



रेल भर्ती बोर्ड / RAILWAY RECRUITMENT BOARDS
सी ई एन - ०१/२०२५ - CEN - 01/2025
सहायक लोको पायलट की भर्ती/ Recruitment of Assistant Loco Pilot



RRB ALP 2025 CBT 2

Assistant Loco Pilot | CEN 01/2025 | CBT 2 | Mechanic Diesel

ENGLISH ANSWER KEY

Official Answer Key

All 2 Shifts · 28-07-2026 to 28-07-2026

Questions	175 (Part A 100 + Part B 75)
Marking	+1 correct / -1/3 wrong
Duration	2 hours 30 minutes (Part A 90 min + Part B 60 min)
Sections	Part A 100 (Maths, Reasoning, Basic Sci & Engg) · Part B 75 (trade)

Every paper is set from the saved RRB question paper, with the official correct answer marked.

HOW TO USE THIS BOOK

- 1 Open the INDEX on the next page.
- 2 Click any row to jump straight to that date and shift.
- 3 Correct options are ticked in green, wrong ones crossed in red.

Check your marks, normalized score and zone-wise rank free at
rank.qmaths.in

Blackbook

Score & Rank Calculator · rank.qmaths.in

Compiled 28 October 2026

INDEX · Click any row to open that paper

RRB ALP 2025 CBT 2 (Mechanic Diesel) (English) · 2 shifts

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Day 1	28-07-2026	Shift 1	09:30 - 12:00	3
Day 1	28-07-2026	Shift 2	14:30 - 17:00	24



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Exam	RRB ALP 2025 CBT 2 (CEN 01/2025)
Paper	Mechanic Diesel
Test Date	28 Jul 2026
Test Time	9:30 AM - 12:00 PM
Language	English

*** Note**

Correct answer carries 1 mark; each incorrect answer carries a negative mark of 1/3.

1. The option shown in green with a tick is the correct answer as per the official answer key.

2. RRB shuffles question order for every candidate inside each Part; this paper follows the order of one real response sheet.

Section : Part A

Q.1 If Rohan's income increases by 20% and his expenditure increases by 10%, then his savings increase by ₹1,200. If his original income was ₹12,000, what was his original expenditure? (Assume that savings = income – expenditure.)

- Ans
- ☒ 1. ₹10,000
 - ☒ 2. ₹11,000
 - ☒ 3. ₹12,000
 - ☒ 4. ₹9,000

Q.2 Which feature is a requirement of the BIS drawing standard in engineering drawings?

- Ans
- ☒ 1. Freehand sketches without scale
 - ☒ 2. Margin lines of random width
 - ☒ 3. Title block with specific information
 - ☒ 4. Use of colored pencils for clarity

Q.3 What should come in place of the question mark (?) in the given series?

98, 104, 116, 134, 158, ?

- Ans
- ☒ 1. 184
 - ☒ 2. 186
 - ☒ 3. 188
 - ☒ 4. 190

Q.4 If the mean of the following data is 40, then what is the value of x?

Class	10-20	20-30	30-40	40-50	50-60
Frequency	30	27	44	29	X

- Ans
- ☒ 1. 82
 - ☒ 2. 98
 - ☒ 3. 99
 - ☒ 4. 93

Q.5 Which property of a fuse wire ensures it melts quickly when excess current flows?

- Ans
- ☒ 1. High electrical resistance
 - ☒ 2. High melting point
 - ☒ 3. Thick wire
 - ☒ 4. Low melting point

- Q.6 There are two types of silver–copper alloys. The first alloy contains $93\frac{1}{3}\%$ silver, while the second alloy contains $86\frac{2}{3}\%$ silver. Find the amount of the first alloy that should be mixed with some quantity of the second alloy to obtain a 100 kg mixture containing 90% silver.
- Ans ☒ 1. 48 kg
☒ 2. 52 kg
☒ 3. 50 kg
☒ 4. 45 kg
-
- Q.7 A trader buys 187 pens at ₹23 each. During transportation, 7 pens get damaged and cannot be sold. He sells the remaining pens at ₹27 each. Find his profit percentage. (rounded off to one decimal place)
- Ans ☒ 1. 13.7%
☒ 2. 14.1%
☒ 3. 13.0%
☒ 4. 12.6%
-
- Q.8 A car travels on a highway, and its odometer records a reading of 180 km at 8:00 am and 240 km at 9:30 am. Based on this information, which statement best describes the car's average speed during this interval?
- Ans ☒ 1. The car's average speed is 240 km per hour since that was the odometer reading at 9:30 am.
☒ 2. The car's average speed is 60 km per hour based only on the change in odometer readings.
☒ 3. The car's average speed is 40 km per hour as calculated from the odometer readings and time interval.
☒ 4. The car's average speed is 180 km per hour since that was the odometer reading at 8:00 am.
-
- Q.9 A cyclist covers 120 meters in 16 seconds on a straight road, then immediately covers 180 meters in 24 seconds on a similar road segment. What is the average speed of the cyclist during the entire journey?
- Ans ☒ 1. 7.5 meters per second
☒ 2. 7.0 meters per second
☒ 3. 6.5 meters per second
☒ 4. 8.0 meters per second
-
- Q.10 What do touch gestures in Microsoft Windows allow users to do?
- Ans ☒ 1. Type faster on the keyboard
☒ 2. Connect external devices
☒ 3. Perform actions using finger movements
☒ 4. Increase screen brightness
-
- Q.11 Which of the following is both, an input and output device?
- Ans ☒ 1. Keyboard
☒ 2. Touchscreen monitor
☒ 3. Projector
☒ 4. Printer
-
- Q.12 In third angle projection, where is the object placed relative to the plane of projection?
- Ans ☒ 1. The object is placed in the third quadrant
☒ 2. The object is placed in the second quadrant
☒ 3. The object is placed in the first quadrant
☒ 4. The object is placed in the fourth quadrant
-
- Q.13 An engineer uses fault tree analysis to assess a machine-related injury in a factory. Which step should be taken first according to standard procedure?
- Ans ☒ 1. Establish preventive measures to control risks
☒ 2. List all possible causes of failures
☒ 3. Validate the analysis using workplace data
☒ 4. Define the top event representing the injury
-

Q.14 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 Shreya related to Mahak if 'Shreya + Dev – Taran × Harshit % Mahak'?

- Ans
- ☐ 1. Father's sister
 - ☐ 2. Mother's sister
 - ☐ 3. Father's mother
 - ☒ 4. Mother's mother

Q.15 Which of the following scenarios best demonstrates the conversion of chemical energy to mechanical energy?

- Ans
- ☐ 1. A flashlight turns on after inserting new batteries
 - ☐ 2. A stone falls off a table to the ground
 - ☐ 3. A stretched rubber band snaps back to its original shape
 - ☒ 4. A runner uses stored energy from food to sprint forward

Q.16 A shopkeeper marks a product 75% above cost price and offers two successive discounts of 30% and 40%. What is the profit or loss percentage?

- Ans
- ☐ 1. 15.7% profit
 - ☐ 2. 20.9% profit
 - ☒ 3. 26.5% loss
 - ☐ 4. 22.6% profit

Q.17 Refer to the following letter series and answer the question that follows. Counting to be done from left to right only.

(Left) A T D E B R C L M Q O N P J M Q E A O Z W F U K S L (Right)

How many such vowels are there, each of which is immediately preceded by a consonant and also immediately followed by a consonant?

- Ans
- ☒ 1. 3
 - ☐ 2. 1
 - ☐ 3. 2
 - ☐ 4. 0

Q.18 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.)

- Ans
- ☐ 1. DJ – GM
 - ☐ 2. AF – DI
 - ☒ 3. CH – EK
 - ☐ 4. BG – EJ

Q.19 Refer to the given letter series and answer the question that follows. Counting to be done from left to right.

(Left) B F O P P S Q A L M K A W X S N U Q J O M Y (Right)

How many such vowels are there, each of which is immediately preceded by a consonant and also immediately followed by a consonant?

- Ans
- ☐ 1. 6
 - ☐ 2. 4
 - ☐ 3. 7
 - ☒ 4. 5

Q.20 What is the primary function of a fire hydrant in a workplace safety system?

- Ans
- ☐ 1. Removing hazardous fumes from the area
 - ☐ 2. Detecting smoke and warning employees
 - ☒ 3. Supplying large quantities of water to fight fires
 - ☐ 4. Activating fire alarms automatically in emergencies

Q.21 Which approach most effectively reduces both nitrogen and phosphorus concentrations during wastewater treatment?

- Ans
- ☒ 1. Biological and chemical nutrient removal
 - ☐ 2. Primary sedimentation with extended aeration
 - ☐ 3. UV disinfection following secondary treatment
 - ☐ 4. Surface-flow constructed wetlands

Q.22 Which of the following letter-number clusters will replace the question mark (?) in the given series to make it logically complete?

QOI 5, OMG 10, MKE 15, KIC 20, ?

- Ans ☒ 1. IGA 25
☐ 2. IHS 23
☐ 3. HIZ 30
☐ 4. JHZ 24

Q.23 Refer to the following letter and symbol series and answer the question that follows. Counting to be done from left to right.

(Left) Z @ B R J # D * Q A M S % P L V O U S N T W Z (Right)

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

- Ans ☐ 1. None
☒ 2. Four
☐ 3. Three
☐ 4. Two

Q.24 A sum of ₹420 is divided among A, B, C, and D such that: A : B = 4 : x, B : C = x : 7, C : D = 6 : (x - 3). If B and C together get ₹210, find the value of x.

- Ans ☐ 1. 42
☐ 2. 27
☒ 3. 39
☐ 4. 53

Q.25 Three pipes A, B and C can fill a tank in 12 hours, 18 hours and 24 hours, respectively. A leak at the bottom can empty the full tank in 36 hours. If all the pipes are opened together, in how many hours will the tank be filled? (Round off your answer to two decimal places.)

- Ans ☐ 1. 3.33 hours
☐ 2. 5.56 hours
☒ 3. 6.55 hours
☐ 4. 9.45 hours

Q.26 A pendulum takes 60 seconds to complete 24 oscillations. If its length is increased and it now takes 72 seconds for the same number of oscillations, what has happened to its time period?

- Ans ☒ 1. It has increased to 3.0 seconds
☐ 2. It has decreased to 1.5 seconds
☐ 3. It remains at 2.5 seconds
☐ 4. It has decreased to 2.0 seconds

Q.27 An engineer is tasked with creating the front view of a mechanical part. The part has a rectangular base with a vertical circular hole passing through it and a triangular prism attached on top. Which of the following best describes what will be visible in the front view?

- Ans ☐ 1. Only the rectangular base outline will be visible in the front view drawing
☒ 2. The outline of rectangular base and triangular prism will be visible but hole is not shown
☐ 3. The outline of triangular prism and circular hole will be visible in front view only
☐ 4. Only the triangular prism will be clearly visible in the front view drawing

Q.28 An engineering student is tasked with creating a detailed side view of a complex machine part for an assembly drawing. Which approach will most accurately represent all features visible from the side while avoiding hidden overlaps or misinterpretations?

- Ans ☒ 1. Project all visible elements from the side and omit hidden features unless needed
☐ 2. Use only hidden lines for representing features on the far side in the view
☐ 3. Sketch the side view freely without using projections from the main view
☐ 4. Include all features even those not visible from the selected side view

Q.29 If $\left(x + \frac{1}{x}\right) = 3$, find the value of $\left(x^3 + \frac{1}{x^3}\right)$.

- Ans ☐ 1. 20
☐ 2. 16
☒ 3. 18
☐ 4. 15

Q.30 A sample of water is heated from 15 degrees Celsius to 35 degrees Celsius. What is the temperature change in Kelvin?

- Ans
- ✓ 1. The temperature change is 20 K.
 - ✗ 2. The temperature change is 30 K.
 - ✗ 3. The temperature change is 50 K.
 - ✗ 4. The temperature change is 15 K.

Q.31 In a certain code language, 'KING' is coded as '9713' and 'ITCH' is coded as '2945'. What is the code for 'I' in the given code language?

- Ans
- ✗ 1. 2
 - ✓ 2. 9
 - ✗ 3. 7
 - ✗ 4. 4

Q.32 Simplify: $60 - \{(-8) \times (-16 - 19 - 2)\} \div [5 \times \{2 + (-1) \times (-1)\}]$

- Ans
- ✗ 1. $\frac{594}{15}$
 - ✗ 2. $\frac{614}{15}$
 - ✗ 3. $\frac{608}{15}$
 - ✓ 4. $\frac{604}{15}$

Q.33 A worker's hand is at risk of injury from a mechanical shearing action. Which situation best describes a shearing hazard?

- Ans
- ✗ 1. A hand touching a hot metallic machine surface during maintenance activity
 - ✓ 2. A hand caught between a moving blade and a fixed machine surface during operation
 - ✗ 3. A hand sliding repeatedly across a rough abrasive machine surface during work
 - ✗ 4. A hand becoming entangled in a rotating machine shaft during operation

Q.34 What should come in place of the question mark (?) in the given series based on the English alphabetical order?

UMD ZQG EUJ JYM ?

- Ans
- ✗ 1. PDP
 - ✗ 2. NBQ
 - ✗ 3. NDO
 - ✓ 4. OCP

Q.35 If a scooter travels at a constant speed of 25 km per hour, how far will it travel in 4 hours?

- Ans
- ✗ 1. 120 km
 - ✓ 2. 100 km
 - ✗ 3. 75 km
 - ✗ 4. 80 km

Q.36 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: All girls are hens. No hen is a cat.

Conclusion (I): No girl is a cat.

Conclusion (II): Some cats are hens.

- Ans
- ✗ 1. Neither conclusion (I) nor (II) follows
 - ✗ 2. Both conclusions (I) and (II) follow
 - ✓ 3. Only conclusion (I) follows
 - ✗ 4. Only conclusion (II) follows

Q.37 What is the simplified value of the expression $\left[\frac{\cos A}{(1 - \tan A)} \right] + \left[\frac{\sin A}{(1 - \cot A)} \right]$?

- Ans
- ✓ 1. $\cos A + \sin A$
 - ✗ 2. $\sin A - \cos A$
 - ✗ 3. 1
 - ✗ 4. 0

Q.38 Which of the following best describes a key environmental concern associated with improper disposal of e-waste?

- Ans ☒ 1. Release of toxic metals into soil and water
☐ 2. Enhanced biodegradation of plastics
☐ 3. Increased recycling rates of precious metals
☐ 4. Release of greenhouse gases from decomposition

Q.39 Solve the system of equations:

$$-3x + 2y - z = -1, 6x - 6y + 7z = -7, 3x - 4y + 4z = -6$$

- Ans ☐ 1. $x=1, y=2, z=2$
☒ 2. $x=2, y=2, z=-1$
☐ 3. $x=2, y=1, z=-3$
☐ 4. $x=-2, y=2, z=11$

Q.40 In this question, a question is followed by two statements numbered (I) and (II). You have to decide whether the data provided in the statements are sufficient to answer the question. Read both the statements and decide the appropriate answer.

Among the five poles—I, N, C, H, and L—each having a different height, which pole is the tallest?

(I) I is shorter than N but taller than C. C is taller than only one pole.

(II) H is taller than L.

- Ans ☐ 1. Both statements I and II together (and not statement I alone or statement II alone) are sufficient to answer the question
☐ 2. Data in statement I alone is sufficient to answer the question while data in statement II is not
☒ 3. Both statements I and II together are NOT sufficient to answer the question
☐ 4. Data in statement II alone is sufficient to answer the question while data in statement I is not

Q.41 In this question, a group of numbers/symbols is coded using letter codes as per the codes given below and the conditions which follow. The correct combination of codes following the conditions is your answer. If none of the conditions follow, then the codes for the respective number/symbol are to be followed directly as given in the table.

Number/symbol	6	1	&	3	%	8	+	4	#	7	@	5	2	\$
Code	R	V	G	D	S	C	T	L	F	W	H	U	Y	N

Conditions:

- (i) If the first element is a symbol and the last element is an odd number, the codes for these two (the first and the last elements) are to be interchanged.
(ii) If the first element is an odd number and the last an even number, the first and last elements are to be coded as @.
(iii) If both the second and third elements are perfect squares, the third element is to be coded as the code for the second element.

What will be the code for the following group?

+ 6 \$ 2 7

- Ans ☐ 1. STMWV
☐ 2. WSNYT
☒ 3. WRNYT
☐ 4. TSNWW

Q.42 A boat sails 40 km downstream and then 40 km upstream in a river. The boat's speed in still water is 12 km/hr and the speed of the stream is 4 km/hr. How much time does the boat take to cover the entire distance (both upstream and downstream)?

- Ans ☐ 1. 8 hours
☒ 2. 7.5 hours
☐ 3. 10 hours
☐ 4. 6 hours

Q.43 Which of the following statements correctly reflects the characteristics of a Local Area Network (LAN) and the role of Ethernet within it?

- Ans ☐ 1. Ethernet in a LAN provides low-speed data transfer and connects users over public Internet infrastructure.
☐ 2. A LAN always requires Gigabit Ethernet to function and is insecure because it allows open access to all network devices.
☐ 3. LANs are designed for long-distance communication and use Ethernet primarily for wireless data exchange.
☒ 4. Ethernet is a standard that governs how devices in a LAN communicate via wired connections, supporting speeds from 10 Mbps to 1000 Mbps.

Q.44 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 glasses are spoons.
All spoons are forks.

Conclusions:

- (I) Some glasses are forks.
(II) All forks are spoons.

Ans ☒ 1. Only conclusion (II) follows
☒ 2. Neither conclusion (I) nor (II) follows
☒ 3. Only conclusion (I) follows
☒ 4. Both conclusions (I) and (II) follow

Q.45 Seven boxes, P, Q, S, T, U, V, and W, are kept one over the other, but not necessarily in the same order. Only three boxes are kept above S. Exactly one box is kept between T and S. Exactly three boxes are kept between T and U, and U is kept somewhere above S. V is kept immediately below U. W is kept at one of the places above P. Q is not kept immediately above or below T. Based on the given information, which box is kept at the lowermost position?

Ans ☒ 1. V
☒ 2. S
☒ 3. P
☒ 4. Q

Q.46 A diamond ring costs ₹85,000. Its price is reduced first by 11% and then by 4% on the reduced price. Find the final price of the ring after both discounts.

Ans ☒ 1. ₹72,624
☒ 2. ₹74,624
☒ 3. ₹72,604
☒ 4. ₹73,624

Q.47 Which is the most important safety check before operating any machine in a workshop?

Ans ☒ 1. Ensure the machine area is properly illuminated
☒ 2. Wipe the machine with a dry cloth before use
☒ 3. Check if the machine is plugged in properly
☒ 4. Inspect the machine for loose or damaged parts

Q.48 What is the best description of the purpose of multi-view drawing in engineering drawing?

Ans ☒ 1. To show different colors of an object for better visual appearance
☒ 2. To view an object from only one direction
☒ 3. To represent different sides of an object clearly on a flat surface
☒ 4. To present the object in a single three-dimensional visual form only

Q.49 An engineer is tasked with creating a hollow cone for a machine part, where the wall thickness must be consistent and the slant height is critical for assembly. Which factor is most important to ensure the cone will fit correctly in the final design?

Ans ☒ 1. Matching only the overall height of the cone
☒ 2. Prioritizing uniform wall thickness over all other features
☒ 3. Focusing only on base diameter for precise fit
☒ 4. Ensuring the slant height matches the assembly requirement

Q.50 Which of the following statements correctly describes average velocity and its SI unit?

Ans ☒ 1. Average velocity is the total displacement divided by total time, and its unit is meter per second.
☒ 2. Average velocity is the total distance divided by total time, and its unit is meter per second.
☒ 3. Average velocity is the total distance divided by total time, and its unit is kilometer per hour.
☒ 4. Average velocity is the total displacement divided by total time, and its unit is kilometer per hour.

Q.51 Find the LCM of 72, 78, and 90.

Ans ☒ 1. 4250
☒ 2. 4680
☒ 3. 4280
☒ 4. 4120

Q.52 If 'A' stands for '+', 'B' stands for '-', 'C' stands for 'x' and 'D' stands for '÷', then what will come in place of the question mark (?) in the following equation?

28 A 16 C 3 B 12 D 4 = ?

- Ans ☐ 1. 72
☒ 2. 73
☐ 3. 70
☐ 4. 71

Q.53 A mechanical engineer must design a flange joint where two pipes are to be connected at a 45-degree angle. Which method should the engineer use to accurately represent the intersection line on a technical drawing of the two cylindrical pipes?

- Ans ☒ 1. Draw the true shape of the intersection using auxiliary projection
☐ 2. Represent the intersection as a straight line in the side view
☐ 3. Use only standard orthographic projection without auxiliary views
☐ 4. Draw a simple circle at the junction in the top view

Q.54 Which line symbol is commonly used in engineering drawings to represent a hidden edge that is not directly visible?

- Ans ☐ 1. Solid thick line
☐ 2. Chain thin line
☐ 3. Zigzag line
☒ 4. Dashed line

Q.55 A roller coaster at the top of its track has maximum potential energy. As it descends and speeds up, what principle explains why the sum of its kinetic and potential energies remains constant if we ignore friction and air resistance?

- Ans ☐ 1. Law of inertia
☐ 2. Principle of inertia
☒ 3. Law of conservation of energy
☐ 4. Principle of superposition

Q.56 A tangent PQ at a point P of a circle of radius 5 cm meets a line through the center O at a point Q such that OQ = 12 cm. What is the length of PQ?

- Ans ☐ 1. $\sqrt{117}$ cm
☒ 2. $\sqrt{119}$ cm
☐ 3. $\sqrt{97}$ cm
☐ 4. $\sqrt{107}$ cm

Q.57 G is the mother of Y. Y is the sister of V. S is the father of L. L is the husband of V. How is G related to S?

- Ans ☐ 1. Mother's mother
☐ 2. Son's wife
☐ 3. Son's wife's sister
☒ 4. Son's wife's mother

Q.58 In this question, a question is followed by two statements numbered (I) and (II). You have to decide whether the data provided in the statements are sufficient to answer the question. Read both the statements and decide the appropriate answer.

Q. Among five people – A, B, C, D, and E – who is the tallest?

(I) A is taller than B. B is taller than C.

(II) D is taller than E.

- Ans ☒ 1. Both statements I and II together are NOT sufficient to answer the question.
☐ 2. Both statements I and II together (and not statement I alone or statement II alone) are sufficient to answer the question
☐ 3. Data in statement II alone is sufficient to answer the question while data in statement I is not
☐ 4. Data in statement I alone is sufficient to answer the question while data in statement II is not

Q.59 If 'A' stands for '÷', 'B' stands for 'x', 'C' stands for '+' and 'D' stands for '-', what will come in place of the question mark '?' in the following equation?

14 A 30 B 45 C 15 D 9 = ?

- Ans ☒ 1. 27
☐ 2. 29
☐ 3. 25
☐ 4. 28

Q.60 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.)

- Ans ☒ 1. QK-VA
☐ 2. EY-KO
☐ 3. TN-ZD
☐ 4. WQ-CG

Q.61 A conical tent has a base radius of 14 m and a height of 48 m. How many cubic meters of air can it hold? (Use $\pi = \frac{22}{7}$)

- Ans ☐ 1. 8956
☒ 2. 9856
☐ 3. 9865
☐ 4. 9568

Q.62 Namia is facing the west. She turns left and walks 15 m. She turns left and walks 25 m. She again turns left and walks 40 m. She finally turns left and walks 40 m to reach home. In which direction is her home with respect to the starting point?

- Ans ☐ 1. South-East
☐ 2. South-West
☐ 3. North-East
☒ 4. North-West

Q.63 A trader marks an article 25% above its cost price. He allows a discount of 10% on the marked price. After giving the discount, he makes a profit of ₹180 on the article. What is the cost price of the article?

- Ans ☐ 1. ₹1,260
☐ 2. ₹1,200
☐ 3. ₹1,380
☒ 4. ₹1,440

Q.64 Three workers, X, Y, and Z, can complete a certain job in 10 days, 12 days, and 15 days, respectively. Determine the number of days required for them to complete the job when they work together.

- Ans ☐ 1. 8 days
☐ 2. 6 days
☐ 3. 5 days
☒ 4. 4 days

Q.65 What is an email used for?

- Ans ☐ 1. File storage
☐ 2. Creating documents
☒ 3. Sending messages
☐ 4. Data processing

Q.66 Which integrated strategy best addresses soil pollution, falling crop yields, and low microbial activity near an industrial zone?

- Ans ☐ 1. Expand urban areas into farmland.
☒ 2. Control industrial waste for sustainability.
☐ 3. Reforestation in nearby urban centers.
☐ 4. Ban all regional chemical fertilizers.

Q.67 A train X crosses a man who is sitting in another train Y, which is moving in the opposite direction, in 8 seconds. However, when both trains are moving in the same direction, train X takes 20 seconds to pass the same man. If the length of train X is 360 meters and the length of train Y (in which the man is sitting) is 240 meters, what is the speed of train Y?

- Ans ☒ 1. 48.6 km/h
☐ 2. 46.5 km/h
☐ 3. 45.3 km/h
☐ 4. 45.8 km/h

Q.68 The circumference of the base of a solid right circular cylinder is 88 cm and its height is 150 cm. What is the volume (in cm^3) of the cylinder?

(Take $\pi = \frac{22}{7}$)

- Ans ☒ 1. 92550
☒ 2. 92500
☒ 3. 92450
☒ 4. 92400

Q.69 In how many years will a sum of ₹16,000 at 10% per annum compounded semi-annually become ₹18,522?

- Ans ☒ 1. 2.5 years
☒ 2. 2 years
☒ 3. 1 year
☒ 4. 1.5 years

Q.70 A, B, C, D, X, Y and Z are sitting around a circular table facing the centre of the table. Only two people sit between X and Z when counted from the right of X. Only two people sit between Z and D. Only three people sit between X and B. A sits to the immediate left of C. Who sits third to the left of Y?

- Ans ☒ 1. X
☒ 2. C
☒ 3. Z
☒ 4. A

Q.71 E, F, G, H, L and M live on six different floors of the same building. The lowermost floor in the building is numbered 1, the floor above it, number 2 and so on, till the topmost floor is numbered 6. Only three people live above G. Only two people live between L and E. Only two people live between M and G. E lives below G but above F. How many people live below H?

- Ans ☒ 1. One
☒ 2. Four
☒ 3. Two
☒ 4. Three

Q.72 16 is related to 260 following a certain logic. Following the same logic, 25 is related to 630. To which of the following is 9 related, following the same logic?

(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 to/subtracting from/multiplying with 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

- Ans ☒ 1. 732
☒ 2. 84
☒ 3. 729
☒ 4. 78

Q.73 Which statement best describes a 'point' in engineering drawing?

- Ans ☒ 1. A point is a short line segment used to mark measurements.
☒ 2. A point is the intersection of two lines and always has measurable length.
☒ 3. A point represents a small area with both length and width.
☒ 4. A point indicates a precise location but has no size, length, or width.

Q.74 The average of 8 numbers is 45. If one number, 59, is removed, what will the new average be?

- Ans ☒ 1. 42.5
☒ 2. 42
☒ 3. 43
☒ 4. 41.5

Q.75 If 'A' stands for '+', 'B' stands for '-', 'C' stands for 'x' and 'D' stands for '÷', then what will come in place of the question mark (?) in the following equation?

31 B 35 D 7 A 9 C 2 = ?

- Ans ☒ 1. 46
☒ 2. 48
☒ 3. 44
☒ 4. 42

Q.76 An object has a mass of 10 kilograms. How does its weight on the Moon compare to its weight on Earth?

- Ans
- ☐ 1. The object weighs more on the Moon than on Earth
 - ☐ 2. The object weighs the same on both the Moon and Earth
 - ☐ 3. The object weighs zero on the Moon
 - ☒ 4. The object weighs less on the Moon than on Earth

Q.77 When using a hand file during fitting operations, which action demonstrates adherence to tool safety protocols?

- Ans
- ☐ 1. Applying excessive downward force when filing
 - ☐ 2. Filing above shoulder height for better leverage
 - ☒ 3. Fitting a proper handle securely to the tang
 - ☐ 4. Holding the file near its tang during filing work

Q.78 Below are given two sets of numbers. 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 to/subtracting from/multiplying with 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

10 - 100 - 50 - 25; 2 - 4 - 2 - 1

- Ans
- ☐ 1. 12 - 144 - 62 - 31
 - ☒ 2. 4 - 16 - 8 - 4
 - ☐ 3. 8 - 64 - 32 - 14
 - ☐ 4. 5 - 25 - 15 - 7

Q.79 A thermometer shows a reading of 37 degrees Celsius. What is the corresponding temperature in Kelvin?

- Ans
- ☒ 1. 310 K
 - ☐ 2. 320 K
 - ☐ 3. 300 K
 - ☐ 4. 270 K

Q.80 The median of the following data is :

25, 15, 23, 25, 17, 27, 20, 18, 24, 30, 19, 28, 35, 10, 31, 40

- Ans
- ☐ 1. 20.5
 - ☒ 2. 24.5
 - ☐ 3. 25
 - ☐ 4. 23.5

Q.81 A runner completes one lap of a 200 meter circular track in 50 seconds. What is the average speed of the runner?

- Ans
- ☐ 1. 3 meter per second
 - ☒ 2. 4 meter per second
 - ☐ 3. 3.5 meter per second
 - ☐ 4. 4.5 meter per second

Q.82 P, Q, R, S and T have different ages. T is elder than only one person. S is elder than P but younger than Q. R is elder than Q. Who is the youngest?

- Ans
- ☒ 1. P
 - ☐ 2. R
 - ☐ 3. Q
 - ☐ 4. S

Q.83 Which of the following best defines 'work' in physics?

- Ans
- ☐ 1. Work is done if a force acts at any angle to the motion.
 - ☒ 2. Work is done when a force moves an object in the direction of the force.
 - ☐ 3. Work is done when energy is stored in an object.
 - ☐ 4. Work is done whenever a force is applied, regardless of movement.

Q.84 O, P, Q, U and V have different heights. Only three people have heights between V and Q. P is taller than U but shorter than O. V is taller than Q.

How many people are shorter than P?

- Ans
- ☐ 1. Four
 - ☐ 2. One
 - ☐ 3. Three
 - ☒ 4. Two

Q.85 The simple interest earned on a certain sum of money for 3 years at 15% per annum is ₹2,700. Find the sum.

- Ans ☐ 1. ₹5,000
☐ 2. ₹9,000
☒ 3. ₹6,000
☐ 4. ₹8,000

Q.86 Select the pair which follows the same pattern as that followed by the two pairs given below. Both pairs follow the same pattern.

BIP : EMU
GNU : JRZ

- Ans ☐ 1. XDE : PON
☐ 2. CGW : NHT
☒ 3. FMT : IQY
☐ 4. VCD : GRD

Q.87 Which component makes up the largest proportion of Earth's atmosphere by volume?

- Ans ☐ 1. Oxygen
☐ 2. Argon
☐ 3. Carbon dioxide
☒ 4. Nitrogen

Q.88 Which situation best describes an entanglement hazard in a mechanical workshop?

- Ans ☒ 1. Loose clothing caught in a rotating shaft
☐ 2. Gloves worn near hot surfaces
☐ 3. Hand pinched between gears
☐ 4. Finger cut by a sharp edge

Q.89 A car travels 60 km north in 2 hours, then 40 km south in the next 1 hour. What is the car's average velocity over the entire trip?

- Ans ☐ 1. 20 km/h south
☒ 2. 6.7 km/h north
☐ 3. 33.3 km/h north
☐ 4. 0 km/h

Q.90 PJAE is related to JOWH in a certain way based on the English alphabetical order. In the same way, OIVC is related to INRF. To which of the following is NEZF related to following the same logic?

- Ans ☐ 1. IKUH
☐ 2. IJVJ
☒ 3. HJVI
☐ 4. HKVJ

Q.91 What should come in place of the question mark (?) in the given series?

74, 83, 101, 128, ?, 209

- Ans ☐ 1. 176
☒ 2. 164
☐ 3. 155
☐ 4. 146

Q.92 In a spreadsheet application, a user selects a range of cells and presses Ctrl + C, followed by Ctrl + V in a different worksheet. What happens to the data?

- Ans ☐ 1. The selected cells are deleted from the original worksheet.
☐ 2. The selected cells are saved to a new file.
☒ 3. The selected cells are copied to the new worksheet.
☐ 4. The selected cells are moved to the new worksheet.

Q.93 What is the typical temperature range covered by a laboratory thermometer used in school experiments?

- Ans ☐ 1. Minus fifty to fifty degrees Celsius
☐ 2. Thirty five to forty two degrees Celsius
☒ 3. Minus ten to one hundred and ten degrees Celsius
☐ 4. Zero to two hundred degrees Celsius

Q.94 A father distributed two different amounts among his sons P, Q, R and S. First amount was distributed in the ratio 5 : 4 : 3 : 2 and the second amount was distributed in the ratio 6 : 7 : 8 : 9. If the second amount is thrice the first amount, then which son will get the maximum amount?

- Ans ☒ 1. S
☐ 2. R
☐ 3. Q
☐ 4. P

Q.95 A car travels 90 km east and then 30 km west along the same straight road. If the entire journey takes 3 hours, what is the average velocity of the car?

- Ans ☐ 1. 40 km/h east
☐ 2. 50 km/h north
☐ 3. 30 km/h east
☒ 4. 20 km/h east

Q.96 A laboratory record shows a distance of 0.004 kilometers between two points. How should this be written in SI units of length for a scientific report?

- Ans ☐ 1. 400 cm
☒ 2. 4 m
☐ 3. 4000 mm
☐ 4. 0.4 m

Q.97 When a moving car suddenly applies brakes, its kinetic energy is transformed mainly into which form of energy?

- Ans ☐ 1. Light energy
☐ 2. Sound energy
☐ 3. Potential energy
☒ 4. Heat energy

Q.98 A car of mass 1200 kg accelerates from rest to a speed of 20 m/s on a straight road. If the kinetic energy gained by the car is completely due to the work done by the engine, which of the following best represents the total kinetic energy acquired by the car at this speed?

- Ans ☐ 1. 480,000 joules
☐ 2. 12,000 joules
☐ 3. 24,000 joules
☒ 4. 240,000 joules

Q.99 What is the main purpose of ambient air quality standards?

- Ans ☐ 1. To require all industries to reduce emissions by the exact same percentage.
☒ 2. To set legally permissible limits for specific pollutants to protect public health.
☐ 3. To focus exclusively on industrial operations while ignoring other sectors.
☐ 4. To ensure air is routinely sampled to map historical pollution trends.

Q.100 Two students move identical boxes through a distance of 10 m. Student A applies a force of 50 N, while Student B applies a force of 100 N. What is the difference in the work done by the two students?

- Ans ☐ 1. 50 J
☐ 2. 1000 J
☒ 3. 500 J
☐ 4. 0 J

Section : Part B (Mechanic Diesel)

Q.101 Which emission standard is currently enforced for diesel vehicles to limit harmful exhaust gases in India?

- Ans ☐ 1. Bharat Stage III
☐ 2. Bharat Stage VII
☐ 3. Bharat Stage IV
☒ 4. Bharat Stage VI

Q.102 Which sensor helps quiet diesel technology operate effectively?

- Ans ☐ 1. Engine oil temperature sensor
☐ 2. Fuel filter clog sensor
☒ 3. Crankshaft position sensor
☐ 4. Air intake pressure sensor

Q.103 Which engine part must work closely with the connecting rod to produce rotational movement?

- Ans
- ☐ 1. Cylinder head
 - ☐ 2. Fuel injector
 - ☒ 3. Crankshaft
 - ☐ 4. Oil filter

Q.104 In a single overhead camshaft diesel engine, how many camshafts are used for both intake and exhaust valves?

- Ans
- ☐ 1. Three
 - ☐ 2. Four
 - ☒ 3. One
 - ☐ 4. Two

Q.105 In which operation would a single-acting cylinder most likely provide the greatest efficiency?

- Ans
- ☐ 1. Regulating hydraulic fluid flow
 - ☐ 2. Extending and retracting a tool holder
 - ☒ 3. Ejecting finished components from a machine
 - ☐ 4. Opening and closing a heavy gate

Q.106 A mechanic inspects a diesel engine and finds the oil level indicator shows the oil is just at the 'Low' mark after running the engine for several hours. What is the most appropriate professional action to ensure engine protection?

- Ans
- ☒ 1. Add oil until the level reaches the Full mark as indicated
 - ☐ 2. Check the oil again without adding oil to confirm reading
 - ☐ 3. Continue running the engine until next scheduled maintenance
 - ☐ 4. Add oil until the stick is overfilled beyond Full mark

Q.107 In the context of diesel engines, which of the following best describes the primary objective of emission standards?

- Ans
- ☐ 1. Increase smoke emission
 - ☒ 2. Reduce pollution levels
 - ☐ 3. Reduce engine power
 - ☐ 4. Increase fuel wastage

Q.108 Where is the timing belt or timing chain generally located in a typical engine layout?

- Ans
- ☐ 1. Top section of the engine
 - ☐ 2. Bottom section of the engine
 - ☒ 3. Front section of the engine
 - ☐ 4. Middle section of the engine

Q.109 Which of the following best defines machine efficiency?

- Ans
- ☒ 1. Ratio of output to input
 - ☐ 2. Product of input and output
 - ☐ 3. Ratio of input to output
 - ☐ 4. Difference between input and output

Q.110 Which type of valves is most commonly used in diesel engine cylinder heads?

- Ans
- ☐ 1. Sleeve valve
 - ☒ 2. Poppet valve
 - ☐ 3. Rotary valve
 - ☐ 4. Needle valve

Q.111 In engineering drawing, what is another name for a pictorial/isometric drawing?

- Ans
- ☐ 1. Orthographic drawing
 - ☐ 2. Dimension drawing
 - ☒ 3. Three-dimensional drawing
 - ☐ 4. Sectional drawing

Q.112 During maintenance, a supervisor asks the role of a turbocharger when atmospheric pressure is low. How does it help the engine?

- Ans
- ☐ 1. It supplies extra fuel to the engine
 - ☐ 2. It lowers the engine noise produced
 - ☐ 3. It regulates the coolant flow to the engine
 - ☒ 4. It supplies sufficient air to the engine

Q.113 A marine diesel engine is fitted with a coolant system operating under increased pressure. During operation, the engine coolant temperature rises above normal limits. What is the most likely direct consequence regarding the coolant's boiling point due to the increased system pressure?

- Ans
- ☐ 1. The coolant will boil at a lower temperature under higher pressure.
 - ☐ 2. The boiling point of the coolant decreases with system pressure.
 - ☐ 3. The boiling point of the coolant remains unchanged at all pressures.
 - ☒ 4. The boiling point of the coolant increases with system pressure.

Q.114 Which practice helps maintain the accuracy of a steel rule during daily use?

- Ans
- ☐ 1. Measure hot metal parts
 - ☐ 2. Wash after every use
 - ☒ 3. Avoid dropping on floor
 - ☐ 4. Oil every hour of use

Q.115 Which of the following is a common cause of knocking noise in a diesel engine?

- Ans
- ☒ 1. Incorrect fuel injection timing
 - ☐ 2. Excessive engine oil
 - ☐ 3. Worn out piston rings
 - ☐ 4. Loose cylinder head bolts

Q.116 Why is it important for a temperature-resistant thread sealant to resist both thermal cycling and vibration in automotive environments?

- Ans
- ☒ 1. To prevent real-world leaks and seal degradation
 - ☐ 2. To withstand continuous high heat without vibration
 - ☐ 3. To ensure rapid curing under cold start conditions
 - ☐ 4. To facilitate easy removal of components after use

Q.117 In a battery, the electrolyte conducts electricity through movement of:

- Ans
- ☐ 1. Neutral atoms only
 - ☒ 2. Ions
 - ☐ 3. Free electrons only
 - ☐ 4. Magnetic domains

Q.118 The voltage regulator controls alternator voltage by varying the current flow to the:

- Ans
- ☒ 1. Rotor
 - ☐ 2. Battery
 - ☐ 3. Ammeter
 - ☐ 4. Stator

Q.119 Compression ignition engines are known for their ability to operate efficiently at which type of compression ratio?

- Ans
- ☐ 1. Medium compression ratio
 - ☐ 2. Low compression ratio
 - ☒ 3. High compression ratio
 - ☐ 4. Variable compression ratio

Q.120 Which factor is most important when selecting the material for main bearings in diesel engines?

- Ans
- ☒ 1. Ability to withstand cyclic loads
 - ☐ 2. Good machinability
 - ☐ 3. High thermal conductivity
 - ☐ 4. Low manufacturing cost

Q.121 What is a direct mechanical reason for low power generation in a diesel engine?

- Ans
- ☐ 1. Damaged fan belt
 - ☒ 2. Worn piston rings
 - ☐ 3. Faulty alternator
 - ☐ 4. Incorrect coolant level

Q.122 In a gravity feed system, what action causes fuel to start moving from the tank to the engine?

- Ans
- ☐ 1. Heating the fuel tank initiates fuel movement
 - ☒ 2. Releasing the fuel cock allows fuel to flow downward
 - ☐ 3. Activating the pump starts the fuel flow upward
 - ☐ 4. Pressurizing the fuel line pushes fuel forward

Q.123 What should be done if a toxic dust container is full in the workshop?

- Ans
- ☐ 1. Continue using the same container
 - ☐ 2. Mix dust in the container with general waste
 - ☐ 3. Leave the container open until convenient
 - ☒ 4. Seal and replace the container immediately

Q.124 Which components are connected to each end of the alternator rotor's field winding?

- Ans
- ☒ 1. Slip rings
 - ☐ 2. Diodes
 - ☐ 3. Iron poles
 - ☐ 4. Bearings

Q.125 Which part of the Vernier caliper slides along the main scale for measurement?

- Ans
- ☐ 1. Lock screw
 - ☐ 2. Depth rod
 - ☒ 3. Vernier scale
 - ☐ 4. Lower jaw

Q.126 A solar cell operates on the principle of the:

- Ans
- ☒ 1. Photovoltaic effect
 - ☐ 2. Heating effect
 - ☐ 3. Electrochemical effect
 - ☐ 4. Piezoelectric effect

Q.127 What happens to the armature and rotor in an electromagnetic coupling when the voltage is removed?

- Ans
- ☐ 1. Torque remains applied
 - ☐ 2. The armature stays connected
 - ☐ 3. The magnetic force holds them together
 - ☒ 4. The pre stressed spring separates them

Q.128 A customer complains about sluggish acceleration at low speeds in a diesel vehicle with a fixed-geometry turbocharger. How does a variable geometry turbocharger address this issue?

- Ans
- ☐ 1. By raising exhaust gas temperature automatically
 - ☒ 2. By altering turbine geometry to create boost at low speed
 - ☐ 3. By increasing fuel supply at low engine speeds
 - ☐ 4. By reducing exhaust manifold pressure at idle

Q.129 Which type of bearings is most commonly used for supporting the crankshaft in a diesel engine?

- Ans
- ☐ 1. Ball bearing
 - ☐ 2. Needle bearing
 - ☒ 3. Plain bearing
 - ☐ 4. Roller bearing

Q.130 What property is primarily strengthened in alloy steels through carburizing for piston pins?

- Ans
- ☐ 1. Thermal conductivity
 - ☐ 2. Ductility
 - ☐ 3. Corrosion resistance
 - ☒ 4. Surface hardness

Q.131 A diesel engine workshop tests a radiator by measuring the temperature of water entering and exiting the radiator core during a simulated run. What finding would best confirm that the radiator is performing its intended function?

- Ans
- ☒ 1. The water entering is significantly hotter than the water exiting
 - ☐ 2. The water temperature changes slightly with no significant difference
 - ☐ 3. The water entering is the same temperature as the water exiting
 - ☐ 4. The water exiting is significantly hotter than the water entering

Q.132 If a vehicle has two axles and each axle supports two wheels, what technical category does it fall under?

- Ans
- ☐ 1. It is grouped as a six-wheeler vehicle type
 - ☒ 2. It is classified as a four-wheeler vehicle type
 - ☐ 3. It is known as a three-wheeler vehicle type
 - ☐ 4. It is categorized as a two-wheeler vehicle type

Q.133 In a training scenario, a student is asked about the correct sequence in a forced feed system. Which order best reflects the movement of fuel from the tank to the combustion chamber?

- Ans
- ☒ 1. Fuel travels from injectors to water separator, then to tank, finally to combustion chamber
 - ☒ 2. Fuel moves from injection pump to filters, then to tank, finally to injectors
 - ☒ 3. Fuel bypasses filters, moves directly from tank to injectors, then to combustion chamber
 - ☒ 4. Fuel passes from tank to water separator, through filters, to injection pump, then injectors

Q.134 Which of the following has both magnitude and direction, making it a vector quantity?

- Ans
- ☒ 1. Time
 - ☒ 2. Distance
 - ☒ 3. Speed
 - ☒ 4. Velocity

Q.135 Which of the following statements correctly matches the units of mass with their respective systems?

- Ans
- ☒ 1. F.P.S system uses gram, C.G.S system uses kilogram, M.K.S system uses pound
 - ☒ 2. F.P.S system uses gram, C.G.S system uses pound, M.K.S system uses kilogram
 - ☒ 3. F.P.S system uses pound, C.G.S system uses gram, M.K.S system uses kilogram
 - ☒ 4. F.P.S system uses kilogram, C.G.S system uses pound, M.K.S system uses gram

Q.136 Which type of line is typically used to represent centre lines in engineering drawings?

- Ans
- ☒ 1. Continuous thin line
 - ☒ 2. Dashed thin line
 - ☒ 3. Chain thick
 - ☒ 4. Chain thin line

Q.137 In an alternator stator, how are the windings typically connected in lightweight stator units?

- Ans
- ☒ 1. Star connected
 - ☒ 2. Series connected
 - ☒ 3. Delta connected
 - ☒ 4. Parallel connected

Q.138 Which process is initiated when the cooling fan operates as designed in a diesel engine cooling system?

- Ans
- ☒ 1. Fuel is circulated faster through the injector pump
 - ☒ 2. Air is drawn through radiator fins, cooling engine coolant
 - ☒ 3. Air is filtered before entering the combustion chamber
 - ☒ 4. Electric current is increased by the alternator circuit

Q.139 In which application is an external gear pump commonly used in the field of hydraulics?

- Ans
- ☒ 1. Compressing fuel in injectors
 - ☒ 2. Supplying oil to hydraulic systems
 - ☒ 3. Transferring air in pneumatic systems
 - ☒ 4. Lubricating bearings in engines

Q.140 Which combination of materials is commonly used for the construction of a cross-cut chisel's body and edge?

- Ans
- ☒ 1. Body of hardened steel, edge of mild steel
 - ☒ 2. Body and edge both brass
 - ☒ 3. Body of mild steel, edge of hardened steel
 - ☒ 4. Body and edge both mild steel

Q.141 In a transformer, if primary conditions remain constant, increasing the number of turns in the secondary winding causes the secondary voltage to:

- Ans
- ☒ 1. Remain unchanged
 - ☒ 2. Decrease
 - ☒ 3. Increase
 - ☒ 4. Become zero

Q.142 In a parallel connection, all branches connected across the same two nodes have :

- Ans
- ☒ 1. Equal power dissipation
 - ☒ 2. Zero resistance
 - ☒ 3. Different currents only
 - ☒ 4. Equal voltage

Q.143 A diesel mechanic observes that certain engine parts show signs of rust after a long period without maintenance. Which function of lubricating oil is most relevant in preventing this scenario, considering its role in corrosion reduction?

- Ans
- ☐ 1. Neutralizing acids produced during combustion
 - ☐ 2. Facilitating heat transfer within engine parts
 - ☐ 3. Reducing mechanical friction among moving parts
 - ☒ 4. Forming a protective barrier over metal surfaces

Q.144 A diesel engine manufacturer needs to ensure rapid and consistent coolant flow through the engine regardless of its operating temperature. Which cooling system design should be selected to meet this requirement?

- Ans
- ☒ 1. Pump circulation system provides rapid and consistent coolant flow
 - ☐ 2. Thermosyphon system provides rapid and consistent coolant flow
 - ☐ 3. Water cooling system provides rapid and consistent coolant flow
 - ☐ 4. Air cooling system provides rapid and consistent coolant flow

Q.145 A diesel mechanic compares engine types and finds one where each cylinder contains two pistons attached to separate connecting rods. What operational benefit is most associated with this engine type?

- Ans
- ☒ 1. Achieving a higher power to weight ratio is most associated with this engine type.
 - ☐ 2. Improving engine cooling efficiency is most associated with this engine type.
 - ☐ 3. Simplifying engine maintenance tasks is most associated with this engine type.
 - ☐ 4. Reducing overall fuel consumption is most associated with this engine type.

Q.146 Which component is commonly used in evaporative emission control systems to store fuel vapors temporarily?

- Ans
- ☐ 1. Radiator expansion tank
 - ☒ 2. Activated charcoal canister
 - ☐ 3. Air filter case housing
 - ☐ 4. Oil separator ball valve

Q.147 A commercial vehicle manufacturer plans to design a new city bus for frequent stop-and-go urban traffic. Which engine layout would most effectively facilitate easy passenger boarding, maximize internal space, and support rear-driven axles for better traction, given the operational requirements?

- Ans
- ☐ 1. Selecting a rear longitudinal engine layout for the bus design
 - ☒ 2. Selecting a rear transverse engine layout for the bus design
 - ☐ 3. Selecting a front transverse engine layout for the bus design
 - ☐ 4. Selecting a front longitudinal engine layout for the bus design

Q.148 What is the main function of the adjustment feature on a micrometer?

- Ans
- ☐ 1. To lock the spindle for repeated readings
 - ☐ 2. To increase the measurement range
 - ☐ 3. To change the scale type used
 - ☒ 4. To set the zero reading for accuracy

Q.149 Which property makes particulates from diesel engines particularly harmful in urban environments?

- Ans
- ☐ 1. Particulates neutralize when exposed to sunlight
 - ☐ 2. Particulates dissolve rapidly in water near cities
 - ☒ 3. Particulates remain suspended in air for long periods
 - ☐ 4. Particulates settle quickly on ground surfaces

Q.150 Which of the following actions is the safest procedure if fuel is accidentally spilled in a workshop environment?

- Ans
- ☐ 1. Apply water directly to the spill area so that the fuel is immediately diluted.
 - ☒ 2. Clean the spill using approved absorbents and dispose of it as per guidelines
 - ☐ 3. Ignore the spilled fuel completely and allow yourself to continue working as normal.
 - ☐ 4. Leave the spill completely unattended and deal with it only at the end of the shift.

Q.151 An automotive technician needs to ensure the camshaft is not bent during installation. How can a dial indicator assist in this process?

- Ans
- ☒ 1. By measuring the camshaft's straightness as it is rotated and noting any deviation
 - ☐ 2. By measuring the camshaft lobe base circle diameter at a completely fixed position
 - ☐ 3. By ensuring the camshaft journals are properly lubricated prior to the installation
 - ☐ 4. By verifying the camshaft achieves the specified torque value after final tightening

Q.152 Which issue complicates the implementation of quiet diesel engines?

- Ans
- ☐ 1. Designing larger injectors
 - ☒ 2. Precise control of injection timing
 - ☐ 3. Using simpler fuel lines
 - ☐ 4. Operating at lower injection pressure

Q.153 Which tool is most appropriate for marking parts before removing them during diesel engine dismantling to ensure correct reassembly?

- Ans
- ☐ 1. A metal brush.
 - ☐ 2. A barrette file.
 - ☒ 3. A center punch.
 - ☐ 4. An adjustable wrench.

Q.154 Why are compression ignition engines NOT preferred for high-speed applications?

- Ans
- ☐ 1. Produces no torque at high speeds
 - ☐ 2. Smooth operation which decreases speed
 - ☒ 3. Heavier components reduce maximum speed
 - ☐ 4. Requires a complex ignition system

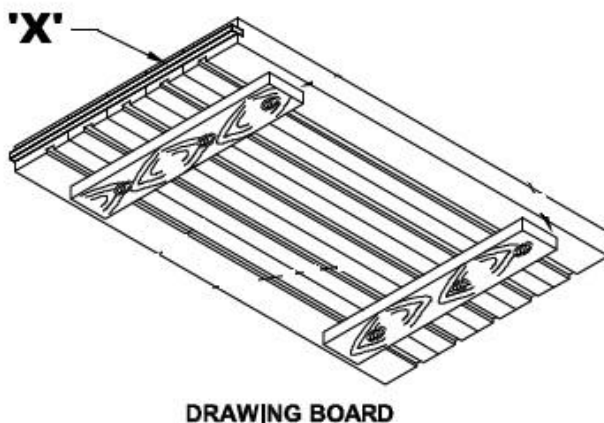
Q.155 An industrial diesel engine fitted with an automatic shutdown system begins to overheat. Which stopping method will the system typically initiate to ensure rapid and safe engine stoppage?

- Ans
- ☐ 1. Disconnecting the starter motor circuit fully
 - ☐ 2. Blocking the air intake using a shutoff flap
 - ☐ 3. Engaging the decompression lever automatically
 - ☒ 4. Cutting the fuel supply via solenoid valve action

Q.156 Which statement describes the main function of a die stock in the context of threading tools?

- Ans
- ☐ 1. It cleans debris from newly cut threads
 - ☐ 2. It measures the diameter of threads during threading operations
 - ☐ 3. It sharpens the cutting edges of dies
 - ☒ 4. It securely holds the die to cut external threads on rods or pipes

Q.157 What is the name of the part of the shorter edges of the drawing board shown in the figure that is marked with 'X'?



- Ans
- ☐ 1. Drawing pin
 - ☐ 2. Battens
 - ☒ 3. Ebony edge
 - ☐ 4. Wooden Strips

Q.158 If a flat chisel is used instead of a center punch before drilling, what problem might occur?

- Ans
- ☐ 1. Drill will make a larger hole
 - ☐ 2. Drill will cut faster
 - ☐ 3. Workpiece will become softer
 - ☒ 4. Drill bit may slip off the spot

Q.159 Excessive oil consumption in a diesel engine, accompanied by thick blue smoke emitting from the exhaust, most likely indicates:

- Ans
- ☒ 1. Piston rings worn out
 - ☐ 2. Worn out gudgeon pins
 - ☐ 3. Low coolant level
 - ☐ 4. High oil level in the sump

Q.160 When proper safety procedures are followed, compressed air may be used for many workshop tasks. Which of the following should never be done with compressed air?

- Ans
- ☒ 1. Clean machine surfaces
 - ☒ 2. Operate pneumatic tools
 - ☒ 3. Inflate vehicle tyres
 - ☒ 4. Remove dust from clothes

Q.161 If the battery is too weak to operate the starter motor, which starting method can be used in a suitable manual-transmission vehicle?

- Ans
- ☒ 1. Starting the vehicle by starter motor.
 - ☒ 2. Starting the vehicle by ignition switch.
 - ☒ 3. Starting the vehicle by push-starting.
 - ☒ 4. Starting the vehicle by remote switch.

Q.162 A technician observes that after a diesel engine runs for several hours, the vehicle's exhaust sound becomes much louder and a strong smell is detected at the tail pipe. What is the most probable function of the muffler being compromised in this situation?

- Ans
- ☒ 1. To regulate exhaust back pressure for engine braking
 - ☒ 2. To redirect exhaust gases and control flow only
 - ☒ 3. To convert exhaust gases and neutralize pollutants
 - ☒ 4. To silence exhaust noise and cool gases before exit

Q.163 A key advantage of using a lubricating compound in thread sealing is that it:

- Ans
- ☒ 1. Accelerates the curing of sealant used
 - ☒ 2. Acts as a solvent for contaminants present
 - ☒ 3. Improves thread strength significantly
 - ☒ 4. Prevents galling and seizing of threads

Q.164 During a batch production task, the operator must switch quickly between different sizes of workpieces. Which drill vice feature will improve efficiency without compromising holding security?

- Ans
- ☒ 1. Fixed jaws with no jaw adjustment capability
 - ☒ 2. Manual unscrewing of vice jaws for each workpiece change
 - ☒ 3. Quick-release mechanism with adjustable jaw inserts
 - ☒ 4. Elastic bands added to standard vice jaws being used

Q.165 In what way does contrast marking contribute to workshop safety?

- Ans
- ☒ 1. Raises cutting speed
 - ☒ 2. Minimizes chance of miscuts
 - ☒ 3. Decreases lighting needs
 - ☒ 4. Increases oil spillage

Q.166 When selecting a drill bit for making precise holes in a hard metal workpiece, which feature should be prioritized to ensure accuracy and tool life?

- Ans
- ☒ 1. The drill bit must have a decorative coating and short overall length.
 - ☒ 2. The drill bit should be made up of carbon steel and have a flat tip.
 - ☒ 3. The drill bit should have a long flute length and no coating at all.
 - ☒ 4. Drill bits need appropriate point angles and must be HSS or carbide.

Q.167 Which bearing applications in diesel engines make use of bronze materials?

- Ans
- ☒ 1. Bushings
 - ☒ 2. Camshaft bearings
 - ☒ 3. Connecting rod bearings
 - ☒ 4. Main bearings

Q.168 In Third Angle Projection, onto which plane is the elevation of an object projected?

- Ans
- ☒ 1. Vertical plane
 - ☒ 2. Auxiliary plane
 - ☒ 3. Horizontal plane
 - ☒ 4. Inclined plane

Q.169 Which component works directly with engine valves to manage air and exhaust flow in a diesel engine?

- Ans
- ☒ 1. The crankshaft
 - ☒ 2. The camshaft
 - ☒ 3. The fuel injector
 - ☒ 4. The flywheel

Q.170 Which mechanism acts as a lever to open the engine valve when pushed by the push rod in a diesel engine?

- Ans ☒ 1. **Rocker arm mechanism**
☒ 2. Tappet mechanism
☒ 3. Camshaft mechanism
☒ 4. Push rod mechanism
-

Q.171 An engine test reveals that the feed pump supplies inconsistent amounts of fuel to the filters under varying engine speeds. What is the most likely explanation for this behavior, considering the feed pump's design and function?

- Ans ☒ 1. Air entering the fuel tank causes irregular fuel supply patterns.
☒ 2. **The camshaft-driven feed pump varies delivery with engine speed changes.**
☒ 3. A clogged fuel filter causes fluctuating pressure in the system.
☒ 4. The injector opening pressure changes with engine temperature.
-

Q.172 Which component typically initiates the oil splash in a splash lubrication system?

- Ans ☒ 1. The vibrating crankcase
☒ 2. The intake valve
☒ 3. **The rotating crankshaft**
☒ 4. The vibrating cylinder head
-

Q.173 In a real-life scenario, how should a mechanic systematically diagnose and remedy persistent high engine oil pressure involving multiple possible causes?

- Ans ☒ 1. Adjust fuel mixture, check battery terminals, and clean spark plugs
☒ 2. Replace coolant, inspect radiator, and adjust idle speed
☒ 3. Clean exhaust manifold, replace air filter, and tighten cylinder head bolts
☒ 4. **Check oil viscosity, inspect relief valve, clean oil filter, and verify oil pump operation**
-

Q.174 Which electrical component fault can completely interrupt power supply to the ignition and starter circuits, causing engine not starting?

- Ans ☒ 1. **Main fuse blown off**
☒ 2. Air lock in fuel system
☒ 3. Defective starting relay
☒ 4. Defective brushes in starter
-

Q.175 What is the main function of a direction control valve in a hydraulic system?

- Ans ☒ 1. **To control the path of fluid flow**
☒ 2. To adjust fluid temperature
☒ 3. To regulate system pressure
☒ 4. To filter contaminants from fluid
-



रेल भर्ती बोर्ड / RAILWAY RECRUITMENT BOARDS

सी ई एन - ०१/२०२५ - CEN - 01/2025

सहायक लोको पायलट की भर्ती/ Recruitment of Assistant Loco Pilot



Exam	RRB ALP 2025 CBT 2 (CEN 01/2025)
Paper	Mechanic Diesel
Test Date	28 Jul 2026
Test Time	2:30 PM - 5:00 PM
Language	English

* Note

Correct answer carries 1 mark; each incorrect answer carries a negative mark of 1/3.

1. The option shown in green with a tick is the correct answer as per the official answer key.

2. RRB shuffles question order for every candidate inside each Part; this paper follows the order of one real response sheet.

Section : Part A

Q.1 Which of the following correctly states the full form of CD and the technology used to store data on it?

- Ans ☒ 1. Compact Disc, Optical Storage
☒ 2. Compact Drive, Optical Storage
☒ 3. Compact Disc, Magnetic Storage
☒ 4. Compact Drive, Magnetic Storage

Q.2 A ramp is used to lift a box to a platform 2 m high. To reduce the effort required, the ramp length is increased from 4 m to 8 m. Assuming negligible friction, what remains unchanged?

- Ans ☒ 1. The mechanical advantage
☒ 2. The work done in raising the box
☒ 3. The force required
☒ 4. The distance moved along the ramp

Q.3 A car travels from point A to point B in a zigzag path, covering a total distance of 200 meters. If the shortest straight-line distance between A and B is 120 meters, which statement best describes the car's distance and displacement?

- Ans ☒ 1. The distance is 120 meters; the displacement is 200 meters
☒ 2. The distance is 200 meters; the displacement is 200 meters
☒ 3. The distance is 200 meters; the displacement is 120 meters
☒ 4. The distance is 120 meters; the displacement is 120 meters

Q.4 Which statement best describes how the mass and speed of an object affect its kinetic energy?

- Ans ☒ 1. An object with less mass and lower speed will have more kinetic energy.
☒ 2. An object with greater mass and higher speed will have more kinetic energy.
☒ 3. An object with same mass but higher speed will have less kinetic energy.
☒ 4. An object with greater mass but lower speed will have more kinetic energy.

Q.5 What is a key feature of single stroke lettering in technical drawings?

- Ans ☒ 1. Each character is made with several parallel lines.
☒ 2. Each character is made with one continuous stroke.
☒ 3. Each character is outlined and then filled.
☒ 4. Each character is shaded after drawing.

Q.6 Two trains are moving in opposite directions. The first train is 120 m long and runs at 54 km/h. The second train is 180 m long and runs at 72 km/h. How much time will they take to cross each other completely? (Rounded up to two decimal places)

- Ans ☒ 1. 7.57 seconds
☒ 2. 8.43 seconds
☒ 3. 8.57 seconds
☒ 4. 9.25 seconds

Q.7 Refer to the given letter series and answer the question that follows. Counting to be done from left to right only.

(Left) H S A N D D I A D F P A J O S K I O Z O T X (Right)

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

- Ans ☒ 1. Six
☒ 2. Five
☒ 3. Three
☒ 4. Four

Q.8 What information does a kilometer stone provide to travelers on a road?

- Ans ☒ 1. Direction of travel
☒ 2. Distance from a reference point
☒ 3. Time taken to reach destination
☒ 4. Speed of the vehicle

Q.9 Which of the following is the best example of municipal solid waste?

- Ans ☒ 1. Hospital biomedical waste
☒ 2. Mining tailings
☒ 3. Industrial process waste
☒ 4. Household kitchen garbage

Q.10 Which tool safety measure best prevents injuries when cleaning a workshop lathe after use?

- Ans ☒ 1. Using a rag to remove metal dust from the lathe
☒ 2. Wiping metal chips using bare hands directly
☒ 3. Using a brush to remove metal chips from the lathe
☒ 4. Blowing chips away with compressed air around the lathe

Q.11 P, Q and R are three batsmen. The ratios of runs scored by them in a certain match were as follows:

$P : Q = 5 : 7$ and $Q : R = 2 : 3$.

If they scored a total of 765 runs, then find the number of runs scored by R.

- Ans ☒ 1. 378
☒ 2. 350
☒ 3. 357
☒ 4. 336

Q.12 A sum of money invested at simple interest amounts to ₹21,500 in 5 years and ₹26,000 in 8 years. Find the principal amount (in ₹).

- Ans ☒ 1. 7,500
☒ 2. 15,500
☒ 3. 12,000
☒ 4. 14,000

Q.13 A cyclist travels from the kilometer stone marked 52 to the stone marked 79. How far has the cyclist traveled?

- Ans ☒ 1. 27 kilometers
☒ 2. 31 kilometers
☒ 3. 52 kilometers
☒ 4. 131 kilometers

Q.14 What is the primary role of the Central Processing Unit (CPU) in a computer system?

- Ans ☒ 1. To store long-term data
☒ 2. To execute program instructions
☒ 3. To manage network connections
☒ 4. To display output on the screen

Q.15 Five students, N, O, R, S and T, have different heights. T is taller than N. R is taller than S but shorter than O. S is taller than N. More than two people are taller than T. How many people are shorter than R?

- Ans ☒ 1. Two
☒ 2. None
☒ 3. One
☒ 4. Three

Q.16 Why are electric wires in household appliances usually covered with plastic or rubber coating?

- Ans ☒ 1. To prevent electric shocks by insulation
☒ 2. To produce more heat
☒ 3. To make the wires heavier
☒ 4. To increase the flow of current

Q.17 A hiker lifts a backpack from the ground to a ledge 2 meters above the ground. Which situation would result in the greatest increase in the backpack's gravitational potential energy?

- Ans ☒ 1. Carrying the same backpack horizontally for 2 meters
☒ 2. Lifting a heavier backpack to the same 2-meter ledge
☒ 3. Lifting the same backpack to a 1-meter ledge
☒ 4. Lifting a lighter backpack to the same 2-meter ledge

Q.18 When drawing repeated 67° angles on an engineering sheet, which practice best helps minimize cumulative alignment errors?

- Ans
- ☒ 1. Drawing all angles continuously without intermediate verification
 - ☒ 2. Using the same reference line for all repeated angles
 - ☒ 3. Relying solely on the initial protractor alignment for all angles
 - ☒ 4. Marking all angles lightly with a pencil before finalizing

Q.19 Why does biomedical waste require special handling compared to general municipal waste?

- Ans
- ☒ 1. It may contain infectious agents that pose health risks.
 - ☒ 2. It is more likely to be recycled than other types of waste.
 - ☒ 3. It has higher chemical content and is always toxic.
 - ☒ 4. It is always radioactive and requires heavy shielding.

Q.20 Refer to the given letter series and answer the question that follows.

(Left) A X T N K R Q K C P S I D F J U D O R G Z M B E L (Right)

How many letters are there in the English alphabetical series between the letter that is fourth from the right end and the letter that is third from the left end of the series?

- Ans
- ☒ 1. 3
 - ☒ 2. 4
 - ☒ 3. 6
 - ☒ 4. 5

Q.21 If $x + \frac{1}{x} = 5$, then $\frac{x^3 - 5x^2 + 5x}{x^2 + 1}$ is equal to:

- Ans
- ☒ 1. $\frac{1}{5}$
 - ☒ 2. $\frac{4}{5}$
 - ☒ 3. $\frac{2}{5}$
 - ☒ 4. $\frac{3}{5}$

Q.22 The cost of a diamond varies directly with the square of its weight. A diamond broke into four pieces with weights in the ratio 2:4:1:3. If it had been broken into four equal pieces, the loss would have been ₹60,000. What was the original cost of the diamond?

- Ans
- ☒ 1. ₹80,000
 - ☒ 2. ₹78,000
 - ☒ 3. ₹75,000
 - ☒ 4. ₹82,000

Q.23 A, B, C, D and E have different heights. E is taller than C but shorter than A. Only one person is taller than A. D is shorter than C. Who amongst them is the third tallest?

- Ans
- ☒ 1. C
 - ☒ 2. A
 - ☒ 3. E
 - ☒ 4. B

Q.24 Simplify the following expression.

$$11 \text{ of } 7 + 125 \div 5 + 99 \div 11 \times 7 - 17 \text{ of } 7 + 7 \times 6 - (91 \div 7 + 7 \times 5)$$

- Ans
- ☒ 1. 48
 - ☒ 2. 36
 - ☒ 3. 40
 - ☒ 4. 44

Q.25 G is the mother of Y. Y is the sister of V. S is the father of L. L is the son of V. How is G related to L?

- Ans
- ☒ 1. Mother
 - ☒ 2. Sister
 - ☒ 3. Mother's mother
 - ☒ 4. Mother's sister

Q.26 Which symbol best represents a battery in an electric circuit diagram according to standard conventions?

- Ans
- ☒ 1. Two short lines placed together
 - ☒ 2. A single long line only
 - ☒ 3. Two circles connected in series
 - ☒ 4. A pair of long and short parallel lines placed alternately

Q.27 An astronaut weighs 600 N on Earth. During a moon mission, she performs an experiment to measure her weight on the moon. Which value is closest to her expected weight on the moon, and why?

- Ans ☒ 1. 200 N, because the Moon's gravity is about one-third of Earth's.
☒ 2. 100 N, because the Moon's gravity is about one-sixth of Earth's.
☒ 3. 600 N, because a person's weight remains unchanged on the Moon.
☒ 4. 300 N, because the Moon's gravity is about one-half of Earth's.

Q.28 If the height of an object is doubled while its mass remains constant, its gravitational potential energy will be:

- Ans ☒ 1. unchanged
☒ 2. decreased to one-fourth
☒ 3. halved
☒ 4. doubled

Q.29 A pump can fill a tank in 3 hours. Due to a leak in the tank, it takes 4.5 hours to fill the tank. In how much time can the leak empty the full tank if no other entry or exit routes are open?

- Ans ☒ 1. 7 hours
☒ 2. 9 hours
☒ 3. 8 hours
☒ 4. 6 hours

Q.30 SANZ is related to YUTT in a certain way based on the English alphabetical order. In the same way, MTHM is related to SNNG. To which of the following is LJRE related to following the same logic?

- Ans ☒ 1. QEYZ
☒ 2. REXZ
☒ 3. QDYY
☒ 4. RDXY

Q.31 If 2 is subtracted from each odd digit and 2 is added to each even digit in the number 235234796423, what will be the sum of the digits that are third from the left and third from the right?

- Ans ☒ 1. 9
☒ 2. 6
☒ 3. 8
☒ 4. 7

Q.32 Pipes A and B can fill an entire tank in 8 hours and 12 hours, respectively. The water tank is one-fourth full. If both the pipes are opened together, then how long will it take to fill the remaining part of the tank?

- Ans ☒ 1. 3 hours 26 minutes
☒ 2. 3 hours 6 minutes
☒ 3. 3 hours 16 minutes
☒ 4. 3 hours 36 minutes

Q.33 If a rectangular field is measured to be 120 meters long and 75 meters wide, what is its area in SI units?

- Ans ☒ 1. 19500 square meters
☒ 2. 15000 square meters
☒ 3. 1800 square meters
☒ 4. 9000 square meters

Q.34 Refer to the following letter series and answer the question that follows. (Counting to be done from left to right only.)

(Left) Q K Q N X K G G V M L A W T W K N G V (Right)

How many such consonants are there each of which is immediately preceded by a vowel and also immediately followed by a consonant?

- Ans ☒ 1. None
☒ 2. Two
☒ 3. Three
☒ 4. One

Q.35 What should come in place of the question mark (?) in the given series based on the English alphabetical order?

MDB PHE SLH VPK ?

- Ans ☒ 1. YTN
☒ 2. ZTM
☒ 3. XSM
☒ 4. ZUO

Q.36 The average of five numbers is 30. If four of the numbers are 25, 35, 28 and 32, then what is the fifth number?

- Ans ☒ 1. 35
☒ 2. 28
☒ 3. 30
☒ 4. 32

Q.37 An engineering firm is tasked with creating a set of technical drawings for a large-scale project. The client specifies that all components must fit on a single sheet without reducing the drawing scale, and the total drawing area required is approximately 1 square meter. Based on standard drawing sheet sizes, which sheet should the firm select to best meet these requirements?

- Ans ☒ 1. A0 size sheet
☒ 2. A2 size sheet
☒ 3. A3 size sheet
☒ 4. A1 size sheet

Q.38 A question is followed by two statements numbered (I) and (II). You have to decide whether the data provided in the statements are sufficient to answer the question. Read both the statements and select the most appropriate answer.

Question:

Among five trees N, O, R, S, and T, each having a different height, which tree is the tallest?

Statements:

- (I) T is taller than R. N is taller than T.
(II) R is shorter than O but taller than S.

- Ans ☒ 1. Both statements I and II together are NOT sufficient to answer the question
☒ 2. Data in Statement I alone is sufficient to answer the question while data in statement II is not
☒ 3. Both statements I and II together (and not statement I alone or statement II alone) are sufficient to answer the question
☒ 4. Data in Statement II alone is sufficient to answer the question while data in statement I is not

Q.39 A laboratory thermometer has a range from -10 degrees Celsius to 110 degrees Celsius and 120 equal divisions. What is the smallest value that this thermometer can read?

- Ans ☒ 1. 10 degrees Celsius
☒ 2. 1 degree Celsius
☒ 3. 0.5 degrees Celsius
☒ 4. 2 degrees Celsius

Q.40 A, B, C, D, X, Y and Z are sitting around a circular table facing the centre of the table. Only two people sit between Y and C when counted from the left of C. D sits third to the left of B. A sits to the immediate right of B. A sits second to the left of Y. Z is not an immediate neighbor of D. Who sits third to the right of X?

- Ans ☒ 1. A
☒ 2. C
☒ 3. Y
☒ 4. D

Q.41 Which intervention most effectively reduces ground-level pollutant concentrations during a winter temperature inversion?

- Ans ☒ 1. Reducing local wind speed to minimize horizontal dispersion
☒ 2. Increasing surface temperatures near emission sources
☒ 3. Elevating emission sources above inversion layers
☒ 4. Enhancing vertical air mixing through artificial turbulence

Q.42 Which of the following letter-number clusters will replace the question mark (?) in the given series to make it logically complete?

GXM 5, JVN 11, MTO 24, PRP 51, ?

- Ans ☒ 1. SPQ 107
☒ 2. SPQ 106
☒ 3. TPQ 106
☒ 4. TPQ 107

Q.43 If the mean of the following data is 45, then what is the value of x?

Class	10-20	20-30	30-40	40-50	50-60
Frequency	23	30	31	45	X

- Ans ☒ 1. 160
☒ 2. 188
☒ 3. 180
☒ 4. 162

Q.44 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.)

- Ans ☒ 1. PJ-QK
☒ 2. HB-IC
☒ 3. FZ-GA
☒ 4. RL-SN

Q.45 Read the given statement(s) and conclusions carefully. Assuming that the information given in the statement(s) 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 statement(s).

Statements:

All chocolates are paneers.
No paneer is a milk.

Conclusions:

- (I) No chocolate is a milk.
(II) Some milks are paneers.

- Ans ☒ 1. Both conclusions (I) and (II) follow.
☒ 2. Neither conclusion (I) nor (II) follows.
☒ 3. Only conclusion (II) follows.
☒ 4. Only conclusion (I) follows.

Q.46 Sohan covers a total distance of 760 km to reach his home, traveling partly by train and partly by car. He takes 8 hours when he travels 160 km by train and the rest by car. If he travels 240 km by train and the remaining distance by car, his journey takes 12 minutes longer. Find the difference between the speeds of the train and the car.

- Ans ☒ 1. 23 km/h
☒ 2. 21 km/h
☒ 3. 20 km/h
☒ 4. 27 km/h

Q.47 Which scenario best demonstrates proactive workplace safety behavior?

- Ans ☒ 1. Identifying and correcting hazards before accidents occur
☒ 2. Discussing only past safety problems in meetings
☒ 3. Reporting hazards after incidents happen
☒ 4. Waiting for a supervisor to notice hazards

Q.48 Which combination best describes the main environmental challenges associated with plastic waste management?

- Ans ☒ 1. Persistence in the environment and microplastic formation
☒ 2. Thermal pollution and effective composting
☒ 3. Neutralization and easy recycling
☒ 4. Rapid biodegradation and chemical leaching

Q.49 A boy uses a wheelbarrow to carry sand. The wheel acts as the pivot, the sand is placed in the tray, and the boy lifts the handles. In this arrangement, the sand represents _____.

- Ans ☒ 1. Effort
☒ 2. Fulcrum
☒ 3. Load
☒ 4. Arm

Q.50 The mean of 11 numbers is 10.9. If the mean of the first 6 numbers is 10.5 and the mean of the last 6 numbers is 11.4, then find the 6th number.

- Ans ☒ 1. 10
☒ 2. 10.5
☒ 3. 11.5
☒ 4. 11

Q.51 Srinu starts from his home and drives 2 km towards the south, then takes a right turn and drives 5 km. He then takes a right turn and drives 6 km before taking a right turn again and driving 4 km further. Srinu finally takes a right turn and drives 4 km before stopping at his office. In which direction should Srinu drive to reach his home again? (All turns are 90-degree turns only unless specified.)

- Ans ☒ 1. East
☒ 2. West
☒ 3. North
☒ 4. South

Q.52 When a cutting plane line passes through a hole and a rib, which feature should be sectioned in the resulting view according to standard conventions?

- Ans ☒ 1. The hole is sectioned but the rib is shown unsectioned
☐ 2. Both the hole and the rib are shown unsectioned
☐ 3. Both the hole and the rib are shown sectioned
☐ 4. The rib is sectioned but the hole is left unsectioned

Q.53 If $3x - 2y + 3z = 8$, $4x - 3y + 2z = 4$ and $2x + y - z = 1$, then find x, y and z, respectively.

- Ans ☒ 1. 1, 2 and 3
☐ 2. 2, 1 and 3
☐ 3. 3, 1 and 2
☐ 4. 2, 3 and 1

Q.54 Which statement best describes the side view in engineering drawing?

- Ans ☐ 1. It shows the object as seen clearly from the front
☒ 2. It shows the object as seen from left or right side
☐ 3. It shows a combination of all views of the object
☐ 4. It shows the object as seen from above or below

Q.55 Which of the following statements best describes a cuboid as used in engineering drawing?

- Ans ☐ 1. A cuboid has all sides and angles equal, making it similar to a cube.
☐ 2. A cuboid is a solid where all faces are parallelograms but not necessarily rectangles.
☒ 3. A cuboid is a solid with six rectangular faces, and opposite faces are equal.
☐ 4. A cuboid has all faces as squares of equal size.

Q.56 What is the primary purpose of a Local Area Network (LAN)?

- Ans ☒ 1. To connect computers within a small geographical area
☐ 2. To connect global networks
☐ 3. To connect social media accounts
☐ 4. To link wireless devices only

Q.57 A group of numbers/symbols is coded using letter codes as per the codes given below and the conditions that follow. The correct combination of codes following the conditions is your answer.

Note: If none of the conditions follow, then the codes for the respective number/symbol are to be followed directly as given in the table.

Number/symbol	3	@	8	4	\$	&	2	%	#	1	+	9	7	5
Code	U	G	B	K	M	F	X	R	E	Q	S	C	V	T

Conditions –

- (i) If the first element is a symbol and the last element an odd number, the codes for these two (the first and the last elements) are to be interchanged.
(ii) If the first element is an odd number and the last an even number, the first and the last elements are to be coded as ©
(iii) If both second and third elements are perfect squares, the third element is to be coded as the code for the second element.

What will be the code for the following group?

& 8 \$ 9 5

- Ans ☐ 1. FCBMT
☐ 2. FBMCT
☒ 3. TBMCF
☐ 4. TCMBF

Q.58 What will come in the place of '?' in the following equation, if '+' and '-' are interchanged and 'x' and '÷' are interchanged?
 $5 \div 3 + 15 \times 5 - 3 = ?$

- Ans ☒ 1. 15
☐ 2. 9
☐ 3. 18
☐ 4. 12

Q.59 Why is a room thermometer generally mounted vertically on a wall?

- Ans ☐ 1. It prevents the liquid from freezing inside the thermometer.
☐ 2. It helps the thermometer measure body temperature faster.
☒ 3. It ensures accurate reading by keeping the bulb exposed to room air.
☐ 4. It protects the thermometer from breaking easily.

Q.60 An engineer is updating a schematic for a control panel and needs to indicate a normally closed push button. Which approach best ensures the symbol is universally understood among engineers referring to standard engineering drawings?

- Ans ☐ 1. Substitute the normally closed push button symbol with a general switch symbol
☐ 2. Describe the normally closed push button in words within the schematic diagram clearly
☐ 3. Draw a hand made representation of the push button with a note explaining function
☒ 4. Use the standardized symbol for a normally closed push button as per conventions

Q.61 What will come in place of the question mark (?) in the following equation if '+' and '-' are interchanged and 'x' and '÷' are interchanged?

$$42 \times 6 \div 7 - 35 + 19 = ?$$

- Ans ☐ 1. 69
☒ 2. 65
☐ 3. 67
☐ 4. 63

Q.62 The first shopkeeper allows two successive discounts of 3% and 7%, while a second shopkeeper allows two successive discounts of 2% and 8%. A third shopkeeper allows 10% discount on the same item. From which shopkeeper should a customer buy if the marked price is the same at the three shops?

- Ans ☐ 1. Buy from the first shopkeeper
☐ 2. Buy from the first or the second shopkeeper as both are the same.
☐ 3. Buy from the second shopkeeper
☒ 4. Buy from the third shopkeeper

Q.63 A ladder is leaning against a wall and makes an angle of 60° with the ground. If the length of the ladder is 24 m, find the distance of the foot of the ladder from the wall.

- Ans ☐ 1. 9 m
☒ 2. 12 m
☐ 3. 15 m
☐ 4. 18 m

Q.64 In a certain code language, 'SOIL' is coded as '1547' and 'COIL' is coded as '7124'. What is the code for 'C' in the given code language?

- Ans ☐ 1. 7
☒ 2. 2
☐ 3. 1
☐ 4. 4

Q.65 A cyclist travels 120 km in 3 hours, rests for 1 hour, and then travels another 80 km in 2 hours. To determine the cyclist's average speed for the entire journey, which of the following quantities should be used?

- Ans ☐ 1. Change in velocity divided by total time taken
☐ 2. Total displacement divided by total time taken
☒ 3. Total distance travelled divided by the total time taken
☐ 4. Distance travelled in a particular direction divided by time

Q.66 A plane parallel to the base divides a cone of height 40 cm into two parts. If the volume of the upper smaller cone formed is $\frac{1}{64}$ of the volume of the original cone, calculate the height of the plane from the base of the cone.

- Ans ☐ 1. 10 cm
☒ 2. 30 cm
☐ 3. 20 cm
☐ 4. 40 cm

Q.67 Which color is universally associated with emergency exit signs in industrial workplaces under international standards?

- Ans ☐ 1. Red background with white text or symbols
☐ 2. Yellow background with black text or symbols
☒ 3. Green background with white text or symbols
☐ 4. Blue background with white text or symbols

Q.68 A question is followed by two statements numbered (I) and (II). You have to decide whether the data provided in the statements are sufficient to answer the question. Read both the statements and decide the appropriate answer.

Among 5 sticks, B, U, N, M and D, each having a different height, which stick is the shortest?

(I) D is shorter than U. M is shorter than B.

(II) M is taller than D.

- Ans ☐ 1. Data in statement I alone is sufficient to answer the question while data in statement II is not
☐ 2. Both statements I and II together (and not statement I alone or statement II alone) are sufficient to answer the question
☒ 3. Both statements I and II together are NOT sufficient to answer the question
☐ 4. Data in statement II alone is sufficient to answer the question while data in statement I is not

Q.69 The price of sugar is increased by 20%. Manoj can increase his expenditure on sugar by only 15% from his income. In order to balance his expenditure, by what percentage should he reduce the quantity of sugar consumed?

- Ans ☐ 1. $5\frac{1}{3}\%$
☒ 2. $4\frac{1}{6}\%$
☐ 3. 5%
☐ 4. 6.5%

Q.70 A dealer buys a table for ₹2,750. He first marks it up by 28%, then allows a 12% discount to a customer. If the customer also pays 5% GST on the selling price, find the profit percentage (excluding GST) made by the dealer.

- Ans ☐ 1. 13.81%
☒ 2. 12.64%
☐ 3. 15.12%
☐ 4. 10.36%

Q.71 Which of the following pairs of numbers is co-prime?

- Ans ☐ 1. (21, 33)
☐ 2. (14, 28)
☒ 3. (17, 54)
☐ 4. (28, 49)

Q.72 A cyclist rides 60 meters north, then 80 meters south, and finally 70 meters north. What is the total distance the cyclist has traveled?

- Ans ☐ 1. 60 meters
☐ 2. 10 meters
☐ 3. 150 meters
☒ 4. 210 meters

Q.73 12 is related to 1730 following a certain logic. Following the same logic, 13 is related to 2199. To which of the given options is 11 related, following the same logic?
(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 etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

- Ans ☐ 1. 1443
☐ 2. 1543
☐ 3. 1433
☒ 4. 1333

Q.74 Read the given statement(s) 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 statement(s).

Statements:
Some rugs are fans.
No fan is a car.

Conclusion (I) : Some rugs are cars.
Conclusion (II) : Some fans are rugs.

- Ans ☐ 1. Neither conclusion (I) nor (II) follows
☐ 2. Only conclusion (I) follows
☐ 3. Both conclusions (I) and (II) follow
☒ 4. Only conclusion (II) follows

Q.75 Which of the following best describes the function of a speedometer in a vehicle?

- Ans ☒ 1. It displays the current speed at which the vehicle is moving.
☐ 2. It measures the total distance the vehicle has traveled.
☐ 3. It shows the rate at which the vehicle's speed changes.
☐ 4. It calculates the average speed over a journey.

Q.76 Find the compound interest on ₹5,70,000 for 1.5 years at 10% per annum compounded half-yearly.

- Ans ☐ 1. ₹92,846.25
☐ 2. ₹88,846.25
☒ 3. ₹89,846.25
☐ 4. ₹89,946.25

Q.77 Seven boxes S, T, U, V, W, X, and Y are kept one over the other but not necessarily in the same order. U is kept exactly third from the top. Only one box is kept between U and T. W is kept immediately above T. Only three boxes are kept between X and S. V is kept on one of the positions below Y. Only two boxes are kept between U and S. Which box is kept second from the top?

- Ans ☐ 1. T
☐ 2. U
☒ 3. X
☐ 4. V

Q.78 What is the primary color used in warning signs to alert workers of potential hazards?

- Ans ☐ 1. Green with white symbol or text
☐ 2. Blue with white symbol or text
☐ 3. Red with white symbol or text
☒ 4. Yellow with black symbol or text

Q.79 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 Satish related to Mayank if 'Satish + Deep × Piyush - Hitesh % Mayank'?

- Ans ☒ 1. Mother's brother's wife's sister
☒ 2. Father's brother's wife's sister
☒ 3. Mother's brother's wife's mother
☒ 4. Father's brother's wife's mother

Q.80 A 42-litre solution has sugar and water in the ratio 2 : 5. If, due to evaporation, the volume is reduced by 35%, and only water evaporates, what is the new ratio of sugar to water?

- Ans ☒ 1. 31 : 50
☒ 2. 40 : 41
☒ 3. 51 : 42
☒ 4. 40 : 51

Q.81 A crane lifts a 200 kg load to a height of 15 meters in 10 seconds. Assuming acceleration due to gravity is 10 m/s² and energy loss is negligible, what is the power output of the crane during this operation?

- Ans ☒ 1. 3000 W
☒ 2. 2000 W
☒ 3. 1000 W
☒ 4. 1500 W

Q.82 Select the pair which follows the same pattern as that followed by the two pairs given below. Both pairs follow the same pattern.

ZOT - TLP
NIL - HFH

- Ans ☒ 1. BCD - VZZ
☒ 2. BOC - VZT
☒ 3. ABD - VZZ
☒ 4. VZZ - BCD

Q.83 Seven boxes, P, Q, S, T, U, V, and W, are kept one over the other, but not necessarily in the same order. There are exactly two boxes between T and P. Only Q is kept above U. No box is kept below P. S is kept somewhere below W but above V. Based on the given information, which box is kept third above V?

- Ans ☒ 1. W
☒ 2. P
☒ 3. S
☒ 4. T

Q.84 Which one of the following statements correctly describes a characteristic of WANs?

- Ans ☒ 1. WANs are limited to connecting devices within a radius of 1 to 2 km.
☒ 2. WANs typically use only wireless media to connect distant LANs.
☒ 3. WANs can be built by connecting multiple LANs via wired or wireless links.
☒ 4. WANs are always public networks managed solely by Internet Service Providers (ISPs).

Q.85 What does the term 'HAZOP' stand for in occupational safety?

- Ans ☒ 1. Handling and Organizing Safety
☒ 2. Hazardous Operation Standard
☒ 3. Hazardous Operations Safety
☒ 4. Hazard and Operability Study

Q.86 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.)

- Ans ☒ 1. DG - EH
☒ 2. SJ - TK
☒ 3. IT - KV
☒ 4. KE - LF

Q.87 What should come in place of '?' in the given series?

11, 22, 44, 88, 176, ?

- Ans ☒ 1. 358
☒ 2. 352
☒ 3. 356
☒ 4. 342

Q.88 A solid right circular cone is 7 cm high, and the radius of its base is 22.2 cm. It is melted and recast into a right circular cone with radius of its base 3.7 cm. Then the height (in cm) of the cone is ____.

- Ans ☒ 1. 185
☒ 2. 267
☒ 3. 159
☒ 4. 252

Q.89 An article is bought for ₹300 and its price is increased by 5.5%. The resulting price is then reduced by 8%. Find the final selling price.

- Ans ☒ 1. ₹296.46
☒ 2. ₹284.45
☒ 3. ₹291.18
☒ 4. ₹288.24

Q.90 A technician needs to select a fuse wire for a room heater. Which property should be considered most important for safety based on the heating effect of electric current?

- Ans ☒ 1. The fuse wire must have a low melting point to break the circuit during excess current.
☒ 2. The fuse wire must have a high melting point for durability.
☒ 3. The fuse wire must have a shiny surface for efficient cooling.
☒ 4. The fuse wire must have high resistance and be thick to prevent melting.

Q.91 Which type of personal protective equipment is most suitable for tasks involving airborne chemical particles in confined spaces?

- Ans ☒ 1. Respiratory protection devices such as half-face masks
☒ 2. Body protection with flame-retardant suits
☒ 3. Hand protection using chemical-resistant gloves
☒ 4. Head protection with industrial-grade hard hats

Q.92 The salary of a person is increased by 10%, 20% and 25% successively in three consecutive years. Find the overall percentage increase in the salary at the end of the third year.

- Ans ☒ 1. 65%
☒ 2. 60%
☒ 3. 30%
☒ 4. 50%

Q.93 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 to/subtracting from/multiplying with 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

6 – 16 – 23 – 32; 7 – 19 – 26 – 35

- Ans ☒ 1. 11 – 31 – 38 – 29
☒ 2. 4 – 14 – 21 – 30
☒ 3. 8 – 22 – 15 – 24
☒ 4. 12 – 34 – 41 – 50

Q.94 Which of the following statements best describes a triangle as used in engineering drawing?

- Ans ☒ 1. A triangle must always have all sides of equal length.
☒ 2. A triangle is a polygon having three curved sides.
☒ 3. A triangle is a polygon with four straight sides and four angles.
☒ 4. A triangle is a polygon with three straight sides and three angles.

Q.95 What does CPU stand for in computing?

- Ans ☒ 1. Central Processing Unit
☒ 2. Computer Processing Unit
☒ 3. Control Processing Unit
☒ 4. Core Processing Unit

Q.96 Which factor increases the amount of heat produced in a wire when an electric current flows through it for a fixed time?

- Ans ☒ 1. Making the wire thicker
☒ 2. Increasing the resistance of the wire
☒ 3. Reducing the current in the wire
☒ 4. Decreasing the length of the wire

Q.97 Which statement best describes the front view in an engineering drawing?

- Ans ☒ 1. It shows only one dimension of the object
☒ 2. It shows the object's depth and height as seen from the side
☒ 3. It shows only the object's bottom or right side
☒ 4. It shows the object's height and width as seen from the front

Q.98 Why does restricting certain chemical refrigerants effectively reduce damage to the ozone layer?

- Ans ☒ 1. Refrigerants emit greenhouse gases that warm the stratosphere.
☒ 2. Refrigerants increase oxygen production, supporting ozone recovery.
☒ 3. Refrigerants release substances that catalyze ozone breakdown.
☒ 4. Refrigerants contain particles that absorb harmful UV light.

Q.99 What should come in place of the question mark (?) in the given series?

1 2 7 20 61 ?

- Ans ☒ 1. 185
☒ 2. 181
☒ 3. 182
☒ 4. 183

Q.100 Let C be a circle, and AB and DE be two chords on C such that AB = BE. In the quadrilateral ABED, let AE and BD intersect at F, $\angle DBE = 55^\circ$ and $\angle BAE = 40^\circ$. Find $\angle FED$.

- Ans ☒ 1. 55°
☒ 2. 110°
☒ 3. 60°
☒ 4. 45°

Section : Part B (Mechanic Diesel)

Q.101 Which repair action is directly associated with restoring smooth current transfer in a damaged commutator in the starter motor?

- Ans ☒ 1. Tightening
☒ 2. Rewinding
☒ 3. Lubricating
☒ 4. Regrounding

Q.102 When performing external checking of a forged component with outside callipers, which practice ensures reliable results?

- Ans ☒ 1. Recalibrating the tool after every measurement
☒ 2. Reading values directly from the calliper scale
☒ 3. Zeroing calliper to a known standard before use
☒ 4. Applying excessive force to ensure contact

Q.103 Which combination of components allows a vernier calliper to measure both internal and external dimensions accurately?

- Ans ☒ 1. Fixed jaw, movable jaw & vernier scale
☒ 2. Locking screw and main scale
☒ 3. Depth measuring blade and main scale
☒ 4. Fixed jaw and locking screw

Q.104 Which feature distinguishes a taper reamer from a straight reamer?

- Ans ☒ 1. A taper reamer's edges match the required taper
☒ 2. The number of flutes is always greater on taper reamers
☒ 3. The handles are always longer on taper reamers
☒ 4. Taper reamers have serrated teeth for faster cutting

Q.105 A technician must prevent vibration-induced loosening in a bolted assembly on a high-speed machine. Which type of washer is suitable for this situation?

- Ans ☒ 1. Taper washer
☒ 2. Flat washer
☒ 3. Spring lock washer
☒ 4. Plain washer

Q.106 A diesel mechanic is asked why carburetors are essential for petrol engines but not used in standard diesel engines. Based on the working principle, what is the best explanation?

- Ans ☒ 1. Carburetors adjust exhaust emissions for diesel engines only
☒ 2. Carburetors create air-fuel mixtures required in petrol engines
☒ 3. Carburetors control engine cooling in both engine types
☒ 4. Carburetors increase fuel atomization in diesel engines

Q.107 Increasing current through a conductor increases the heat produced because heat is proportional to:

- Ans ☒ 1. Current
☒ 2. Resistance only
☒ 3. Voltage only
☒ 4. Square of current

Q.108 Which factor most influences the completeness of combustion in a diesel engine?

- Ans ☒ 1. The engine's battery condition
☒ 2. The mixing of air and fuel
☒ 3. The frequency of high voltage
☒ 4. The octane number of fuel

Q.109 Which condition can lead to low engine oil pressure in a diesel engine?

- Ans ☒ 1. Oil pressure gauge showing excessive pressure
☒ 2. Oil pressure relief valve stuck closed
☒ 3. Insufficient oil level in the sump
☒ 4. Oil of higher-than-recommended viscosity

Q.110 In a hydraulic system, why is a non-return valve used when connecting a pump to a cylinder?

- Ans ☒ 1. To increase the pressure in the cylinder only
☒ 2. To permit fluid flow in both directions
☒ 3. To ensure one-way fluid flow & no backflow
☒ 4. To reduce leakage between connections

Q.111 When using outside calipers to compare two shafts, what is the best approach?

- Ans ☒ 1. Estimate by eye after using calipers
☒ 2. Use inside calipers for both shafts
☒ 3. Measure both shafts together at once
☒ 4. Set calipers to one shaft and check the other

Q.112 The extension lines are used together with _____ in engineering drawing dimensioning.

- Ans ☒ 1. Cutting plane lines
☒ 2. Border lines
☒ 3. Dimension lines
☒ 4. Hidden lines

Q.113 In planning a new industrial site, engineers must select vehicles for internal goods movement. If safety and maneuverability are both priorities, which vehicle classification by wheels is most suitable?

- Ans ☒ 1. Two-wheel hand trolley
☒ 2. Six-wheel articulated truck
☒ 3. Four-wheel electric cart
☒ 4. Three-wheel scooter with mixed tires

Q.114 How does the flywheel contribute to the operation of other engine accessories?

- Ans ☒ 1. By regulating valve operation
☒ 2. By filtering fuel
☒ 3. By providing a mounting surface
☒ 4. By cooling lubricant

Q.115 In an industrial engine, the cooling water temperature unexpectedly rises above normal, but oil pressure and oil flow remain consistent. How does this condition affect the oil cooler's ability to regulate engine oil temperature?

- Ans ☒ 1. The oil cooler cools oil faster due to greater heat exchange rate
☒ 2. The oil cooler becomes less effective, resulting in higher oil temperature
☒ 3. The oil cooler compensates automatically, keeping oil temperature stable
☒ 4. The oil cooler maintains oil temperature by increasing water pressure

Q.116 What is the main purpose of a diesel engine cylinder head?

- Ans ☒ 1. To seal the combustion chamber
☒ 2. To drive the crankshaft
☒ 3. To lubricate pistons
☒ 4. To supply fuel

Q.117 Which vehicle body classification has a fixed roof, moderate passenger capacity, and a separate luggage compartment, commonly used as a family car?

- Ans ☒ 1. Sedan
☒ 2. Van
☒ 3. Convertible
☒ 4. Hatchback

Q.118 How does the crankshaft help maintain engine balance during operation?

- Ans
- ☐ 1. By reducing exhaust gases
 - ☐ 2. By controlling valve timing
 - ☐ 3. By increasing fuel injection
 - ☒ 4. By using counterweights

Q.119 Which part of the crankshaft connects to the connecting rod in a diesel engine?

- Ans
- ☐ 1. Flange
 - ☐ 2. Flywheel
 - ☒ 3. Crankpin
 - ☐ 4. Main journal

Q.120 What is a key diagnostic sign of low oil pressure in a Hydraulic Electronic Unit Injector (HEUI) system?

- Ans
- ☒ 1. Engine misfires or rough running
 - ☐ 2. Timing chain rattle noise
 - ☐ 3. High exhaust temperature
 - ☐ 4. Rapid fuel consumption rate

Q.121 When designing an automated cutting machine that requires precise blade positioning from both sides, why is a double-ended cylinder preferred over a single-ended one?

- Ans
- ☐ 1. It allows use of different cylinder sizes for each side
 - ☐ 2. It requires more manual adjustment for alignment
 - ☒ 3. It balances force and movement bilaterally for accuracy
 - ☐ 4. It makes synchronization with separate cylinders easier

Q.122 The total surface area of a cylinder is given by _____.

- Ans
- ☒ 1. $2\pi r(h + r)$
 - ☐ 2. $2\pi rh$
 - ☐ 3. $4\pi r^2$
 - ☐ 4. $\pi r^2 h$

Q.123 An engine exhibits erratic idling and excessive smoke after the induction manifold was reinstalled. What should be evaluated first regarding the diesel induction system's function?

- Ans
- ☐ 1. Clean the air cleaner to restore unrestricted intake flow
 - ☐ 2. Adjust the timing to optimize combustion efficiency
 - ☐ 3. Inspect the intake valve for proper seating and movement
 - ☒ 4. Check for manifold air leaks affecting air supply consistency

Q.124 In Marine Engines, which sequence best describes the coolant flow in a heat exchange cooling system after leaving the expansion tank?

- Ans
- ☐ 1. Direct to engine, then to oil cooler, then to cores
 - ☐ 2. To exhaust manifold, then to oil cooler, then to cores
 - ☒ 3. Around cores, to oil cooler, to engine coolant pump inlet
 - ☐ 4. To keeling coil, then to engine, then to expansion tank

Q.125 While welding, an operator observes sparks flying towards a nearby electrical extension board. What should be done to minimize electrical hazards during this activity?

- Ans
- ☐ 1. Place a damp cloth over the electrical extension board
 - ☐ 2. Shield the extension board using a metal cover
 - ☐ 3. Leave the electrical board in its current position
 - ☒ 4. Relocate the extension board outside the hazard zone

Q.126 What is the main function of the evaporative emission control system?

- Ans
- ☐ 1. It increases the engine operating temperature
 - ☐ 2. It increases the overall fuel consumption of the vehicle
 - ☒ 3. It prevents fuel vapours entering the atmosphere
 - ☐ 4. It improves the performance and grip of tyres

Q.127 A mechanic turns the ignition key in a vehicle fitted with an electrical fuel pump. What happens to the pump at that moment?

- Ans
- ☐ 1. The pump starts after engine warms up fully
 - ☐ 2. The pump starts after fuel pressure drops
 - ☐ 3. The pump starts when the vehicle begins moving
 - ☒ 4. The pump starts operating immediately upon ignition

Q.128 Which part of a Vernier caliper is used to measure the depth of a hole?

- Ans
- ☐ 1. The main scale
 - ☐ 2. The locking screw
 - ☒ 3. The depth measuring blade
 - ☐ 4. The fixed jaw

Q.129 Which scenario best demonstrates the correct use of a wire brush in an ITI workshop?

- Ans
- ☐ 1. Painting a metal pipe for finishing
 - ☐ 2. Measuring the pipe length accurately
 - ☐ 3. Cutting a metal pipe for measurement tasks
 - ☒ 4. Cleaning a metal pipe before using a scriber

Q.130 In a scenario where flatness and minimal material removal are both critical, which lapping abrasive trait should be prioritized when selecting a compound?

- Ans
- ☐ 1. Chemical inertness
 - ☒ 2. Controlled abrasive friability
 - ☐ 3. High initial hardness
 - ☐ 4. High thermal conductivity

Q.131 Which combination of actions helps prevent engine overheating due to coolant flow issues?

- Ans
- ☐ 1. Replace exhaust manifold gasket and inspect timing
 - ☒ 2. Flush cooling system and replace thermostat
 - ☐ 3. Change fuel type for better combustion
 - ☐ 4. Adjust injector pressure and clean air intake

Q.132 Which of the following best describes the use of a non-continuous/dashed lines in engineering drawing?

- Ans
- ☐ 1. To show dimension and extension lines
 - ☐ 2. To represent visible outlines and edges
 - ☒ 3. To indicate hidden outlines and edges
 - ☐ 4. To indicate cutting planes

Q.133 Which of the following aspects is most important for controlling vehicle emissions in modern diesel vehicles?

- Ans
- ☒ 1. Using proper emission control systems reduces harmful exhaust gases
 - ☐ 2. Increasing engine size helps reduce emission levels in diesel vehicles
 - ☐ 3. Using high-content carbon fossil fuels results in lower vehicle emissions
 - ☐ 4. Ignoring engine maintenance and overhauling leads to reduced emissions

Q.134 During routine workshop maintenance, 80 liters of used engine oil are collected. If each disposal drum has a marked capacity of 25 liters and regulations require drums to be filled to only 80 percent for safe transport, how many drums are required?

- Ans
- ☒ 1. 4 drums
 - ☐ 2. 6 drums
 - ☐ 3. 3 drums
 - ☐ 4. 5 drums

Q.135 Which type of wire is used for the pull-in winding in a solenoid switch?

- Ans
- ☐ 1. Thin Copper wire
 - ☐ 2. Thick Aluminium wire
 - ☒ 3. Thick Copper wire
 - ☐ 4. Silver wire

Q.136 In engineering drawing, what angle do two radii form within a quadrant?

- Ans
- ☐ 1. 45°
 - ☐ 2. 180°
 - ☐ 3. 360°
 - ☒ 4. 90°

Q.137 Which maintenance task is critical for a Hydraulic Electronic Unit Injector (HEUI) system reliability?

- Ans
- ☐ 1. Regular injector nozzle cleaning
 - ☐ 2. Routine air filter replacement
 - ☒ 3. Regular engine oil changes
 - ☐ 4. Frequent fuel filter cleaning

Q.138 Which engine is generally more compact for the same power output?

- Ans
- ☐ 1. External combustion engine
 - ☒ 2. Internal combustion engine
 - ☐ 3. Steam engine
 - ☐ 4. Stirling engine

Q.139 In which situation is a paper gasket used as a sealing element in automotive applications?

- Ans
- ✓ 1. Sealing flat, smooth surfaces with low pressure
 - ✗ 2. Sealing high-temperature exhaust manifolds
 - ✗ 3. Sealing uneven, rough surfaces in high vibration areas
 - ✗ 4. Sealing joints exposed to heavy oils and chemicals

Q.140 Which of the following represents the total surface area of a sphere?

- Ans
- ✗ 1. $2\pi r^2$
 - ✓ 2. $4\pi r^2$
 - ✗ 3. πr^2
 - ✗ 4. $3\pi r^2$

Q.141 A mechanic inspects a modern diesel vehicle and notices the seat belt warning light remains active even when the passenger seat is empty. Based on the dashboard instrument design, which action should the mechanic prioritize to ensure system reliability?

- Ans
- ✗ 1. Check for blown seat belt indicator bulbs only
 - ✓ 2. Inspect the seat weight sensor wiring for faults
 - ✗ 3. Update the vehicle's onboard software system
 - ✗ 4. Replace the dashboard instrument cluster immediately

Q.142 Which part of the micrometer should be cleaned to remove debris after use?

- Ans
- ✗ 1. Ratchet stop
 - ✗ 2. Thimble
 - ✓ 3. Measuring faces
 - ✗ 4. Lock nut

Q.143 Why are fillets provided at the junctions of crank pins and webs?

- Ans
- ✗ 1. Decrease exhaust noise
 - ✗ 2. Enhance combustion efficiency
 - ✓ 3. Reduce stress concentration
 - ✗ 4. Improve fuel atomization

Q.144 In an electrical machine, interaction between stator and rotor magnetic fields produces:

- Ans
- ✓ 1. Mechanical torque
 - ✗ 2. Thermal insulation
 - ✗ 3. Electrochemical action
 - ✗ 4. Optical energy

Q.145 An engine with a two-part mechanical fuel pump design is experiencing intermittent fuel supply issues. During inspection, the technician finds that all external connections are secure and the mounting bolts are tight. What should the technician examine next to identify the source of the problem?

- Ans
- ✗ 1. The technician should check the fuel quality in the tank.
 - ✗ 2. The technician should inspect the pump exterior for leaks.
 - ✓ 3. The technician should inspect the internal rocker cam connection.
 - ✗ 4. The technician should examine electrical connections to the pump.

Q.146 Why does using oil with incorrect viscosity contribute to low engine oil pressure in a diesel engine?

- Ans
- ✗ 1. Overfilled oil sump increases oil pressure
 - ✗ 2. Underfilled oil sump increases oil pressure
 - ✗ 3. High viscosity oil restricts oil flow and increases pressure
 - ✓ 4. Low viscosity oil flows too easily and reduces pressure

Q.147 Which environmental problem is most closely linked to increased carbon dioxide emissions?

- Ans
- ✗ 1. Thinning of ozone layer in upper sky
 - ✗ 2. Soil erosion in agricultural fields
 - ✓ 3. Rising global temperatures over long periods
 - ✗ 4. Formation of acid rain on buildings

Q.148 In a scenario where multiple remedies are possible, how should a mechanic address persistent engine noise after all standard procedures have failed?

- Ans
- ✗ 1. Lubricating piston rings using correct oil
 - ✗ 2. Replacing air filter with high-quality type
 - ✓ 3. Conducting a comprehensive engine teardown and inspection
 - ✗ 4. Adjusting valve clearance to manufacturer recommendations

Q.149 While manufacturing a cutting tool, which mechanical property is most important for the material to resist wear and scratching during operation?

- Ans ☒ 1. Ductility
☒ 2. Hardness
☒ 3. Elasticity
☒ 4. Toughness

Q.150 What issue can occur in the charging system due to a worn out or sticking brush in the alternator?

- Ans ☒ 1. No charging condition
☒ 2. Alternator noise
☒ 3. Over charging condition
☒ 4. Low output

Q.151 What type of gears is most commonly used in a ship's reduction gearbox?

- Ans ☒ 1. Double helical gears
☒ 2. Spur gears
☒ 3. Worm gears
☒ 4. Bevel gears

Q.152 A mechanic observes that the gear shift indicator suggests an upshift during steady driving at moderate speed. Why is following the gear shift indicator's recommendation beneficial in this scenario?

- Ans ☒ 1. Following the gear shift indicator's recommendation enhances rapid acceleration and shortens journey times.
☒ 2. Following the gear shift indicator's recommendation reduces unnecessary engine load and improves fuel efficiency.
☒ 3. Following the gear shift indicator's recommendation increases transmission temperature and reduces driver comfort.
☒ 4. Following the gear shift indicator's recommendation maintains high engine speed and increases exhaust emissions.

Q.153 Apart from drawing circles, a large compass is also used for:

- Ans ☒ 1. Measuring temperature
☒ 2. Cutting sheets
☒ 3. Printing drawings
☒ 4. Taking large measurements

Q.154 If a supercharger is driven directly by the engine through gears and shafts, what will happen for engine operation at higher speeds?

- Ans ☒ 1. It decreases compressed intake-charge delivery.
☒ 2. It stops compressed intake-charge delivery.
☒ 3. It keeps intake-charge delivery unchanged.
☒ 4. It increases compressed intake-charge delivery.

Q.155 Which engine type is more suitable for vehicles requiring frequent speed changes and quick acceleration?

- Ans ☒ 1. Stirling engine
☒ 2. Steam engine
☒ 3. Internal combustion engine
☒ 4. External combustion engine

Q.156 Which process best describes the use of a cylindrical lap in achieving a high-quality surface finish on hardened steel shafts?

- Ans ☒ 1. Rubbing the lap manually without compound
☒ 2. Applying compound but not rotating the lap
☒ 3. Using the lap without abrasive compound applied
☒ 4. Rotating the lap with abrasive compound applied evenly

Q.157 Why are Bharat Stage standards updated periodically for diesel engine vehicles in India?

- Ans ☒ 1. They are updated to reduce pollution and match global emission requirements
☒ 2. They are updated to improve fuel efficiency and decrease maintenance costs
☒ 3. They are updated to increase vehicle sales and purchasing capacity in India
☒ 4. They are updated to maintain older diesel engine designs and keep them functional

Q.158 Which feature makes a scribe suitable for marking on metal surfaces?

- Ans ☒ 1. Flexible rubber grip
☒ 2. Hard pointed tip
☒ 3. Graduated measuring scale
☒ 4. Wide flat blade

Q.159 Which piston pin locking system is NOT commonly preferred in high-speed engines because of vibration loosening?

- Ans ☒ 1. Wire lock locking
☒ 2. End pad locking
☒ 3. Circlip locking
☒ 4. Set screw locking

Q.160 A thermocouple generates thermoelectric voltage when its two junctions are at:

- Ans ☒ 1. Different temperatures
☒ 2. Equal temperatures
☒ 3. Zero pressure
☒ 4. Equal resistance

Q.161 Which of the following is a common application of pneumatic systems in automobiles?

- Ans ☒ 1. Running the fuel pump in cars
☒ 2. Operating heavy vehicle brakes
☒ 3. Powering headlights in cars
☒ 4. Starting the engine in cars

Q.162 A mechanic observes that the engine temperature indicator on the instrument panel has moved into the red zone during operation. What does this instrument primarily indicate in the context of the cooling system?

- Ans ☒ 1. It indicates the temperature of water in engine water jackets.
☒ 2. It shows the fuel level in the fuel tank only.
☒ 3. It displays the engine RPM on the instrument panel.
☒ 4. It measures the oil pressure in the engine block.

Q.163 A senior technician explains that the recovery system's design allows expelled coolant to return to the radiator instead of being lost. How does this benefit overall cooling system performance?

- Ans ☒ 1. It maintains system volume and reduces risk of overheating or air entry
☒ 2. It lowers engine noise and reduces mechanical vibration
☒ 3. It enhances coolant flow rate and improves engine performance
☒ 4. It improves fuel efficiency and reduces exhaust emissions

Q.164 During troubleshooting, a mechanic finds premature bearing wear in a diesel engine with infrequent oil filter changes. What does this suggest about the filter's function?

- Ans ☒ 1. It is used for reducing operational noise in oil
☒ 2. It is critical for removing abrasive particles from oil
☒ 3. It is important for raising the total oil volume always
☒ 4. It is necessary for changing oil flow direction only

Q.165 What property should a diesel engine bearing material have to withstand high loads?

- Ans ☒ 1. High fatigue strength
☒ 2. Low melting point
☒ 3. High porosity
☒ 4. Low thermal conductivity

Q.166 If an engine is operated in a tilted position for extended periods, which lubrication system is most likely to ensure reliable oil supply to all parts?

- Ans ☒ 1. Oil mist lubrication system
☒ 2. Wet sump lubrication system
☒ 3. Dry sump lubrication system
☒ 4. Splash lubrication system

Q.167 Which of the following is an important step to ensure personal safety in an auto workshop?

- Ans ☒ 1. Wearing protective gloves and goggles
☒ 2. Working with wet hands near electrical equipments
☒ 3. Keeping tools scattered on the floor of the workshop
☒ 4. Ignoring warning signs in the workshop

Q.168 Valve seat inserts are commonly made from which type of material?

- Ans ☒ 1. High-strength alloy steel
☒ 2. Aluminum alloy base
☒ 3. Lead-tin alloy
☒ 4. Copper and tin mixture

Q.169 In a series circuit, all components are connected in:

- Ans ☒ 1. Separate branches
☒ 2. Parallel paths only
☒ 3. Independent voltage loops
☒ 4. A single current path

Q.170 If the oil return passages are blocked and the piston rings are worn, what is the likely outcome in a diesel engine?

- Ans
- ☒ 1. Reduced fuel pressure
 - ☒ 2. Overheated starter motor
 - ☒ 3. Poor battery charging
 - ☒ 4. Excessive oil consumption

Q.171 Which part interacts directly with the camshaft lobe to open an engine valve?

- Ans
- ☒ 1. The crankshaft main journal
 - ☒ 2. The valve lifter or follower
 - ☒ 3. The piston ring assembly
 - ☒ 4. The flywheel ring gear

Q.172 While servicing a diesel engine, a technician notes that the extractor manifold helps maintain a specific gas velocity. What design feature of the extractor primarily supports this function?

- Ans
- ☒ 1. Modifying the timing of ignition sparks
 - ☒ 2. Adjusting the size of engine pistons used
 - ☒ 3. Changing the type of fuel supplied to engine
 - ☒ 4. Choosing the correct tube diameter for flow

Q.173 A maintenance supervisor is designing a test to evaluate the effect of radiator cap pressure on engine cooling systems. He uses three identical engines but fits each with radiator caps rated at 0.7 bar, 1.0 bar, and 1.3 bar, respectively. Which system will allow the coolant to reach the highest temperature before boiling?

- Ans
- ☒ 1. System with the 1.3 bar radiator cap installed
 - ☒ 2. System with the 0.7 bar radiator cap installed
 - ☒ 3. System with the 1.0 bar radiator cap installed
 - ☒ 4. All systems will boil at the same temperature

Q.174 What is the main advantage of using superchargers in marine engines?

- Ans
- ☒ 1. Reduces air compression
 - ☒ 2. Increases engine size
 - ☒ 3. Decreases engine efficiency
 - ☒ 4. Increases thermal efficiency

Q.175 What would happen if the intake valve in a diesel engine is too small?

- Ans
- ☒ 1. Less air would enter the cylinder
 - ☒ 2. The engine would cool faster
 - ☒ 3. More fuel would flow into the engine
 - ☒ 4. Exhaust gases would increase