



रेल भर्ती बोर्ड / RAILWAY RECRUITMENT BOARDS

सी ई एन - ०१/२०२५ - CEN - 01/2025

सहायक लोको पायलट की भर्ती/ Recruitment of Assistant Loco Pilot



Test Date	28/07/2026
Test Time	2:30 PM - 5:00 PM
Subject	ALP Stage 2 Mechanic Tractor

* Note

Correct Answer will carry 1 mark per Question.

Incorrect Answer will carry 1/3 Negative mark per Question.

1. Options shown in green color with a tick icon are correct.

2. Chosen option on the right of the question indicates the option selected by the candidate.

Section : PART-A

Q.1 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 ☒ A. C
☒ B. A
☒ C. B
☒ D. E

Q.2 Which color is universally associated with emergency exit signs in industrial workplaces under international standards?

Ans ☒ A. Blue background with white text or symbols
☒ B. Yellow background with black text or symbols
☒ C. Red background with white text or symbols
☒ D. Green background with white text or symbols

Q.3 What does the term 'HAZOP' stand for in occupational safety?

Ans ☒ A. Handling and Organizing Safety
☒ B. Hazard and Operability Study
☒ C. Hazardous Operations Safety
☒ D. Hazardous Operation Standard

Q.4 Which factor increases the amount of heat produced in a wire when an electric current flows through it for a fixed time?

Ans ☒ A. Decreasing the length of the wire
☒ B. Increasing the resistance of the wire
☒ C. Making the wire thicker
☒ D. Reducing the current in the wire

Q.5 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 ☒ A. The hole is sectioned but the rib is shown unsectioned
☒ B. The rib is sectioned but the hole is left unsectioned
☒ C. Both the hole and the rib are shown sectioned
☒ D. Both the hole and the rib are shown unsectioned

Q.6 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**
- ☐ A. 1543
 - ☐ B. 1433
 - ☐ C. 1443
 - ☒ D. 1333

Q.7 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**
- ☐ A. One
 - ☒ B. Three
 - ☐ C. Two
 - ☐ D. None

Q.8 What is the primary color used in warning signs to alert workers of potential hazards?

- Ans**
- ☐ A. Green with white symbol or text
 - ☒ B. Yellow with black symbol or text
 - ☐ C. Red with white symbol or text
 - ☐ D. Blue with white symbol or text

Q.9 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**
- ☐ A. 110°
 - ☒ B. 45°
 - ☐ C. 60°
 - ☐ D. 55°

Q.10 A cyclist travels from the kilometer stone marked 52 to the stone marked 79. How far has the cyclist traveled?

- Ans**
- ☐ A. 52 kilometers
 - ☐ B. 131 kilometers
 - ☒ C. 27 kilometers
 - ☐ D. 31 kilometers

Q.11 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**
- ☐ A. 7
 - ☐ B. 8
 - ☐ C. 6
 - ☒ D. 9

Q.12 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**
- ☐ A. ₹82,000
 - ☐ B. ₹78,000
 - ☐ C. ₹75,000
 - ☒ D. ₹80,000

Q.13 Which tool safety measure best prevents injuries when cleaning a workshop lathe after use?

- Ans**
- ☐ A. Wiping metal chips using bare hands directly
 - ☒ B. Using a brush to remove metal chips from the lathe
 - ☐ C. Blowing chips away with compressed air around the lathe
 - ☐ D. Using a rag to remove metal dust from the lathe

Q.14 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**
- ☐ A. Distance travelled in a particular direction divided by time
 - ☐ B. Total displacement divided by total time taken
 - ☒ C. Total distance travelled divided by the total time taken
 - ☐ D. Change in velocity divided by total time taken

Q.15 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**
- ☐ A. Mother's brother's wife's sister
 - ☐ B. Father's brother's wife's sister
 - ☒ C. Father's brother's wife's mother
 - ☐ D. Mother's brother's wife's mother

Q.16 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**
- ☐ A. 8 – 22 – 15 – 24
 - ☐ B. 11 – 31 – 38 – 29
 - ☒ C. 12 – 34 – 41 – 50
 - ☐ D. 4 – 14 – 21 – 30

Q.17 Which of the following pairs of numbers is co-prime?

- Ans**
- ☐ A. (21, 33)
 - ☐ B. (28, 49)
 - ☐ C. (14, 28)
 - ☒ D. (17, 54)

Q.18 Why does biomedical waste require special handling compared to general municipal waste?

- Ans**
- ☐ A. It is always radioactive and requires heavy shielding.
 - ☐ B. It is more likely to be recycled than other types of waste.
 - ☒ C. It may contain infectious agents that pose health risks.
 - ☐ D. It has higher chemical content and is always toxic.

Q.19 Which of the following best describes the function of a speedometer in a vehicle?

- Ans
- ☐ A. It calculates the average speed over a journey.
 - ☐ B. It shows the rate at which the vehicle's speed changes.
 - ☒ C. It displays the current speed at which the vehicle is moving.
 - ☐ D. It measures the total distance the vehicle has traveled.

Q.20 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
- ☐ A. The force required
 - ☒ B. The work done in raising the box
 - ☐ C. The distance moved along the ramp
 - ☐ D. The mechanical advantage

Q.21 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
- ☐ A. South
 - ☐ B. West
 - ☒ C. East
 - ☐ D. North

Q.22 Which statement best describes the front view in an engineering drawing?

- Ans
- ☐ A. It shows the object's depth and height as seen from the side
 - ☐ B. It shows only one dimension of the object
 - ☐ C. It shows only the object's bottom or right side
 - ☒ D. It shows the object's height and width as seen from the front

Q.23 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
- ☐ A. 18
 - ☐ B. 9
 - ☐ C. 12
 - ☒ D. 15

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
- ☒ A. 40
 - ☐ B. 44
 - ☐ C. 48
 - ☐ D. 36

Q.25 Why are electric wires in household appliances usually covered with plastic or rubber coating?

- Ans
- ☐ A. To increase the flow of current
 - ☒ B. To prevent electric shocks by insulation
 - ☐ C. To produce more heat
 - ☐ D. To make the wires heavier

Q.26 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**
- ☒ A. DG – EH
 - ☒ B. KE – LF
 - ☒ C. SJ – TK
 - ☒ D. IT – KV

Q.27 What is the primary purpose of a Local Area Network (LAN)?

- Ans**
- ☒ A. To link wireless devices only
 - ☒ B. To connect computers within a small geographical area
 - ☒ C. To connect global networks
 - ☒ D. To connect social media accounts

Q.28 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**
- ☒ A. The fuse wire must have a shiny surface for efficient cooling.
 - ☒ B. The fuse wire must have a high melting point for durability.
 - ☒ C. The fuse wire must have a low melting point to break the circuit during excess current.
 - ☒ D. The fuse wire must have high resistance and be thick to prevent melting.

Q.29 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**
- ☒ A. Y
 - ☒ B. C
 - ☒ C. D
 - ☒ D. A

Q.30 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**
- ☒ A. Use the standardized symbol for a normally closed push button as per conventions
 - ☒ B. Substitute the normally closed push button symbol with a general switch symbol
 - ☒ C. Draw a hand made representation of the push button with a note explaining function
 - ☒ D. Describe the normally closed push button in words within the schematic diagram clearly

Q.31 Which statement best describes the side view in engineering drawing?

- Ans**
- ☒ A. It shows the object as seen from above or below
 - ☒ B. It shows the object as seen from left or right side
 - ☒ C. It shows the object as seen clearly from the front
 - ☒ D. It shows a combination of all views of the object

Q.32 If $3x - 2y + 3z = 8$, $4x - 3y + 2z = 4$ and $2x + y - z = 1$, then find x, y and z, respectively.

- Ans**
- ☒ A. 1, 2 and 3
 - ☒ B. 2, 3 and 1
 - ☒ C. 2, 1 and 3
 - ☒ D. 3, 1 and 2

Q.33 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**
- ☒ A. REXZ
 - ☒ B. QDYY
 - ☒ C. RDXY
 - ☒ D. QEYZ

Q.34 If $x + \frac{1}{x} = 5$, then $\frac{x^3 - 5x^2 + 5x}{x^2 + 1}$ is equal to:

- Ans**
- ☒ A. $\frac{2}{5}$
 - ☒ B. $\frac{1}{5}$
 - ☒ C. $\frac{3}{5}$
 - ☒ D. $\frac{4}{5}$

Q.35 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**
- ☒ A. 40 : 51
 - ☒ B. 31 : 50
 - ☒ C. 40 : 41
 - ☒ D. 51 : 42

Q.36 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**
- ☒ A. Buy from the third shopkeeper
 - ☒ B. Buy from the second shopkeeper
 - ☒ C. Buy from the first or the second shopkeeper as both are the same.
 - ☒ D. Buy from the first shopkeeper

Q.37 Which of the following correctly states the full form of CD and the technology used to store data on it?

- Ans**
- ☒ A. Compact Disc, Optical Storage
 - ☒ B. Compact Disc, Magnetic Storage
 - ☒ C. Compact Drive, Optical Storage
 - ☒ D. Compact Drive, Magnetic Storage

Q.38 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**
- ☒ A. Carrying the same backpack horizontally for 2 meters
 - ☒ B. Lifting a heavier backpack to the same 2-meter ledge
 - ☒ C. Lifting the same backpack to a 1-meter ledge
 - ☒ D. Lifting a lighter backpack to the same 2-meter ledge

Q.39 Which intervention most effectively reduces ground-level pollutant concentrations during a winter temperature inversion?

- Ans**
- ☐ A. Elevating emission sources above inversion layers
 - ☐ B. Reducing local wind speed to minimize horizontal dispersion
 - ☐ C. Increasing surface temperatures near emission sources
 - ☒ D. Enhancing vertical air mixing through artificial turbulence

Q.40 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**
- ☐ A. 60 meters
 - ☒ B. 210 meters
 - ☐ C. 150 meters
 - ☐ D. 10 meters

Q.41 Which scenario best demonstrates proactive workplace safety behavior?

- Ans**
- ☐ A. Discussing only past safety problems in meetings
 - ☐ B. Reporting hazards after incidents happen
 - ☐ C. Waiting for a supervisor to notice hazards
 - ☒ D. Identifying and correcting hazards before accidents occur

Q.42 Which statement best describes how the mass and speed of an object affect its kinetic energy?

- Ans**
- ☐ A. An object with same mass but higher speed will have less kinetic energy.
 - ☐ B. An object with less mass and lower speed will have more kinetic energy.
 - ☐ C. An object with greater mass but lower speed will have more kinetic energy.
 - ☒ D. An object with greater mass and higher speed will have more kinetic energy.

Q.43 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**
- ☐ A. 600 N, because a person's weight remains unchanged on the Moon.
 - ☒ B. 100 N, because the Moon's gravity is about one-sixth of Earth's.
 - ☐ C. 200 N, because the Moon's gravity is about one-third of Earth's.
 - ☐ D. 300 N, because the Moon's gravity is about one-half of Earth's.

Q.44 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**
- ☐ A. Data in Statement I alone is sufficient to answer the question while data in statement II is not
 - ☒ B. Both statements I and II together are NOT sufficient to answer the question
 - ☐ C. Data in Statement II alone is sufficient to answer the question while data in statement I is not
 - ☐ D. Both statements I and II together (and not statement I alone or statement II alone) are sufficient to answer the question

Q.45 If the height of an object is doubled while its mass remains constant, its gravitational potential energy will be:

- Ans**
- ☒ A. unchanged
 - ☒ B. doubled
 - ☒ C. halved
 - ☒ D. decreased to one-fourth

Q.46 What is a key feature of single stroke lettering in technical drawings?

- Ans**
- ☒ A. Each character is outlined and then filled.
 - ☒ B. Each character is shaded after drawing.
 - ☒ C. Each character is made with one continuous stroke.
 - ☒ D. Each character is made with several parallel lines.

Q.47 What information does a kilometer stone provide to travelers on a road?

- Ans**
- ☒ A. Speed of the vehicle
 - ☒ B. Direction of travel
 - ☒ C. Distance from a reference point
 - ☒ D. Time taken to reach destination

Q.48 Why is a room thermometer generally mounted vertically on a wall?

- Ans**
- ☒ A. It ensures accurate reading by keeping the bulb exposed to room air.
 - ☒ B. It prevents the liquid from freezing inside the thermometer.
 - ☒ C. It helps the thermometer measure body temperature faster.
 - ☒ D. It protects the thermometer from breaking easily.

Q.49 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**
- ☒ A. TBMCF
 - ☒ B. FCBMT
 - ☒ C. FBMCT
 - ☒ D. TCMBF

Q.50 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 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**
- ☒ A. One
 - ☐ B. Three
 - ☐ C. None
 - ☐ D. Two

Q.51 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**
- ☐ A. V
 - ☒ B. X
 - ☐ C. U
 - ☐ D. T

Q.52 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**
- ☒ A. SPQ 106
 - ☐ B. TPQ 107
 - ☐ C. SPQ 107
 - ☐ D. TPQ 106

Q.53 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**
- ☐ A. ₹296.46
 - ☒ B. ₹291.18
 - ☐ C. ₹288.24
 - ☐ D. ₹284.45

Q.54 If a rectangular field is measured to be 120 meters long and 75 meters wide, what is its area in SI units?

- Ans**
- ☐ A. 19500 square meters
 - ☐ B. 1800 square meters
 - ☒ C. 9000 square meters
 - ☐ D. 15000 square meters

Q.55 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**
- ☐ A. FZ-GA
 - ☐ B. HB-IC
 - ☐ C. PJ-QK
 - ☒ D. RL-SN

Q.56 What is the primary role of the Central Processing Unit (CPU) in a computer system?

- Ans**
- ☒ A. To display output on the screen
 - ☒ B. To execute program instructions
 - ☒ C. To manage network connections
 - ☒ D. To store long-term data

Q.57 Which symbol best represents a battery in an electric circuit diagram according to standard conventions?

- Ans**
- ☒ A. A single long line only
 - ☒ B. A pair of long and short parallel lines placed alternately
 - ☒ C. Two circles connected in series
 - ☒ D. Two short lines placed together

Q.58 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**
- ☒ A. 12 m
 - ☒ B. 9 m
 - ☒ C. 18 m
 - ☒ D. 15 m

Q.59 P, Q and R are three batsmen. The ratios of runs scored by them in a certain match were as follows:

$$P : Q = 5 : 7 \text{ and } Q : R = 2 : 3.$$

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

- Ans**
- ☒ A. 378
 - ☒ B. 357
 - ☒ C. 336
 - ☒ D. 350

Q.60 What should come in place of '?' in the given series?
11, 22, 44, 88, 176, ?

- Ans**
- ☒ A. 352
 - ☒ B. 356
 - ☒ C. 358
 - ☒ D. 342

Q.61 Which combination best describes the main environmental challenges associated with plastic waste management?

- Ans**
- ☒ A. Neutralization and easy recycling
 - ☒ B. Thermal pollution and effective composting
 - ☒ C. Persistence in the environment and microplastic formation
 - ☒ D. Rapid biodegradation and chemical leaching

Q.62 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**
- ☒ A. 3 hours 16 minutes
 - ☒ B. 3 hours 6 minutes
 - ☒ C. 3 hours 26 minutes
 - ☒ D. 3 hours 36 minutes

Q.63 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**
- ☐ A. Only conclusion (I) follows
 - ☐ B. Neither conclusion (I) nor (II) follows
 - ☐ C. Both conclusions (I) and (II) follow
 - ☒ D. Only conclusion (II) follows

Q.64 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**
- ☒ A. 160
 - ☐ B. 188
 - ☐ C. 162
 - ☐ D. 180

Q.65 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**
- ☐ A. 12,000
 - ☐ B. 15,500
 - ☐ C. 7,500
 - ☒ D. 14,000

Q.66 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**
- ☐ A. T
 - ☐ B. P
 - ☒ C. W
 - ☐ D. S

Q.67 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**
- ☐ A. 6 hours
 - ☐ B. 8 hours
 - ☒ C. 9 hours
 - ☐ D. 7 hours

Q.68 Which of the following is the best example of municipal solid waste?

- Ans**
- ☐ A. Industrial process waste
 - ☐ B. Hospital biomedical waste
 - ☒ C. Household kitchen garbage
 - ☐ D. Mining tailings

Q.69 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**
- ☒ A. A2 size sheet
 - ☒ B. A3 size sheet
 - ☒ C. A0 size sheet
 - ☒ D. A1 size sheet

Q.70 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**
- ☒ A. Only conclusion (I) follows.
 - ☒ B. Only conclusion (II) follows.
 - ☒ C. Both conclusions (I) and (II) follow.
 - ☒ D. Neither conclusion (I) nor (II) follows.

Q.71 What should come in place of the question mark (?) in the given series?

1 2 7 20 61 ?

- Ans**
- ☒ A. 182
 - ☒ B. 185
 - ☒ C. 181
 - ☒ D. 183

Q.72 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**
- ☒ A. 20 km/h
 - ☒ B. 21 km/h
 - ☒ C. 27 km/h
 - ☒ D. 23 km/h

Q.73 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**
- ☒ A. 1 degree Celsius
 - ☒ B. 2 degrees Celsius
 - ☒ C. 10 degrees Celsius
 - ☒ D. 0.5 degrees Celsius

Q.74 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**
- ☒ A. 7
 - ☒ B. 2
 - ☒ C. 1
 - ☒ D. 4

Q.75 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**
- ☒ A. Load
 - ☐ B. Fulcrum
 - ☐ C. Effort
 - ☐ D. Arm

Q.76 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**
- ☒ A. Both statements I and II together are NOT sufficient to answer the question
 - ☐ B. Data in statement II alone is sufficient to answer the question while data in statement I is not
 - ☐ C. Both statements I and II together (and not statement I alone or statement II alone) are sufficient to answer the question
 - ☐ D. Data in statement I alone is sufficient to answer the question while data in statement II is not

Q.77 Which type of personal protective equipment is most suitable for tasks involving airborne chemical particles in confined spaces?

- Ans**
- ☐ A. Hand protection using chemical-resistant gloves
 - ☐ B. Body protection with flame-retardant suits
 - ☒ C. Respiratory protection devices such as half-face masks
 - ☐ D. Head protection with industrial-grade hard hats

Q.78 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**
- ☐ A. 40 cm
 - ☐ B. 20 cm
 - ☒ C. 30 cm
 - ☐ D. 10 cm

Q.79 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**
- ☐ A. Sister
 - ☒ B. Mother's mother
 - ☐ C. Mother
 - ☐ D. Mother's sister

Q.80 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**
- ☐ A. 10
 - ☐ B. 10.5
 - ☒ C. 11.5
 - ☐ D. 11

Q.81 Which one of the following statements correctly describes a characteristic of WANs?

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

Q.82 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
- ☒ A. $5\frac{1}{3}\%$
 - ☒ B. $4\frac{1}{6}\%$
 - ☒ C. 6.5%
 - ☒ D. 5%

Q.83 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
- ☒ A. 10.36%
 - ☒ B. 15.12%
 - ☒ C. 13.81%
 - ☒ D. 12.64%

Q.84 Find the compound interest on ₹5,70,000 for 1.5 years at 10% per annum compounded half-yearly.

- Ans
- ☒ A. ₹88,846.25
 - ☒ B. ₹92,846.25
 - ☒ C. ₹89,846.25
 - ☒ D. ₹89,946.25

Q.85 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
- ☒ A. 252
 - ☒ B. 185
 - ☒ C. 267
 - ☒ D. 159

Q.86 What does CPU stand for in computing?

- Ans
- ☒ A. Computer Processing Unit
 - ☒ B. Central Processing Unit
 - ☒ C. Core Processing Unit
 - ☒ D. Control Processing Unit

Q.87 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
- ☒ A. 3
 - ☒ B. 4
 - ☒ C. 5
 - ☒ D. 6

Q.88 Which of the following statements best describes a triangle as used in engineering drawing?

- Ans
- ☒ A. A triangle is a polygon having three curved sides.
 - ☒ B. A triangle must always have all sides of equal length.
 - ☒ C. A triangle is a polygon with four straight sides and four angles.
 - ☒ D. A triangle is a polygon with three straight sides and three angles.

Q.89 A crane lifts a 200 kg load to a height of 15 meters in 10 seconds. Assuming acceleration due to gravity is 10 m/s^2 and energy loss is negligible, what is the power output of the crane during this operation?

- Ans**
- ☐ A. 1500 W
 - ☐ B. 2000 W
 - ☐ C. 1000 W
 - ☒ D. 3000 W

Q.90 When drawing repeated 67° angles on an engineering sheet, which practice best helps minimize cumulative alignment errors?

- Ans**
- ☒ A. Using the same reference line for all repeated angles
 - ☐ B. Drawing all angles continuously without intermediate verification
 - ☐ C. Relying solely on the initial protractor alignment for all angles
 - ☐ D. Marking all angles lightly with a pencil before finalizing

Q.91 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**
- ☒ A. 8.57 seconds
 - ☐ B. 8.43 seconds
 - ☐ C. 7.57 seconds
 - ☐ D. 9.25 seconds

Q.92 Which of the following statements best describes a cuboid as used in engineering drawing?

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

Q.93 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**
- ☐ A. The distance is 120 meters; the displacement is 120 meters
 - ☒ B. The distance is 200 meters; the displacement is 120 meters
 - ☐ C. The distance is 200 meters; the displacement is 200 meters
 - ☐ D. The distance is 120 meters; the displacement is 200 meters

Q.94 What should come in place of the question mark (?) in the given series based on the English alphabetical order?

MDB PHE SLH VPK ?

- Ans**
- ☐ A. ZTM
 - ☐ B. ZUO
 - ☒ C. YTN
 - ☐ D. XSM

Q.95 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**
- ☒ A. 65%
 - ☐ B. 60%
 - ☐ C. 30%
 - ☐ D. 50%

Q.96 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**
- ☒ A. Three
 - ☒ B. Four
 - ☒ C. Six
 - ☒ D. Five

Q.97 Why does restricting certain chemical refrigerants effectively reduce damage to the ozone layer?

- Ans**
- ☒ A. Refrigerants release substances that catalyze ozone breakdown.
 - ☒ B. Refrigerants increase oxygen production, supporting ozone recovery.
 - ☒ C. Refrigerants contain particles that absorb harmful UV light.
 - ☒ D. Refrigerants emit greenhouse gases that warm the stratosphere.

Q.98 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**
- ☒ A. BCD - VZZ
 - ☒ B. VZZ - BCD
 - ☒ C. ABD - VZZ
 - ☒ D. BOC - VZT

Q.99 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**
- ☒ A. 63
 - ☒ B. 65
 - ☒ C. 67
 - ☒ D. 69

Q.100 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**
- ☒ A. 30
 - ☒ B. 28
 - ☒ C. 35
 - ☒ D. 32

Section : PART-B

Q.1 A maintenance engineer must select a gasket for a flange joint exposed to both vibration and oil. Which material should be considered?

- Ans**
- ☒ A. Compressed asbestos sheet
 - ☒ B. Rubber-reinforced cork sheet
 - ☒ C. Plain paper gasket sheet
 - ☒ D. Pure metal gasket sheet

Q.2 A file made from which material will provide the best performance for finishing hardened steel parts?

- Ans**
- ☒ A. Aluminium
 - ☒ B. Tool steel
 - ☒ C. Copper
 - ☒ D. Brass

Q.3 Hidden edges in two wheeler drawing are generally represented using:

- Ans**
- ☒ A. Dashed lines
 - ☒ B. Chain thick lines
 - ☒ C. Double curved lines
 - ☒ D. Continuous thick lines

Q.4 Which of the following is a safety step before adjusting the drawbar?

- Ans**
- ☒ A. Engage the parking brake
 - ☒ B. Open the fuel tank
 - ☒ C. Release the clutch lever
 - ☒ D. Rev up the engine

Q.5 Which company is known for introducing the first indigenous tractor in India?

- Ans**
- ☒ A. TAFE Tractors
 - ☒ B. Swaraj Tractors
 - ☒ C. Escorts Limited
 - ☒ D. Eicher Tractors

Q.6 How does the use of advanced electronic control units (ECUs) in clean diesel technology improve emission performance?

- Ans**
- ☒ A. Increases diesel tank size
 - ☒ B. Bypasses emission control sensors
 - ☒ C. Optimizes injection timing precisely
 - ☒ D. Runs injectors at maximum rate

Q.7 According to IEC 60445 wiring colour codes, the neutral conductor is identified by:

- Ans**
- ☒ A. Red
 - ☒ B. Brown
 - ☒ C. Blue
 - ☒ D. Green-yellow

Q.8 What is the main function of variable valve timing in a diesel engine?

- Ans**
- ☒ A. To provide the lubrication system for smooth operation
 - ☒ B. To change the timing of piston mechanism system
 - ☒ C. To reduce the overall size of the valve mechanism
 - ☒ D. To optimize valve opening and closing events

Q.9 What does the valve timing diagram illustrate in a diesel engine?

- Ans**
- ☒ A. The variation of fuel pressure during combustion
 - ☒ B. Fuel injection pressure variation
 - ☒ C. Mechanical designing of inlet and exhaust valves
 - ☒ D. Sequence of valve operations

Q.10 An operator wants to weld a thin sheet metal using gas welding. Which equipment adjustment is most critical for this task?

- Ans**
- ☐ A. Use large nozzle for wider flame spread
 - ☐ B. Change mixer setting to higher oxygen ratio
 - ☒ C. Set low gas pressure with correct nozzle size
 - ☐ D. Increase gas pressure for deeper penetration

Q.11 Why is speed called a scalar quantity?

- Ans**
- ☒ A. It has magnitude but no direction
 - ☐ B. It acts opposite to motion
 - ☐ C. It depends only on force
 - ☐ D. It changes with acceleration only

Q.12 Which component is primarily responsible for maintaining alignment between the left and right front wheels in a mechanical steering system?

- Ans**
- ☐ A. Pitman arm lever
 - ☐ B. Drag link mechanism
 - ☐ C. Steering gear box
 - ☒ D. Tie rod assembly

Q.13 In a dimensioning system, the ends of a dimension line usually touch:

- Ans**
- ☒ A. Extension lines
 - ☐ B. Hidden outlines
 - ☐ C. Centre lines
 - ☐ D. Hatching lines

Q.14 What is the basic working principle of a power tiller?

- Ans**
- ☐ A. It operates completely using battery-driven mechanisms
 - ☐ B. It uses compressed air systems for field operation
 - ☐ C. It works through only hydraulic systems for field movement
 - ☒ D. It transmits engine power to wheels and implements

Q.15 How does periodic testing improve overall safety in lifting operations?

- Ans**
- ☐ A. It focuses mainly on equipment appearance
 - ☐ B. It ensures new equipment is always safe
 - ☒ C. It helps identify hidden defects early
 - ☐ D. It depends on user experience and training

Q.16 What is the primary risk if the locking pin of a trailer hitch is not fully engaged during operation?

- Ans**
- ☒ A. The trailer can detach unexpectedly under load
 - ☐ B. The drawbar will bend and misalign
 - ☐ C. The tiller engine may overheat rapidly
 - ☐ D. The tires may lose air pressure quickly

Q.17 Why must both tie rod ends be adjusted equally on a tractor during alignment?

- Ans**
- ☐ A. To create additional toe-in for the wheels
 - ☐ B. To improve hydraulic fluid performance
 - ☐ C. To provide more toe-out for field turns
 - ☒ D. To ensure both wheels track straight ahead

Q.18 What is the effect on back pressure if the exhaust pipe diameter is too small?

- Ans**
- ☒ A. Only increases back pressure
 - ☐ B. Eliminates back pressure
 - ☐ C. Only decreases back pressure
 - ☐ D. Has no effect on back pressure

Q.19 During a practical assessment, a student sharpens a centre punch at 45 degrees instead of the recommended angle. What is a likely result of this error?

- Ans**
- ☒ A. The punch tip will wear out quickly
 - ☐ B. The marks will be deeper and clear
 - ☐ C. The punch will become stronger
 - ☐ D. The punch will lose its weight

Q.20 In a capacitor, the dielectric material is used to:

- Ans**
- ☒ A. Insulate the plates from each other
 - ☐ B. Reduce supply voltage
 - ☐ C. Join the plates together
 - ☐ D. Increase current flow

Q.21 What is the main function of the ignition warning lamp in a tractor electrical system?

- Ans**
- ☒ A. To indicate charging system faults
 - ☐ B. To increase battery voltage
 - ☐ C. To control wheel alignment
 - ☐ D. To reduce engine temperature

Q.22 A tractor tyre with a 'B' temperature rating is best suited for which type of usage?

- Ans**
- ☐ A. Light loads and low speeds
 - ☒ B. Moderate speeds and moderate loads
 - ☐ C. Strictly off-road use only
 - ☐ D. High speeds and heavy loads

Q.23 How does the chemical structure of synthetic oils affect their performance in diesel engines?

- Ans**
- ☐ A. It decreases the oil's ability to resist thermal breakdown
 - ☐ B. It increases the possibility of sludge formation
 - ☐ C. It encourages irregular molecular arrangement for inconsistent results
 - ☒ D. It enables superior molecular uniformity for consistent lubrication

Q.24 How does the Electronic Control Unit (ECU) contribute to emission control in diesel engines?

- Ans**
- ☐ A. Enhances radiator fan speed
 - ☐ B. Modifies gear lever position
 - ☒ C. Adjusts fuel delivery
 - ☐ D. Increases fuel tank capacity

Q.25 Among the following metals, which has the lowest boiling point?

- Ans**
- ☐ A. Cobalt
 - ☐ B. Calcium
 - ☐ C. Aluminium
 - ☒ D. Cadmium

Q.26 Why might extractors be chosen over a standard exhaust manifold in automotive design?

- Ans**
- ☐ A. They reduce the overall weight of the vehicle significantly
 - ☐ B. They decrease the temperature of exhaust gases
 - ☐ C. They lower the manufacturing cost of the exhaust system
 - ☒ D. They increase performance by optimizing exhaust flow timing

Q.27 Which factor is most improved by using synthetic oils in diesel engine lubrication systems?

- Ans**
- ☒ A. Resistance to breakdown at higher temperatures
 - ☐ B. Formation of abrasive particles
 - ☐ C. Speed of oil degradation
 - ☐ D. Ability to attract moisture into the system

Q.28 Which component regulates the timing of diesel injection?

- Ans**
- ☐ A. Glow plug
 - ☒ B. Injection pump
 - ☐ C. Fuel filter
 - ☐ D. Air intake

Q.29 A thyristor continues to conduct even after the gate pulse is removed. What is the main reason for this behavior?

- Ans**
- ☐ A. The thyristor acts like a fuse
 - ☒ B. The device latches ON after triggering
 - ☐ C. Gate current continuously increases
 - ☐ D. Collector-emitter junction remains reverse biased

Q.30 If a tractor starter emits grinding noises, what is the likely issue?

- Ans**
- ☐ A. Damaged fan blade
 - ☐ B. Faulty governor spring
 - ☒ C. Worn starter pinion
 - ☐ D. Clogged fuel line

Q.31 Why are diodes used in the alternator circuit?

- Ans**
- ☐ A. To increase the magnetic field strength
 - ☐ B. To store electrical charge
 - ☐ C. To reduce mechanical losses
 - ☒ D. To allow current flow in one direction only

Q.32 In a tractor, why is it important that brakes are applied equally to both rear wheels?

- Ans**
- ☐ A. To achieve faster stopping in all conditions
 - ☒ B. To maintain straight movement while stopping
 - ☐ C. To reduce wear on the engine components
 - ☐ D. To increase the fuel efficiency of the tractor

Q.33 An operator notices excessive soot in the flame during welding. What adjustment should be made?

- Ans**
- ☐ A. Reduce the oxygen supply to the flame
 - ☒ B. Increase the oxygen supply to the flame
 - ☐ C. Add more acetylene to the flame
 - ☐ D. Lower both gases at the same rate

Q.34 Which component is directly affected by changes in compression ratio within the engine cycle?

- Ans**
- ☐ A. Air filter
 - ☒ B. Combustion chamber
 - ☐ C. Timing belt
 - ☐ D. Alternator

Q.35 Which tool is primarily used to create straight layout lines on metal surfaces?

- Ans**
- ☒ A. Scribe with steel rule
 - ☐ B. Outside micrometer with try square
 - ☐ C. Centre punch with hammer
 - ☐ D. Vernier caliper with divider

Q.36 Which type of lamps is commonly used for the rear lights in a tractor?

- Ans**
- ☐ A. Flood lamp
 - ☐ B. Spot lamp
 - ☐ C. Headlamp
 - ☒ D. Tail lamp

Q.37 If only a half round file is available, what limitation might a worker face?

- Ans**
- ☐ A. Inability to work on curved surfaces
 - ☐ B. Excess removal of material
 - ☒ C. Difficulty accessing sharp internal corners
 - ☐ D. Inability to finish flat surfaces

Q.38 Which emissions are primarily reduced using variable valve timing in diesel engines?

- Ans**
- ☐ A. Reduction in hydrogen emissions
 - ☒ B. Reduction in nitrogen oxide emissions
 - ☐ C. Rise in particulate matter emissions
 - ☐ D. Reduction in the sulfur dioxide emissions

Q.39 What role does earthing play in electrical installations?

- Ans**
- ☐ A. Reduces voltage to devices
 - ☒ B. Directs fault current to ground
 - ☐ C. Increases device power
 - ☐ D. Stores excess electricity

Q.40 How does the use of a recovery system during maintenance support workplace safety?

- Ans**
- ☐ A. It lubricates moving parts inside the unit
 - ☐ B. It insulates electrical wires from short circuits
 - ☐ C. It automatically shuts off the system during faults
 - ☒ D. It prevents harmful refrigerant exposure to technicians

Q.41 If a machinist wants to drill a precise hole with minimal wandering, which twist drill feature is most critical?

- Ans**
- ☒ A. Point angle
 - ☐ B. Margin
 - ☐ C. Flute
 - ☐ D. Shank

Q.42 A student used a centre punch to mark points for drilling, but the drill bit still slipped. What is the most likely reason?

- Ans**
- ☐ A. Too much force was used
 - ☐ B. The wrong punch was selected
 - ☒ C. The indentation was too shallow
 - ☐ D. The punch was hardened excessively

Q.43 Aluminium is used in overhead transmission lines because it has:

- Ans**
- ☐ A. Zero electrical conductivity
 - ☐ B. High resistance and high weight
 - ☒ C. Good electrical conductivity and low weight
 - ☐ D. Infinite resistivity

Q.44 Which situation best demonstrates a limitation of paper gaskets in sealing applications?

- Ans**
- ☐ A. Temporary repair for a small oil leak
 - ☒ B. Sealing a coolant system with high pressure and heat
 - ☐ C. Covering a low-stress inspection panel
 - ☐ D. Sealing a non-pressurized valve cover

Q.45 Which sequence should be followed when adjusting the pinion in the final drive assembly?

- Ans**
- ☐ A. Adjust backlash, check depth, set contact pattern
 - ☒ B. Set the depth, adjust the backlash, check contact pattern
 - ☐ C. Check contact pattern, set backlash, adjust depth
 - ☐ D. Check pattern, adjust depth, set backlash

Q.46 Why is calibration necessary for a micrometer?

- Ans**
- ☐ A. To change the measuring range of the tool
 - ☐ B. To measure the reading up to the three decimal point
 - ☐ C. To increase the size of the instrument
 - ☒ D. To ensure accurate measurement readings

Q.47 Why are bearing shells made slightly thinner in the middle, than at the ends?

- Ans**
- ☐ A. To increase structural strength
 - ☒ B. To accommodate thermal expansion
 - ☐ C. To reduce overall engine weight
 - ☐ D. To improve noise reduction

Q.48 Which type of projection is commonly used in engineering drawing to represent the exact shape and size of an object?

- Ans**
- ☐ A. Oblique projection
 - ☒ B. Orthographic projection
 - ☐ C. Perspective projection
 - ☐ D. Isometric projection

Q.49 The introduction of which system has most reduced soil compaction in Indian tractor operations?

- Ans**
- ☐ A. Triangular caterpillar tracks
 - ☐ B. Solid rubber treads
 - ☒ C. Low-pressure radial tires
 - ☐ D. Cast iron wheels

Q.50 One horse power is equal to:

- Ans**
- ☒ A. 4500 kgf metre/min
 - ☐ B. 3000 kgf metre/min
 - ☐ C. 6000 kgf metre/min
 - ☐ D. 1500 kgf metre/min

Q.51 Which issue can arise from manufacturing a bearing shell with low-grade material?

- Ans**
- ☐ A. Reduced vibration
 - ☒ B. Premature bearing failure
 - ☐ C. Enhanced oil pressure
 - ☐ D. Improved engine speed

Q.52 What is the main advantage of split (dual) brake pedals in tractors according to the context?

- Ans**
- ☒ A. They allow independent braking for better turning ability
 - ☐ B. They increase the power of the braking system
 - ☐ C. They provide consistent braking on rough terrain
 - ☐ D. They reduce the need for regular maintenance

Q.53 Which characteristic is essential for the material used in exhaust manifolds?

- Ans**
- ☒ A. High thermal resistance
 - ☐ B. Low density for lightweight
 - ☐ C. High electrical conductivity
 - ☐ D. High magnetic permeability

Q.54 Which of the following is a type of brake booster commonly used in vehicles?

- Ans**
- ☐ A. Electromagnetic brake booster
 - ☐ B. Centrifugal brake booster
 - ☒ C. Vacuum brake booster
 - ☐ D. Mechanical brake booster

Q.55 Which property is most important for a cylinder sleeve material?

- Ans**
- ☐ A. High transparency
 - ☐ B. High electrical conductivity
 - ☒ C. High wear resistance
 - ☐ D. High friction

Q.56 What could happen if a tractor is operated in a high gear while pulling a heavy load?

- Ans**
- ☐ A. The engine switches to a lower gear automatically
 - ☒ B. The engine may stall due to insufficient torque
 - ☐ C. The engine runs more efficiently under load
 - ☐ D. The engine produces more power for the load

Q.57 What is a significant impact of Ministry of Road Transport and Highways (MoRTH's) regulatory initiatives on highway safety?

- Ans**
- ☐ A. Supervising driver training schools
 - ☐ B. Issuing pollution control certificates
 - ☐ C. Regulating taxi permit allocation
 - ☒ D. Implementing uniform signage across states

Q.58 What does the ply rating of a tractor tyre indicate?

- Ans**
- ☒ A. The type of tread pattern on the tyre
 - ☒ B. The strength and load-carrying capacity of the tyre
 - ☒ C. The size and width of the tyre
 - ☒ D. The air pressure required in the tyre

Q.59 Projection lines or extension lines are usually drawn using:

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

Q.60 When would a solid die be unsuitable for threading work?

- Ans**
- ☒ A. When slight size adjustments are needed
 - ☒ B. When threading steel rods
 - ☒ C. When using a die stock for support
 - ☒ D. When threading by hand operation

Q.61 What is the common cross-sectional shape of a connecting rod used in diesel engines?

- Ans**
- ☒ A. T-section
 - ☒ B. Square
 - ☒ C. Circular
 - ☒ D. I-section

Q.62 Which property is essential for materials used in piston rings of diesel engines?

- Ans**
- ☒ A. Low wear resistance
 - ☒ B. High wear resistance
 - ☒ C. Low corrosion resistance
 - ☒ D. High corrosion resistance

Q.63 Why is it necessary for tractors to have manual transmissions instead of fixed gear systems?

- Ans**
- ☒ A. They ensure tractors always run at a constant speed
 - ☒ B. They eliminate the need for regular brake usage
 - ☒ C. They allow tractors to adapt to varying work conditions
 - ☒ D. They are primarily used to reduce engine noise

Q.64 When would a four post hoist be less advantageous than a two post hoist?

- Ans**
- ☒ A. While draining engine coolant
 - ☒ B. When checking underbody rust
 - ☒ C. During oil filter replacement
 - ☒ D. When accessing side body panels

Q.65 A tractor safety interlock circuit allows engine starting only when both clutch and neutral switches are active. Which logic gate is most suitable for this operation? (Assume active switch means logic HIGH)

- Ans**
- ☒ A. NOT gate
 - ☒ B. OR gate
 - ☒ C. XOR gate
 - ☒ D. AND gate

Q.66 When reversing a tractor with a mounted cultivator, what effect can an incorrect top link adjustment have?

- Ans**
- ☒ A. It can cause the implement to lift unevenly
 - ☐ B. It can increase the gear ratio sharply
 - ☐ C. It can drop the hydraulic fluid level
 - ☐ D. It can change the injector sequence

Q.67 A cylindrical tank of diameter 2 m and height 3.5 m is filled with petrol. Using $\pi = 22/7$, the volume is:

- Ans**
- ☐ A. 9 m³
 - ☐ B. 12 m³
 - ☒ C. 11 m³
 - ☐ D. 15 m³

Q.68 A technician must drill holes at multiple heights on a construction site with limited access to power outlets. Which portable drilling solution is most suitable?

- Ans**
- ☒ A. Using a battery-operated cordless drill
 - ☐ B. Using a heavy stationary drill press
 - ☐ C. Using a corded electric bench drill
 - ☐ D. Using a pneumatic drilling machine

Q.69 In the event of a suspected electrical fire in the workshop, which action should be avoided to ensure safety?

- Ans**
- ☒ A. Using water to extinguish the electrical fire
 - ☐ B. Disconnecting power supply immediately
 - ☐ C. Evacuating the workshop if smoke increases
 - ☐ D. Using an electrical-rated fire extinguisher

Q.70 A driver notices steam coming from the radiator after a long drive. What does this most likely indicate about the radiator's function?

- Ans**
- ☐ A. The radiator is cleaning the fuel lines
 - ☒ B. The radiator is failing to remove heat effectively
 - ☐ C. The radiator is maintaining tire pressure
 - ☐ D. The radiator is overfilling with coolant

Q.71 Why is a 4-3 way valve preferred for controlling the direction of a double-acting actuator?

- Ans**
- ☒ A. It can reverse flow and provide a neutral position
 - ☐ B. It only allows one-way fluid movement
 - ☐ C. It is smaller than other valve types
 - ☐ D. It increases pressure automatically

Q.72 Which maintenance action is essential for a tractor clutch shaft to function properly?

- Ans**
- ☐ A. Tightening all nearby gearbox mounting bolts
 - ☐ B. Applying grease to all clutch components
 - ☐ C. Regular cleaning of the shaft with solvents
 - ☒ D. Ensuring correct alignment during assembly and repairs

Q.73 Why is it important to use a die stock rather than gripping the die directly with pliers when threading a rod?

- Ans**
- ☐ A. Die stock is lighter in weight
 - ☐ B. Die stock increases cutting speed only
 - ☐ C. Die stock creates more torque than pliers
 - ☒ D. Die stock provides stability and alignment

Q.74 Why is an outside micrometer not suitable for measuring deep internal grooves?

- Ans**
- ☐ A. It expands to fit into grooves automatically
 - ☐ B. It is designed for measuring large holes
 - ☒ C. The spindle cannot reach into grooves
 - ☐ D. It measures multiple grooves simultaneously

Q.75 Which phenomenon primarily causes knocking in spark-ignition (SI) engines and limits their compression ratio?

- Ans**
- ☐ A. Incomplete vaporization of fuel during injection
 - ☒ B. Auto-ignition of unburned mixture ahead of flame front
 - ☐ C. Too high amount of oxygen causing incomplete combustion
 - ☐ D. Excessive temperature of the engine lubrication oil