (Mechanic Tractor)

Gaskets, seals and spacers are made using:

A. centre punch

B. hollow punch



C. pin punch

D. prick punch

Q105 Part B (Mechanic Tractor)

Which of the following elements is used in lubrication oil as an anti-wear additive?

A. Copper (Cu)



B. Barium (Ba)

C. Boron (B)

D. Calcium (Ca)

Q106 Part B (Mechanic Tractor)

A circuit consists of three resistors; 15 ohms, 10 ohms, and 20 ohms. The 15-ohm resistor is in series with the parallel combination of the 10-ohm and 20-ohm resistors. If a 24 V battery is applied across the circuit, what is the total current flowing through the circuit?

A. 3.1 A

B. 0.1 A

C. 1.1 A



D. 2.1 A

Q107 Part B (Mechanic Tractor)

Which of the following types of pliers is used to shape loops in wires and to form curves in light metal strips?

A. Flat nose pliers

B. Round nose pliers



C. Slip-joint pliers

D. End cutting pliers

Q108 Part B (Mechanic Tractor)

A type of internal spring force expands a piston ring based on the design and properties of the material used. It is determined by _____.

A. forced piston ring gap

B. compressed spring ring gap

C. compressed ring gap

D. free piston ring gap



Q109 Part B (Mechanic Tractor)

Which of the following instruments works on the principle of the magnification of the small movement of the plunger or stylus that is converted into a rotary motion of the pointer on a circular scale?

- A. Pressure gauge
- B. Micrometer
- C. Vernier caliper
- D. Dial test indicator**

Q110 Part B (Mechanic Tractor)

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

- A. To transfer dimensions and dividing lines into a number of equal parts
- B. To draw horizontal lines, parallel lines and to guide/hold the set squares
- C. To fasten the drawing sheet on to the drawing board firmly so that it does not shake**
- D. To support the drawing paper/tracing paper for making drawings

Q111 Part B (Mechanic Tractor)

What is the purpose of an emergency evacuation plan?

- A. To ensure safe and orderly evacuation during emergencies**
- B. To avoid safety drills
- C. To increase productivity
- D. To allow workers to leave early

Q112 Part B (Mechanic Tractor)

What is the advantage of giving heat treatment to a material?

- A. To decrease the melting point of the material
- B. To increase the weight of the material
- C. To change it from one element to another element
- D. To make surgical knives of sharp edges**

Q113 Part B (Mechanic Tractor)

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

- A. Wheel
- B. Allen key
- C. Screw driver
- D. Lever**

Q114 Part B (Mechanic Tractor)

Which of the following parts of a file is the part fitted to the tang for holding the file?

- A. Tip or Point
- B. Handle**
- C. Edge
- D. Tang

Q115 Part B (Mechanic Tractor)

Which of the following metals is NOT used for manufacturing of piston bearing?

- A. Copper
- B. Lead
- C. Cast iron**
- D. Silicon

Q116 Part B (Mechanic Tractor)

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

- A. The multimeter is connected directly to the power source.
- B. The multimeter is connected in series with the load.**
- C. The multimeter is connected only across resistive components.
- D. The multimeter is connected in parallel with the load.

Q117 Part B (Mechanic Tractor)

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

- A. Tip**
- B. Puppet
- C. Mushroom
- D. Butterfly

Q118 Part B (Mechanic Tractor)

Which of the following vices consists of a handle and a small collet chuck at one end?

- A. Hand vice
- B. Pin vice**
- C. Pipe vice
- D. Toolmaker's vice



Q119 Part B (Mechanic Tractor)

Which of the following systems is used to transmit engine torque to the driving wheels to drive a vehicle on the road?

A. Transmission system



B. Steering system

C. Differential gear mechanism

D. Four bar chain mechanism

Q120 Part B (Mechanic Tractor)

Why is it important for every person to follow safety procedures in the workplace?

A. To increase overall production efficiency

B. To minimise risks and avoid accidents



C. To reduce operational costs significantly

D. To limit the need for frequent supervision

Q121 Part B (Mechanic Tractor)

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

A. To build up hydraulic pressure to operate the brakes



B. To measure the brake fluid level

C. To control the engine speed

D. To absorb vibrations from the road

Q122 Part B (Mechanic Tractor)

A vital component of a car's clutch system positioned on the clutch housing, which slides along a hollow shaft and moves through the clutch fork aided by hydraulic or cable pressure, is known as:

A. cushion spring

B. clutch release bearing



C. lever

D. fork arm

Q123 Part B (Mechanic Tractor)

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

(Take $\pi = 3.14$)

A. 100 cm²

B. 91.74 cm²



C. 95.86 cm²

D. 75.74 cm²

Q124 Part B (Mechanic Tractor)

What is the primary reason for electrical injuries when a person comes in contact with electrical equipment?

A. Electrical equipment is not properly grounded.

B. Current flows through the body causing harm.



C. Devices are used for too long.

D. Electrical devices are too powerful.

Q125 Part B (Mechanic Tractor)

Which of the following statements is correct about engine valves?

A. The camshaft and its associated parts control the flame of sparks during ignition of the engine.

B. The valve's head is perfectly positioned at a 30-45 degree angle that ideally fits with the valve seat, creating a firm seal.



C. Valves with their conical shapes control the flow of the entry of gasses into an engine.

D. Poppet or mushroom valves are commonly found in two stroke engines for their remarkable features.

Q126 Part B (Mechanic Tractor)

The temperature of the air after compression stroke in a CI engine is:

A. less than ambient temperature

B. ambient temperature only

C. high but not enough to ignite the fuel as spark plug is used to ignite the fuel

D. high enough to auto-ignite the fuel without any external ignition source



Q127 Part B (Mechanic Tractor)

Which type of gear applies in a car 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 lay shaft also rotates and the main shaft remains stationary as no gears in main shaft are engaged with lay shaft gears?

A. Top gear

B. First gear

C. Neutral gear



D. Reverse gear



Q128 Part B (Mechanic Tractor)

Which of the following organisations is responsible for enforcing workplace safety regulations in India?

- A. World Health Organization (WHO)
- B. Food and Drug Administration (FDA)
- C. Directorate General of Factory Advice Service and Labour Institutes (DGFASLI) ✓
- D. Environmental Protection Agency (EPA)

Q129 Part B (Mechanic Tractor)

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

- A. drawing ✓
- B. screening
- C. drilling
- D. casting

Q130 Part B (Mechanic Tractor)

Which of the following type of lubricants are used as solid particles?

- A. Solid wax
- B. Grease
- C. Graphite ✓
- D. Silica

Q131 Part B (Mechanic Tractor)

When selecting a sheet size for an original drawing, what should be the primary consideration?

- A. The standard size of the drawing office.
- B. The clarity and resolution required. ✓
- C. The orientation of the drawing (horizontal or vertical).
- D. The size of the reproduction.

Q132 Part B (Mechanic Tractor)

The unit for specific gravity is ____.

- A. m/s^2
- B. g/cm^3
- C. kg/m^3
- D. no unit (dimensionless) ✓

Q133 Part B (Mechanic Tractor)

A tube-like structure lies between a piston and cylinder wall that regulates the flow of air and fuel inside the cylinder. This valve has a small hole in the side that promptly lines up with the hole of a cylinder. This valve is known as:

- A. butterfly valve
- B. sleeve valve ✓
- C. valve in form of port
- D. poppet valve

Q134 Part B (Mechanic Tractor)

If the current flowing through a conductor is 5 A and the resistance of the conductor is 10 ohms, what will be the voltage across the conductor, according to Ohm's Law?

- A. 15 V
- B. 50 V ✓
- C. 5 V
- D. 10 V

Q135 Part B (Mechanic Tractor)

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. Inlet valve
- B. Spark plug
- C. Outlet valve
- D. Camshaft ✓

Q136 Part B (Mechanic Tractor)

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

- A. Wear personal protective equipment. ✓
- B. Work in a hurry without checking equipment.
- C. Ignore warning signs and instructions.
- D. Take risks to finish tasks quickly.

Q137 Part B (Mechanic Tractor)

Which of the following steps is INCORRECT for micrometer adjustment?

- A. Insert the large end of wrench in the hole on the external cylinder.
- B. Use the wrench to rotate the cylinder until zero is aligned.
- C. Find set screw and loosen it.
- D. Open the micrometer using friction stop. ✓



Q138 Part B (Mechanic Tractor)

Which of the following instruments is used for the measurement of piston ring end gap in the cylinder?

- A. Micrometer
- B. Vernier caliper
- C. Dial gauge
- D. Feeler gauge



Q139 Part B (Mechanic Tractor)

Which of the following types of lube oils are used in airline industries?

- A. Grease and bee wax lubricants
- B. Natural petroleum lubricants
- C. Synthetic lubricants
- D. Biodiesel lubricants



Q140 Part B (Mechanic Tractor)

Which of the following options is correct when the pressure plate position is such that the cushion spring of clutch is NOT compressed?

- A. It is in the engagement phase.
- B. It is in the partial engagement phase.
- C. The clutch is closed.
- D. The clutch is open.



Q141 Part B (Mechanic Tractor)

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

- A. Electric hand drill
- B. Ratchet drilling machine
- C. Breast drilling machine
- D. Bevel gear type drilling machine



Q142 Part B (Mechanic Tractor)

In a diesel engine, heat is supplied at which of the following thermodynamic processes?

- A. At constant pressure process
- B. At constant volume process
- C. At constant temperature process
- D. At adiabatic compression process



Q143 Part B (Mechanic Tractor)

What is a key advantage of using MOSFETs in electronic circuits compared to other types of transistors?

- A. High frequency response
- B. High input impedance and low power consumption
- C. Ability to handle higher voltages and currents than BJTs
- D. Ability to amplify both AC and DC signals



Q144 Part B (Mechanic Tractor)

What is the limiting value of compression ratio on which usually a petrol engine works?

- A. Compression ratio = 6
- B. Compression ratio = 8
- C. Compression ratio = 22
- D. Compression ratio = 14



Q145 Part B (Mechanic Tractor)

In a velocity-time graph, the negative slope represents

- A. retardation
- B. displacement
- C. acceleration
- D. distance



Q146 Part B (Mechanic Tractor)

Which of the following designs have the advantage of effectively preventing contact slippage and axial misplacement of the connecting rod cover and connecting rod body?

- A. Straight cut design
- B. Oval cut design
- C. Obliquely cut design
- D. Curvilinear cut design



Q147 Part B (Mechanic Tractor)

Which of the following files is used for filing narrow grooves and angles above 10°?

- A. Knife-edge file
- B. Half round file
- C. Square file
- D. Triangular file



Q148 Part B (Mechanic Tractor)

The percentage of energy loss per unit deformation from friction happening inside the rubber, which creates heat build-up in the rubber, and is measured as in terms of the temperature, is known as ____.

- A. creep
- B. resilience
- C. stress-strain test
- D. hysteresis

**Q149 Part B (Mechanic Tractor)**

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. integral unit
- B. automatic clutch unit
- C. torque convertor
- D. differential unit

**Q150 Part B (Mechanic Tractor)**

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

- A. Piston
- B. Cylinder head
- C. Cylinder block
- D. Crankcase

**Q151 Part B (Mechanic Tractor)**

Which of the following methods helps the easier assembly and disassembly by providing a more efficient way to fit the connecting rod around the crankshaft journal, particularly in tight engine compartment, in an internal combustion engine?

- A. Small end trimming linearly on a connecting rod
- B. Big end split orthogonally on a connecting rod
- C. Big end split obliquely on a connecting rod
- D. Small end union linearly on a connecting rod

**Q152 Part B (Mechanic Tractor)**

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

- A. Sulphuric acid (H_2SO_4)
- B. Lead (Pb)
- C. Lead dioxide (PbO_2)
- D. Lead sulfate (PbSO_4)

**Q153 Part B (Mechanic Tractor)**

According to BIS SP 46-2003, which of the following applications is correctly represented by a chain-thin line in engineering drawings?

- A. Center lines
- B. Hidden edges
- C. Dimension lines
- D. Visible edges

**Q154 Part B (Mechanic Tractor)**

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

- A. The resistor is functioning normally.
- B. The resistor is open-circuited.
- C. The resistor is short-circuited.
- D. The ohmmeter is malfunctioning.

**Q155 Part B (Mechanic Tractor)**

Which of the following statements is INCORRECT about the four-stroke diesel engine?

- A. Cycles in both petrol and diesel engines consist of suction, compression, ignition, expansion and exhaust.
- B. In C.I. engines, air-fuel mixture is sucked during the stroke and the fuel is injected in the cylinder near the end of the compression stroke.
- C. In C.I. engines, only air is sucked during the stroke and the fuel is injected in the cylinder near the end of the compression stroke.
- D. The operation of C.I. engines (or diesel engines) is practically the same as those of S.I. engines.

**Q156 Part B (Mechanic Tractor)**

Which of the following is NOT the correct characteristic of an I-head combustion chamber used in a petrol engine?

- A. I-head has higher surface to volume ratio and therefore there is a high amount of heat loss.
- B. I-head is superior to an L-head engine at high compression ratios.
- C. I-head has a higher volumetric efficiency from larger valves or valve lifts.
- D. I-head has less flame travel length and hence there is a greater freedom from knock.



Q157 Part B (Mechanic Tractor)

When does a vacuum booster create a vacuum?

- A. When the engine is off, and brake is applied
- B. When the engine is running, and the brake is not applied ☒
- C. When the fuel level is low
- D. When the brake is applied

Q158 Part B (Mechanic Tractor)

$\cos \theta$

- A. $\frac{3}{5}$
- B. $\frac{4}{5}$ ☒
- C. $\frac{5}{4}$
- D. $\frac{3}{4}$

Q159 Part B (Mechanic Tractor)

$(\frac{3}{8}) + (\frac{5}{12})$

- A. $\frac{17}{24}$
- B. $\frac{19}{24}$ ☒
- C. $\frac{8}{20}$
- D. $\frac{7}{12}$

Q160 Part B (Mechanic Tractor)

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

Consider BP - brake power, IP - Indicated power

- A. $BP = IP \times \text{Mechanical efficiency}$ ☒
- B. $IP = \text{Mechanical efficiency} \times PB$
- C. $BP = \frac{(\text{Mechanical efficiency} + IP)}{100}$
- D. $BP = \frac{\text{Mechanical Efficiency}}{IP}$



Part A

100 Questions • Answer Key

Q1 Part A

In a certain code language, 'BOAT' is coded as '8654' and 'AIDS' is coded as '3517'. What is the code for 'A' in the given code language?

A. 5



B. 3

C. 6

D. 8

Q2 Part A

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

A. ₹42,000

B. ₹45,000



C. ₹48,000

D. ₹40,000

Q3 Part A

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

A. -10°C to 110°C B. -100°C to 130°C C. -10°C to 150°C D. 35°C to 42°C

Q4 Part A

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

A. 9



B. 7

C. 3

D. 6

Q5 Part A

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

AD8, FI16, KN24, ?

A. PS35

B. PS32



C. OS32

D. OR35

Q6 Part A

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

A. 50 m^3 B. 500 m^3 C. 5 m^3 D. 20 m^3

Q7 Part A

A, B, C, D, E and F live on six different floors of the same building. The lowermost floor in the building is numbered 1, the floor above it is numbered 2 and so on till the topmost floor is numbered 6. E lives on an even-numbered floor but not 4. The sum of floors on which E and B live is 9. Only three people live between A and C. The sum of floors on which F and C live is 3. What is the sum of floors on which B and F live?

A. 6

B. 5



C. 7

D. 4

Q8 Part A

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

: KHM :: OLQ : %

A. # = LIN, % = NLP

B. # = LIM, % = NKP

C. # = LIN, % = NKP



D. # = LIN, % = NKO



Q9 Part A

Which of the following statements is INCORRECT?

- A. In solids, heat transfer is typically carried out through conduction.
- B. Burning of feet on hot sand is an example of heat transfer by conduction.
- C. Conduction is the process of heat transfer from hotter body to colder body.
- D. Conduction is the process of heat transfer that does not require any medium to transfer heat. ✓

Q10 Part A

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

- A. 5000 J
- B. 9000 J ✓
- C. 1000 J
- D. 60 J

Q11 Part A

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

- A. 3.5
- B. 4 ✓
- C. 3
- D. 4.5

Q12 Part A

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

- A. P
- B. H
- C. G
- D. R ✓

Q13 Part A

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

- A. To improve vehicle lifespan by minimising mechanical wear
- B. To reduce fuel consumption and improve overall efficiency
- C. To protect human health from harmful fumes and dust in the air ✓
- D. To increase vehicle performance by optimising engine efficiency

Q14 Part A

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

- A. 4 K ✓
- B. 2 K
- C. $K/2$
- D. K

Q15 Part A

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

- A. Heat produced in a resistor is directly proportional to the resistance for a given current.
- B. Heat produced in a resistor is directly proportional to the time for which the current flows through the resistor.
- C. Heat produced in a resistor is inversely proportional to the square of the current for a given resistance. ✓
- D. Heat produced in a resistor is directly proportional to the square of the current for a given resistance.

Q16 Part A

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

62 73 87 104 124 ?

- A. 142
- B. 134
- C. 147 ✓
- D. 153



Q17 Part A

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

A. ₹3,460

B. ₹3,500



C. ₹3,350

D. ₹3,200

Q18 Part A

Which of the following actions involves scientific work?

A. Climbing up the stairs



B. Spending time conversing with friends

C. Watching a film

D. Holding a large load on one's head while standing motionless

Q19 Part A

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

A. D

B. B



C. A

D. C

Q20 Part A

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

A. 6.125 and x = 1.2

B. -6.125 and x = 0.25

C. 6.125 and x = 1.25

D. -6.125 and x = 1.25

**Q21 Part A**

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

179 171 163 ? 147 139

A. 153

B. 151

C. 157

D. 155

**Q22 Part A**

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

A. Only bulb

B. Only wire

C. A closed conducting path with a voltage source



D. Only switch

Q23 Part A

What is the primary purpose of netiquette in online communication?

A. To increase the number of followers on social media

B. To improve typing speed

C. To enhance internet connection speed

D. To ensure polite and respectful interactions

**Q24 Part A**

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

A. 44 Ω

B. 220 Ω

C. 1100 Ω



D. 0 Ω

Q25 Part A

What is the SI unit for solid angle?

A. Metre

B. Candela

C. Steradian



D. Radian



Q26 Part A

Which of the following is NOT a good heat conductor?

- A. Aluminum
- B. Copper
- C. Fur
- D. Iron

Q27 Part A

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

- A. 45
- B. 47
- C. 37
- D. 44

Q28 Part A

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

Statements:

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

Conclusions:

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

- A. All conclusions I, II and III follow.
- B. Only conclusions I and II follow.
- C. Only conclusions II and III follow.
- D. Only conclusions I and III follow.

Q29 Part A

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

Q16, O14, M12, K10, I8, ?

- A. H6
- B. G6
- C. G4
- D. J6

Q30 Part A

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

- A. Two thin blankets absorb more heat from the surroundings than one thick blanket.
- B. Two thin blankets allow more heat to escape, keeping you warmer.
- C. Two thin blankets generate more heat than one thick blanket.
- D. Two blankets create an additional insulating layer of air, reducing heat loss.

Q31 Part A

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

- A. 1.25×10^{19}
- B. 1.25×10^{20}
- C. 0.25×10^{20}
- D. 0.25×10^{19}

Q32 Part A

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

- A. 25 J
- B. 12 J
- C. 10 J
- D. 3 J

Q33 Part A

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

- A. Improper disposal of industrial wastes
- B. Natural soil formation
- C. Ozone layer depletion
- D. Water evaporation



Q34 Part A

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

- A. 560
- B. 600
- C. 880
- D. 920

**Q35 Part A**

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?

$$47 D 25 A 5 C 2 B 9 = ?$$

- A. 60
- B. 58
- C. 56
- D. 62

**Q36 Part A**

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

- A. 200 J
- B. 250 N
- C. 250 J
- D. 100 J

**Q37 Part A**

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

- A. Section 29
- B. Section 25
- C. Section 21
- D. Section 27

**Q38 Part A**

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

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

- A. JNEL
- B. UYPW
- C. CGXF
- D. QULS

**Q39 Part A**

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

- A. 20,860
- B. 26,080
- C. 20,086
- D. 20,680

**Q40 Part A**

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

- A. 2 : 1
- B. 4 : 1
- C. 1 : 2
- D. 1 : 4

**Q41 Part A**

What is the value of 100 g in SI units?

- A. 100 kg
- B. 10 kg
- C. 0.1 kg
- D. 1 kg

**Q42 Part A**

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

- A. 23.9
- B. 25.4
- C. 25.2
- D. 23.3



Q43 Part A

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

- A. 96 : 135 : 101
- B. 3 : 5 : 8
- C. 21 : 35 : 44
- D. 165 : 273 : 140

**Q44 Part A**

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

- A. It decreases the building's heating and cooling costs.
- B. It causes a rise in indoor temperatures.
- C. It has no effect on energy consumption.
- D. It increases the need for artificial lighting.

**Q45 Part A**

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

Statement:

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

Conclusions:

- I. Increased vehicular traffic contributes to higher levels of air pollution.
- II. Improving public transportation would reduce respiratory illnesses in City W.

- A. Only conclusion II follows.
- B. Neither conclusion I nor II follows.
- C. Both conclusions I and II follow.
- D. Only conclusion I follows.

**Q46 Part A**

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

- A. 78 m
- B. 480 m
- C. 518 m
- D. 103 m

**Q47 Part A**

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

- A. It prevents overheating of the system.
- B. It decreases the system's energy consumption.
- C. It speeds up system breakdowns.
- D. It increases the cost of energy.

**Q48 Part A**

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

- A. 180
- B. 184
- C. 175
- D. 185

**Q49 Part A**

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

WU5, SQ7, NL11, ?

- A. HE15
- B. HF13
- C. HF17
- D. GE17

**Q50 Part A**

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

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

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

- A. 682 – 341 – 291 – 381
- B. 226 – 113 – 144 – 268
- C. 586 – 293 – 244 – 328
- D. 138 – 69 – 14 – 98



Q51 Part A

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

- A. Increased accessibility to educational resources
- B. Enhancement of communication channels
- C. Privacy violations and data breaches ✓
- D. Reduction in administrative costs

Q52 Part A

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

- A. 0 m/s ✓
- B. 0.1 m/s
- C. 3.3 m/s
- D. 1.6 m/s

Q53 Part A

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

- A. Insert + Alt
- B. F2 + Alt
- C. Tab + Del
- D. Alt + Enter ✓

Q54 Part A

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

ARF : YTH
WVJ : UXL

- A. MEL : HZN
- B. KXF : HZH
- C. SZN : QBP ✓
- D. QEB : NBD

Q55 Part A

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

- A. 80 km/hr
- B. 85 km/hr
- C. 90 km/hr ✓
- D. 75 km/hr

Q56 Part A

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

- A. $[M L^{-3} T^0]$ ✓
- B. $[M L^{-2} T^0]$
- C. $[M^0 L^3 T^0]$
- D. $[M L^{-3} T^{-2}]$

Q57 Part A

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

- A. The likely cause of the fire and the building owner's name
- B. The weather conditions at the time of the fire
- C. How the fire started and if someone is injured or missing ✓
- D. The colour of the smoke and the direction it is moving

Q58 Part A

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

- A. 9,166
- B. 8,666
- C. 11,666
- D. 10,166 ✓



Q59 Part A

Which of the following is NOT correct?

- A. The motion of satellite around Earth in a circular orbit is uniform circular motion.
- B. The distance-time graph of an object moving with uniform speed is not a straight line. ✓
- C. A person jogging in the park is not an example of uniform circular motion.
- D. An object moving with a constant velocity represents uniform motion.

Q60 Part A

In a certain code language, 'GOES' is coded as '8624' and 'SNYC' is coded as '3817'. What is the code for 'S' in the given code language?

- A. 8 ✓
- B. 2
- C. 4
- D. 3

Q61 Part A

Which of the following statements is correct?

- A. All metals are poor conductors of heat.
- B. Plastic and wood allow heat to pass through them easily.
- C. Copper and aluminium are good conductors of heat. ✓
- D. Dry air is a good conductor of heat.

Q62 Part A

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

- A. 12 V ✓
- B. 24 V
- C. 2 V
- D. 48 V

Q63 Part A

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

- A. 3
- B. 7
- C. 5
- D. 1 ✓

Q64 Part A

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

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

- A. EKJR ✓

B. VBZI

C. GMKT

D. IOMV

Q65 Part A

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

- A. $BC < AC < AB$
- B. $AB < AC < BC$
- C. $AC < AB < BC$ ✓
- D. $BC < AB < AC$

Q66 Part A

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. KF – HM ✓

B. DY – AG

C. QL – NT

D. BW – YE

Q67 Part A

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

- A. Random Pollution
- B. Point Source Pollution ✓
- C. Radicle Pollution
- D. Non-point Source Pollution



Q68 Part A

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

A. 50 J



B. 100 J

C. 120 J

D. 80 J

Q69 Part A

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

A. Precision

B. Approximate

C. Accuracy



D. Mean

Q70 Part A

Which of the following statements is NOT true?

A. Clinical and laboratory thermometers are the same.



B. The range of clinical thermometer is 35 to 42°C .

C. Laboratory thermometer cannot be used to measure body temperature.

D. Clinical thermometer should not be used to measure the temperature of boiling water.

Q71 Part A

T-Square is used to _____ in engineering drawings.

A. transfer dimensions and dividing lines into a number of equal parts

B. draw horizontal lines, parallel lines and to guide/hold the setsquares



C. draw curved lines on drawing sheets

D. support the drawing paper/tracing paper for making drawings

Q72 Part A

Which element is used in thermometers?

A. Lead

B. Mercury



C. Gallium

D. Bromine

Q73 Part A

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

1333 – 1730 – 2199 – 2746 – 3377

218 – 345 – 514 – 731 – 1002

A. 3 – 10 – 29 – 66 – 127



B. 3 – 6 – 11 – 18 – 27

C. 38 – 51 – 66 – 83 – 102

D. 123 – 146 – 171 – 198 – 227

Q74 Part A

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

A. Job cycle charts



B. Labels and signs

C. Floor markings

D. Cleaning supplies

Q75 Part A

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

A. Ability to create channels for broadcasting messages to large audiences



B. Integration with Facebook for seamless sharing

C. Voice and video calling capabilities

D. End-to-end encryption for all messages

Q76 Part A

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

A. The pairs of opposite angles are bisected by the corresponding diagonals.



B. At least one diagonal is bisected by the other diagonal.

C. At least one pair of opposite angles is congruent.

D. The diagonals are perpendicular to each other.



Q77 Part A

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

- A. Neither in series nor in parallel
- B. Directly to the power source only
- C. In series with the circuit
- D. In parallel across the points where potential difference is to be measured ✓

Q78 Part A

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

- A. 0.057 mm ✓
- B. 171 mm
- C. 0.57 mm
- D. 0.09 mm

Q79 Part A

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

- A. 1100 and 500
- B. 500 and 600
- C. 1100 and 1100
- D. 1100 and 600 ✓

Q80 Part A

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

- A. Internet Crime Complaint Center
- B. National Cybercrime Reporting Station
- C. Cyber Appellate Tribunal ✓
- D. Cybercrime Reporting Tribunal

Q81 Part A

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

- A. Check if emergency lighting and backup power are functional ✓
- B. Continue working as usual
- C. Panic and leave the premises immediately
- D. Ignore the situation and wait for power to return

Q82 Part A

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

- A. Carbon Dioxide ✓
- B. Nitrogen
- C. Oxygen
- D. Helium

Q83 Part A

Which of the following is NOT an SI unit?

- A. Mole
- B. Hour ✓
- C. Metre
- D. Kilogram

Q84 Part A

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

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

- A. A1
- B. Z2
- C. Z1 ✓
- D. Y1



Q85 Part A

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

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

A. 16 – 36 – 64 – 100 – 144

B. 64 – 225 – 529 – 1444 – 3721

C. 64 – 100 – 144 – 196 – 256

D. 4 – 16 – 36 – 64 – 100

Q86 Part A

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

A. The potential difference across the ends of a conductor is inversely proportional to the current flowing through it.

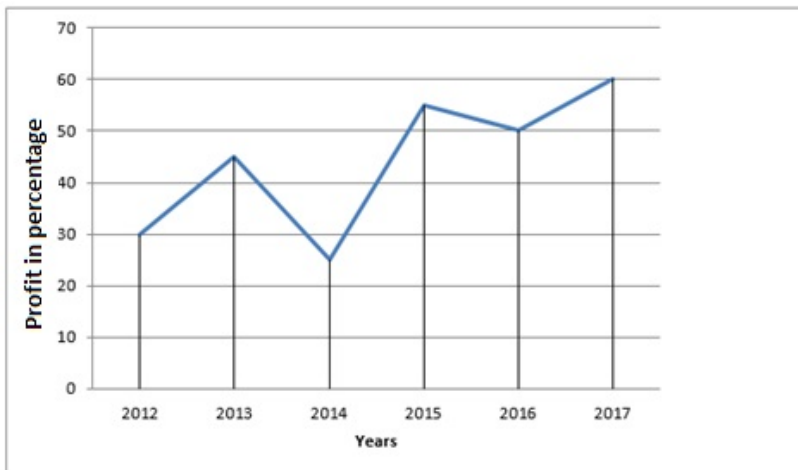
B. The potential difference across the ends of a conductor is directly proportional to the current flowing through it.

C. If the potential difference across the two ends of a conductor is 1 V and the current through it is 1A, then the resistance of the conductor is 2Ω .

D. Current through a resistor is directly proportional to its resistance.

Q89 Part A

Study the given graph and answer the question that follows.



What is the average profit percentage of the given years?

A. 43.4%

B. 45%

C. 44%

D. 44.1%

Q87 Part A

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

A. energy transferred

B. change in velocity

C. energy lost

D. change in speed

Q88 Part A

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

A. ₹5,000

B. ₹6,000

C. ₹4,000

D. ₹6,500



Q90 Part A

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

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

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

A. 28

B. 33

C. 21

D. 31

**Q91** Part A

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

A. 4

B. 1

C. 3

D. 2

**Q92** Part A

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

A. 48 cm

B. 21 cm

C. 42 cm

D. 40 cm

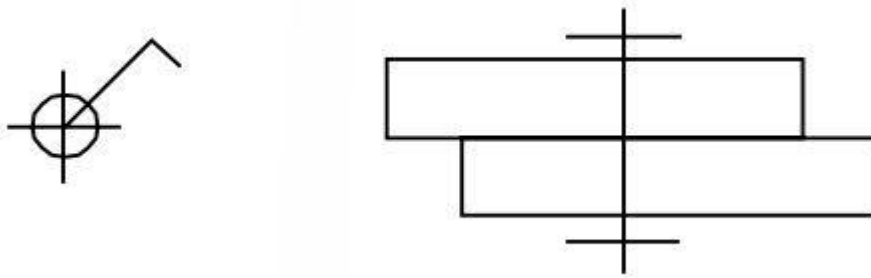


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Q93 Part A

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



- A. Drilled on-site
- B. Fitted in the workshop
- C. Drilled in the workshop
- D. Drilled and fitted on-site

Q94 Part A

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

What is the value of y ?

- A. 720
- B. 750
- C. 600
- D. 800

Q95 Part A

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

- A. $\frac{3}{5}$
- B. $\frac{2}{5}$
- C. $\frac{3}{2}$
- D. $\frac{2}{3}$



Q96 Part A

In an electrical circuit, 'n' number of $1\ \Omega$ resistors are connected in parallel. When one of the resistors is eliminated, the overall resistance of the circuit is _____.

A. $\frac{1}{(n - 1)}$



B. Zero

C. $\frac{1}{n^2}$

D. $\frac{1}{n}$

Q97 Part A

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

A. $32\frac{2}{7}$

B. $34\frac{3}{7}$

C. $34\frac{2}{7}$



D. $34\frac{2}{8}$

Q98 Part A

$$\frac{r}{10}\%$$

A. $\frac{r^4}{10}$



B. $10r^4$

C. $\frac{r^4}{5}$

D. $\frac{r^4}{20}$

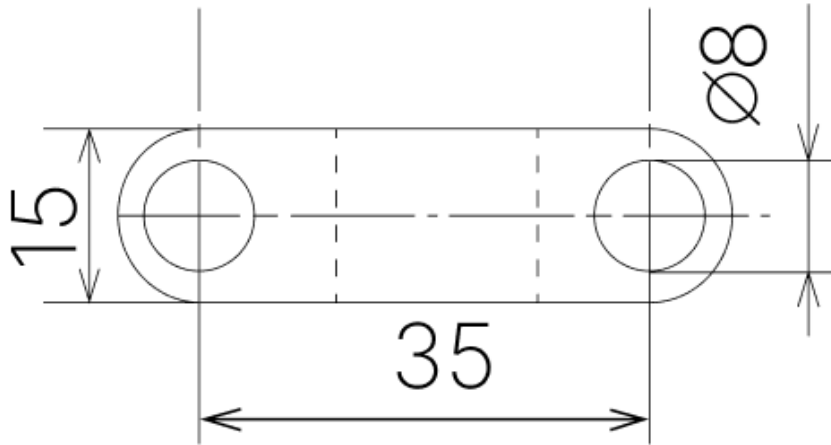


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Q99 Part A

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

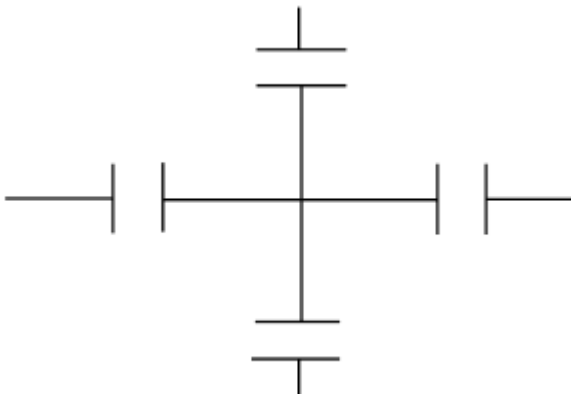


- A. Isometric view
- B. Oblique view
- C. Orthographic view
- D. Perspective view



Q100 Part A

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



- A. Bend
- B. Union
- C. Tee
- D. Cross



Q101 Part B (Mechanic Tractor)

Which of the following statements is INCORRECT about end standard?

- A. It measures the distance between two parallel flat surfaces.
- B. Faces are subject to wear.
- C. It is slower but more accurate.
- D. It is used to measure the distance between two engraved lines. ✓

Q102 Part B (Mechanic Tractor)

A type of piston which provides an even distribution of the air-fuel mixture, consistent flame front during combustion and it has the smallest surface area on top is known as:

- A. semi-spherical piston
- B. dish piston
- C. flat piston ✓
- D. dome piston

Q103 Part B (Mechanic Tractor)

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

- A. Letter width
- B. Letter height ✓
- C. Stroke thickness
- D. Interline spacing

Q104 Part B (Mechanic Tractor)

Which of the following types of additives are blended with the lubricant to reduce the surface tension of the oil?

- A. Tackiness agents
- B. Demulsifiers
- C. Mist suppressors
- D. Emulsifiers ✓

Q105 Part B (Mechanic Tractor)

A crucial engine component that ensures proper sealing of the intake and exhaust valves is known as:

- A. valve barrier
- B. valve gasket
- C. valve seat ✓
- D. valve ring

Q106 Part B (Mechanic Tractor)

Which of the following is NOT the purpose of lubrication oil in an engine?

- A. Separation of lighter boiling materials such as gasoline, jet fuel, diesel, etc.
- B. Finishing to improve oxidation and heat stability
- C. Mixing of impurities uniformly that include aromatics and polar compounds ✓
- D. Dewaxing to improve low-temperature fluidity

Q107 Part B (Mechanic Tractor)

What is the SI unit of 'volume'?

- A. Litres
- B. Cubic centimetre
- C. Cubic metre ✓
- D. Millilitres

Q108 Part B (Mechanic Tractor)

Which of the following symptom or indicator does NOT show the failure of an oil pump?

- A. When the engine oil flow slows or stops, the components continue to be lubricated by hot oil that is not permitted to flow
- B. When the engine runs at a normal temperature and oil flow is steady. ✓
- C. If a hydraulic lifter in a vehicle creates noise
- D. Able to push oil through the system adequately and with low pressure in oil lines

Q109 Part B (Mechanic Tractor)

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

- A. 2 mA
- B. 1 mA
- C. 5 mA ✓
- D. 4 mA



Q110 Part B (Mechanic Tractor)

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

A. Spring joint calipers

B. Leg and point calipers

C. Simple calipers

D. Firm joint calipers

Q111 Part B (Mechanic Tractor)

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

A. Undefined

B. 0

C. 1

D. 2

Q112 Part B (Mechanic Tractor)

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

A. 125 cm²

B. 150 cm²

C. 200 cm²

D. 100 cm²

Q113 Part B (Mechanic Tractor)

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

Statement 1: The title block is situated in the bottom right-hand corner of the drawing sheet.

Statement 2: The contents of the title block are standardised and cannot be modified to suit individual company needs.

A. Both statements are false

B. Statement 1 is false, but statement 2 is true

C. Statement 1 is true, but statement 2 is false

D. Both statements are true

Q114 Part B (Mechanic Tractor)

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

A. The resistance is doubled.

B. The resistance remains the same.

C. The resistance is halved.

D. The resistance quadruples.

Q115 Part B (Mechanic Tractor)

In a hydraulic brake booster system, where is the hydraulic pressure stored before it is used to assist braking?

A. Power steering pump

B. Master cylinder

C. Accumulator

D. Brake caliper

Q116 Part B (Mechanic Tractor)

What is the reason that cam lobe causes the engine to make a ticking or tapping noise, especially when idling, and is often rhythmic and varies in loudness?

A. When the cam lobe is subjected to higher load.

B. When the cam lobe wears out.

C. When the cam lobe is hot.

D. When cam lobe is has insufficient lubrication.

Q117 Part B (Mechanic Tractor)

The process in which an oil pump housing is first filled with oil, especially for oil pumps that are driven by the crankshaft, is known as:

A. alignment of a pump

B. ferrography of a pump

C. priming of a new oil pump

D. cavitation of a pump

Q118 Part B (Mechanic Tractor)

A single plate friction clutch consists of a clutch disk between the:

A. differential gear and transmission gear box

B. pressure plate and driving shaft

C. driving shaft and differential gear

D. flywheel and a pressure plate



Q119 Part B (Mechanic Tractor)

The SI unit of temperature is/are ____.

- A. both kelvin and celsius
- B. celsius
- C. kelvin
- D. fahrenheit

Q120 Part B (Mechanic Tractor)

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

- A. Blue
- B. Yellow
- C. Red
- D. Green

Q121 Part B (Mechanic Tractor)

Which of the following devices is used to insert a micrometer in the hole of an external cylinder for zero aligning?

- A. Spanner
- B. Allen key
- C. Screw driver
- D. Wrench

Q122 Part B (Mechanic Tractor)

What is the accuracy level of metric micrometer reading?

- A. 0.5 mm
- B. 1.0 mm
- C. 0.1 mm
- D. 0.01 mm

Q123 Part B (Mechanic Tractor)

Which of the following parts is NOT associated with camshaft responsible for the opening and closing of engine valves?

- A. Tappets
- B. Connecting rod
- C. Rocker arms
- D. Push rods

Q124 Part B (Mechanic Tractor)

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

- A. 10 ohms
- B. 20 ohms
- C. 30 ohms
- D. 40 ohms

Q125 Part B (Mechanic Tractor)

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

- A. Cross-cut chisel
- B. Flat chisel
- C. Web chisel
- D. Diamond point chisel

Q126 Part B (Mechanic Tractor)

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

- A. 2.0 mm
- B. 0.5 mm
- C. 0.8 mm
- D. 1.0 mm

Q127 Part B (Mechanic Tractor)

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

- A. Continuous thin line
- B. Continuous thick line
- C. Dashed thin line
- D. Chain thin line

Q128 Part B (Mechanic Tractor)

Which of the following types of valve seats are commonly used in cast iron head of the engine?

- A. Integral valve seats
- B. Insert valve seats
- C. Elliptical valve seats
- D. Two piece valve seats



Q129 Part B (Mechanic Tractor)

The camshaft is driven by the crankshaft through which of the following types of power transmission techniques?

- A. Flat belt transmission drive
- B. Timing gears drive** ✓
- C. Chain drive
- D. Epicyclic gear train drive

Q130 Part B (Mechanic Tractor)

The emergency brake locks the wheels by bypassing which system?

- A. Electric brake system
- B. Air pressure system
- C. Hydraulic brake system** ✓
- D. Fuel injection system

Q131 Part B (Mechanic Tractor)

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

- A. Copper has low resistance and high conductivity.** ✓
- B. Copper has a low melting point.
- C. Copper is abundant and inexpensive.
- D. Copper has high resistance to electricity.

Q132 Part B (Mechanic Tractor)

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

- A. cyclists; left; interval
- B. vehicles; right; gap
- C. drivers; left; space
- D. pedestrians; right; distance** ✓

Q133 Part B (Mechanic Tractor)

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

- A. Double level single groove 'V' block
- B. Matched pair 'V' block
- C. Single level double groove 'V' block** ✓
- D. Single level single groove 'V' block

Q134 Part B (Mechanic Tractor)

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

- A. 0°C to 100°C
- B. 35°C to 42°C** ✓
- C. 0°C to 50°C
- D. -10°C to 110°C

Q135 Part B (Mechanic Tractor)

A carburetor used in a petrol engine is designed so as to fit in which of the following parts of the engine?

- A. Piston
- B. Casing
- C. Cylinder head** ✓
- D. Connecting rod

Q136 Part B (Mechanic Tractor)

Which of the following types of engine classifications is based on cylinder arrangement?

- A. Diesel cycle engine
- B. Dual cycle engine
- C. V-engine** ✓
- D. Otto cycle engine

Q137 Part B (Mechanic Tractor)

Which of the following parts of the engine is used to compress the charge during compression stroke and to transmit the gas force to the connecting rod and then to the crankshaft during power stroke?

- A. Crankcase
- B. Cylinder head
- C. Cylinder block
- D. Piston** ✓

Q138 Part B (Mechanic Tractor)

Which of the following provisions is provided in the cylinder head during design for increasing the air cooling effect?

- A. Fins or extended surfaces are provided on the cylinder walls and cylinder blocks.** ✓
- B. Cylinder head is provided with water jackets.
- C. Cylinder block is provided with high speed cooling air flow.
- D. Dimple like shapes on surfaces are provided on the cylinder walls.



Q139 Part B (Mechanic Tractor)

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

- A. Scribe points are very sharp, so they are to be handled very carefully.
- B. While scribing lines, the scribe is used like a pencil.
- C. Do not put the scribe in your pocket.
- D. Place a cork on the point when in use to prevent accidents. ✓

Q140 Part B (Mechanic Tractor)

For the given tire size, as per specification as 205/55R16, what is the width of the tire?

- A. 205/55 mm
- B. 550 mm
- C. 205 mm ✓
- D. 880 mm

Q141 Part B (Mechanic Tractor)

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

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

- A. Only statement 1
- B. Neither statement 1 nor 2
- C. Only statement 2
- D. Both statements 1 and 2 ✓

Q142 Part B (Mechanic Tractor)

Who is authorised to conduct road tests on workshop vehicles?

- A. Only trained and certified personnel ✓
- B. Visitors to the workshop
- C. Any employee
- D. The company accountant

Q143 Part B (Mechanic Tractor)

Which of the following metals has the lowest melting point?

- A. Mercury ✓
- B. Iron
- C. Lead
- D. Gold

Q144 Part B (Mechanic Tractor)

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

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

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

Q145 Part B (Mechanic Tractor)

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

- A. Length of two adjacent sides ✓
- B. Length of one side and the area of the rectangle
- C. Only the length of one side
- D. Only the length of the diagonal

Q146 Part B (Mechanic Tractor)

In two-stroke engines, one power cycle is completed in how many revolutions of the crankshaft?

- A. Two revolutions
- B. Four revolutions
- C. Three revolutions
- D. One revolution ✓



Q147 Part B (Mechanic Tractor)

What happens if air is NOT removed from a hydraulic brake system?

- A. The fuel efficiency improves.
- B. The engine runs smoother.
- C. The tires wear out faster.
- D. The brakes feel spongy and less effective. ✓

Q148 Part B (Mechanic Tractor)

Which of the following is NOT the correct function of the front axle?

- A. It transmits the torque of a vehicle through springs to the front wheels. ✓
- B. It absorbs torque applied on it due to braking of vehicle.
- C. An axle is a central shaft for a rotating wheel or gear.
- D. It supports the weight of the front part of the vehicle.

Q149 Part B (Mechanic Tractor)

Which of the following is NOT a part of the gear changing mechanism in an automatic transmission system?

- A. Universal coupling ✓
- B. Epicyclic gear arrangement
- C. Fluid coupling
- D. Torque converter

Q150 Part B (Mechanic Tractor)

Convert 8.5% into a decimal.

- A. 0.85
- B. 8.5
- C. 0.085 ✓
- D. 85

Q151 Part B (Mechanic Tractor)

How much clearance is to be provided for compression ring fitted into the piston of an IC engine?

- A. Approximately 0.035 – 0.080 mm for compression rings
- B. Approximately 0.095 – 1.80 mm for compression rings
- C. 0.002 D to 0.004 D where D is the cylinder bore ✓
- D. Approximately 0.9 – 1.80 mm for compression rings

Q152 Part B (Mechanic Tractor)

Where is a typical clutch actuated by a number of coil springs?

- A. On a pitch circle near the central axis of the shaft
- B. On a base circle near the centre of the circle
- C. On an addendum circle near the centre of the radius
- D. On a pitch circle near the periphery ✓

Q153 Part B (Mechanic Tractor)

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

- A. 14 years ✓
- B. 12 years
- C. 16 years
- D. 18 years

Q154 Part B (Mechanic Tractor)

What is the best method of manufacturing of connecting rod used in an engine?

- A. Drop forging ✓
- B. Investment casting
- C. Sand casting
- D. Machining operation

Q155 Part B (Mechanic Tractor)

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

- A. Shine
- B. Set
- C. Sort
- D. Sustain ✓

Q156 Part B (Mechanic Tractor)

Which of the following statements is correct about the clutch used in vehicles?

- A. It allows the driver to couple or decouple the power transmission at will without stopping the engine. ✓
- B. It allows the driver to lift and unload the bulk material from engine and transmission.
- C. It allows the driver to change the drive of engine in any direction.
- D. It allows the driver to change the speed of engine.



Q157 Part B (Mechanic Tractor)

Which of the following types of engine classifications is based on the thermodynamic cycle?

- A. In-line cylinder engine
- B. V-engine
- C. Radial engine
- D. Otto cycle engine



Q158 Part B (Mechanic Tractor)

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

- A. 90°
- B. 30°
- C. 120°
- D. 45°



Q159 Part B (Mechanic Tractor)

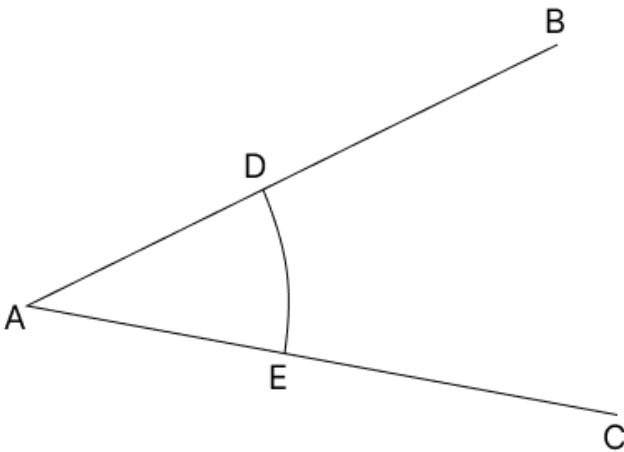
For the given tire size, as per specification as 205/55R16, what is the width of the tire?

- A. 880 mm
- B. 550 mm
- C. $\frac{205}{55}$ mm
- D. 205 mm



Q160 Part B (Mechanic Tractor)

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



- A. To find midpoint AB
- B. To mark equal lengths
- C. To intersect line AC
- D. To intersect above A

