



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	9:30 AM - 12:00 PM
Subject	ALP Stage 2 Fitter

* 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 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
- ☒ A. ₹1,200
 - ☒ B. ₹1,260
 - ☒ C. ₹1,380
 - ☒ D. ₹1,440

Q.2 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
- ☒ A. 26.5% loss
 - ☒ B. 22.6% profit
 - ☒ C. 15.7% profit
 - ☒ D. 20.9% profit

Q.3 If 'A' stands for '+', 'B' stands for '-', 'C' stands for '×' and 'D' stands for '÷', then what will come in place of the question mark (?) in the following equation?

28 A 16 C 3 B 12 D 4 = ?

- Ans
- ☒ A. 72
 - ☒ B. 73
 - ☒ C. 71
 - ☒ D. 70

Q.4 The median of the following data is :
25, 15, 23, 25, 17, 27, 20, 18, 24, 30, 19, 28, 35, 10, 31, 40

- Ans
- ☒ A. 23.5
 - ☒ B. 25
 - ☒ C. 20.5
 - ☒ D. 24.5

Q.5 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**
- ☒ 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 (and not statement I alone or statement II alone) are sufficient to answer the question
 - ☒ C. Both statements I and II together are NOT sufficient to answer the question
 - ☒ D. Data in statement II alone is sufficient to answer the question while data in statement I is not

Q.6 Which statement best describes a 'point' in engineering drawing?

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

Q.7 Which property of a fuse wire ensures it melts quickly when excess current flows?

- Ans**
- ☒ A. Low melting point
 - ☒ B. Thick wire
 - ☒ C. High electrical resistance
 - ☒ D. High melting point

Q.8 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**
- ☒ A. North-East
 - ☒ B. South-East
 - ☒ C. South-West
 - ☒ D. North-West

Q.9 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**
- ☒ A. Only conclusion (II) follows
 - ☒ B. Neither conclusion (I) nor (II) follows
 - ☒ C. Both conclusions (I) and (II) follow
 - ☒ D. Only conclusion (I) follows

Q.10 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**
- ☒ A. The car's average speed is 60 km per hour based only on the change in odometer readings.
 - ☒ B. The car's average speed is 180 km per hour since that was the odometer reading at 8:00 am.
 - ☒ C. The car's average speed is 240 km per hour since that was the odometer reading at 9:30 am.
 - ☒ D. The car's average speed is 40 km per hour as calculated from the odometer readings and time interval.

Q.11 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**
- ☒ A. 2
 - ☒ B. 3
 - ☒ C. 0
 - ☒ D. 1

Q.12 Which component makes up the largest proportion of Earth's atmosphere by volume?

- Ans**
- ☒ A. Oxygen
 - ☒ B. Argon
 - ☒ C. Nitrogen
 - ☒ D. Carbon dioxide

Q.13 Which of the following scenarios best demonstrates the conversion of chemical energy to mechanical energy?

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

Q.14 What do touch gestures in Microsoft Windows allow users to do?

- Ans**
- ☒ A. Increase screen brightness
 - ☒ B. Perform actions using finger movements
 - ☒ C. Connect external devices
 - ☒ D. Type faster on the keyboard

Q.15 An object has a mass of 10 kilograms. How does its weight on the Moon compare to its weight on Earth?

- Ans**
- ☒ A. The object weighs less on the Moon than on Earth
 - ☒ B. The object weighs the same on both the Moon and Earth
 - ☒ C. The object weighs zero on the Moon
 - ☒ D. The object weighs more on the Moon than on Earth

Q.16 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**
- ☒ A. 78
 - ☒ B. 732
 - ☒ C. 729
 - ☒ D. 84

Q.17 A thermometer shows a reading of 37 degrees Celsius. What is the corresponding temperature in Kelvin?

- Ans**
- ☒ A. 270 K
 - ☒ B. 310 K
 - ☒ C. 300 K
 - ☒ D. 320 K

Q.18 Find the LCM of 72, 78, and 90.

- Ans**
- ☒ A. 4250
 - ☒ B. 4680
 - ☒ C. 4280
 - ☒ D. 4120

Q.19 A worker's hand is at risk of injury from a mechanical shearing action. Which situation best describes a shearing hazard?

- Ans**
- ☒ A. A hand becoming entangled in a rotating machine shaft during operation
 - ☒ B. A hand touching a hot metallic machine surface during maintenance activity
 - ☒ C. A hand sliding repeatedly across a rough abrasive machine surface during work
 - ☒ D. A hand caught between a moving blade and a fixed machine surface during operation

Q.20 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**
- ☒ A. 50 kg
 - ☒ B. 45 kg
 - ☒ C. 48 kg
 - ☒ D. 52 kg

Q.21 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**
- ☒ A. WSNYT
 - ☒ B. STMWV
 - ☒ C. WRNYT
 - ☒ D. TSNWW

Q.22 The average of 8 numbers is 45. If one number, 59, is removed, what will the new average be?

- Ans**
- ☒ A. 43
 - ☒ B. 42
 - ☒ C. 42.5
 - ☒ D. 41.5

Q.23 If $\left(x + \frac{1}{x}\right) = 3$, find the value of $\left(x^3 + \frac{1}{x^3}\right)$.

- Ans
- ☒ A. 18
 - ☐ B. 15
 - ☐ C. 20
 - ☐ D. 16

Q.24 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
- ☐ A. Validate the analysis using workplace data
 - ☐ B. List all possible causes of failures
 - ☒ C. Define the top event representing the injury
 - ☐ D. Establish preventive measures to control risks

Q.25 What should come in place of the question mark (?) in the given series?

98, 104, 116, 134, 158, ?

- Ans
- ☐ A. 190
 - ☒ B. 188
 - ☐ C. 184
 - ☐ D. 186

Q.26 Simplify: $60 - \{(-8) \times (-16 - 19 - 2)\} \div [5 \times \{2 + (-1) \times (-1)\}]$

- Ans
- ☒ A. $\frac{604}{15}$
 - ☐ B. $\frac{608}{15}$
 - ☐ C. $\frac{614}{15}$
 - ☐ D. $\frac{594}{15}$

Q.27 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
- ☐ 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. 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 II alone is sufficient to answer the question while data in statement I is not

Q.28 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
- ☐ A. 0 J
 - ☒ B. 500 J
 - ☐ C. 1000 J
 - ☐ D. 50 J

Q.29 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. EY-KO
 - ☒ B. WQ-CG
 - ☒ C. QK-VA
 - ☒ D. TN-ZD

Q.30 Which of the following best defines 'work' in physics?

- Ans
- ☒ A. Work is done whenever a force is applied, regardless of movement.
 - ☒ B. Work is done when energy is stored in an object.
 - ☒ C. Work is done when a force moves an object in the direction of the force.
 - ☒ D. Work is done if a force acts at any angle to the motion.

Q.31 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
- ☒ A. 13.0%
 - ☒ B. 13.7%
 - ☒ C. 14.1%
 - ☒ D. 12.6%

Q.32 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
- ☒ A. 8.0 meters per second
 - ☒ B. 6.5 meters per second
 - ☒ C. 7.0 meters per second
 - ☒ D. 7.5 meters per second

Q.33 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
- ☒ A. X
 - ☒ B. C
 - ☒ C. Z
 - ☒ D. A

Q.34 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
- ☒ A. 82
 - ☒ B. 98
 - ☒ C. 99
 - ☒ D. 93

Q.35 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**
- ☐ A. Q
 - ☐ B. R
 - ☒ C. S
 - ☐ D. P

Q.36 What is the best description of the purpose of multi-view drawing in engineering drawing?

- Ans**
- ☐ A. To view an object from only one direction
 - ☒ B. To represent different sides of an object clearly on a flat surface
 - ☐ C. To present the object in a single three-dimensional visual form only
 - ☐ D. To show different colors of an object for better visual appearance

Q.37 What should come in place of the question mark (?) in the given series?

74, 83, 101, 128, ?, 209

- Ans**
- ☐ A. 176
 - ☒ B. 164
 - ☐ C. 155
 - ☐ D. 146

Q.38 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**
- ☐ A. ₹11,000
 - ☐ B. ₹9,000
 - ☒ C. ₹12,000
 - ☐ D. ₹10,000

Q.39 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**
- ☐ A. 4
 - ☒ B. 9
 - ☐ C. 7
 - ☐ D. 2

Q.40 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**
- ☐ A. 46.5 km/h
 - ☐ B. 45.3 km/h
 - ☐ C. 45.8 km/h
 - ☒ D. 48.6 km/h

Q.41 A sample of water is heated from 15 degrees Celsius to 35 degrees Celsius. What is the temperature change in Kelvin?

- Ans**
- ☒ A. The temperature change is 20 K.
 - ☐ B. The temperature change is 50 K.
 - ☐ C. The temperature change is 30 K.
 - ☐ D. The temperature change is 15 K.

- Q.42** In third angle projection, where is the object placed relative to the plane of projection?
- Ans** ☒ A. The object is placed in the third quadrant
- ☐ B. The object is placed in the first quadrant
- ☐ C. The object is placed in the fourth quadrant
- ☐ D. The object is placed in the second quadrant

- Q.43** If a scooter travels at a constant speed of 25 km per hour, how far will it travel in 4 hours?
- Ans** ☐ A. 80 km
- ☐ B. 120 km
- ☐ C. 75 km
- ☒ D. 100 km

- Q.44** 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** ☐ A. $\sqrt{117}$ cm
- ☒ B. $\sqrt{119}$ cm
- ☐ C. $\sqrt{97}$ cm
- ☐ D. $\sqrt{107}$ cm

- Q.45** 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** ☒ A. Three
- ☐ B. One
- ☐ C. Two
- ☐ D. Four

- Q.46** When using a hand file during fitting operations, which action demonstrates adherence to tool safety protocols?
- Ans** ☐ A. Applying excessive downward force when filing
- ☒ B. Fitting a proper handle securely to the tang
- ☐ C. Filing above shoulder height for better leverage
- ☐ D. Holding the file near its tang during filing work

- Q.47** Solve the system of equations:
- $$-3x + 2y - z = -1, 6x - 6y + 7z = -7, 3x - 4y + 4z = -6$$
- Ans** ☐ A. $x=1, y=2, z=2$
- ☐ B. $x=2, y=1, z=-3$
- ☐ C. $x=-2, y=2, z=11$
- ☒ D. $x=2, y=2, z=-1$

- Q.48** 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** ☐ A. R
- ☐ B. Q
- ☐ C. S
- ☒ D. P

Q.49 Which situation best describes an entanglement hazard in a mechanical workshop?

- Ans**
- ☐ A. Gloves worn near hot surfaces
 - ☐ B. Hand pinched between gears
 - ☒ C. Loose clothing caught in a rotating shaft
 - ☐ D. Finger cut by a sharp edge

Q.50 Which of the following statements correctly reflects the characteristics of a Local Area Network (LAN) and the role of Ethernet within it?

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

Q.51 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**
- ☐ A. IHS 23
 - ☐ B. JHZ 24
 - ☒ C. IGA 25
 - ☐ D. HIZ 30

Q.52 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**
- ☐ A. Represent the intersection as a straight line in the side view
 - ☒ B. Draw the true shape of the intersection using auxiliary projection
 - ☐ C. Use only standard orthographic projection without auxiliary views
 - ☐ D. Draw a simple circle at the junction in the top view

Q.53 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**
- ☐ A. The outline of triangular prism and circular hole will be visible in front view only
 - ☐ B. Only the rectangular base outline will be visible in the front view drawing
 - ☐ C. Only the triangular prism will be clearly visible in the front view drawing
 - ☒ D. The outline of rectangular base and triangular prism will be visible but hole is not shown

Q.54 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**
- ☒ A. HJVI
 - ☐ B. IJVJ
 - ☐ C. HKVJ
 - ☐ D. IKUH

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. DJ – GM
 - ☐ B. AF – DI
 - ☒ C. CH – EK
 - ☐ D. BG – EJ

Q.56 When a moving car suddenly applies brakes, its kinetic energy is transformed mainly into which form of energy?

- Ans**
- ☐ A. Sound energy
 - ☐ B. Light energy
 - ☐ C. Potential energy
 - ☒ D. Heat energy

Q.57 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**
- ☐ A. One
 - ☒ B. Two
 - ☐ C. Four
 - ☐ D. Three

Q.58 The simple interest earned on a certain sum of money for 3 years at 15% per annum is ₹2,700. Find the sum.

- Ans**
- ☐ A. ₹8,000
 - ☐ B. ₹5,000
 - ☐ C. ₹9,000
 - ☒ D. ₹6,000

Q.59 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**
- ☐ A. 30 km/h east
 - ☒ B. 20 km/h east
 - ☐ C. 40 km/h east
 - ☐ D. 50 km/h north

Q.60 What is the main purpose of ambient air quality standards?

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

Q.61 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**
- ☐ A. 8 hours
 - ☐ B. 6 hours
 - ☒ C. 7.5 hours
 - ☐ D. 10 hours

Q.62 If 'A' stands for '+', 'B' stands for '−', 'C' stands for '×' and 'D' stands for '÷', then what will come in place of the question mark (?) in the following equation?

$$31 \text{ B } 35 \text{ D } 7 \text{ A } 9 \text{ C } 2 = ?$$

- Ans**
- ☒ A. 44
 - ☐ B. 42
 - ☐ C. 46
 - ☐ D. 48

Q.63 Which integrated strategy best addresses soil pollution, falling crop yields, and low microbial activity near an industrial zone?

- Ans**
- ☒ A. Control industrial waste for sustainability.
 - ☐ B. Reforestation in nearby urban centers.
 - ☐ C. Expand urban areas into farmland.
 - ☐ D. Ban all regional chemical fertilizers.

Q.64 Which of the following best describes a key environmental concern associated with improper disposal of e-waste?

- Ans**
- ☐ A. Increased recycling rates of precious metals
 - ☐ B. Enhanced biodegradation of plastics
 - ☒ C. Release of toxic metals into soil and water
 - ☐ D. Release of greenhouse gases from decomposition

Q.65 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**
- ☐ A. Prioritizing uniform wall thickness over all other features
 - ☐ B. Matching only the overall height of the cone
 - ☒ C. Ensuring the slant height matches the assembly requirement
 - ☐ D. Focusing only on base diameter for precise fit

Q.66 Which is the most important safety check before operating any machine in a workshop?

- Ans**
- ☐ A. Wipe the machine with a dry cloth before use
 - ☒ B. Inspect the machine for loose or damaged parts
 - ☐ C. Check if the machine is plugged in properly
 - ☐ D. Ensure the machine area is properly illuminated

Q.67 Which of the following statements correctly describes average velocity and its SI unit?

- Ans**
- ☐ A. Average velocity is the total displacement divided by total time, and its unit is kilometer per hour.
 - ☐ B. Average velocity is the total distance divided by total time, and its unit is kilometer per hour.
 - ☐ C. Average velocity is the total distance divided by total time, and its unit is meter per second.
 - ☒ D. Average velocity is the total displacement divided by total time, and its unit is meter per second.

Q.68 Which approach most effectively reduces both nitrogen and phosphorus concentrations during wastewater treatment?

- Ans**
- ☒ A. Biological and chemical nutrient removal
 - ☐ B. Primary sedimentation with extended aeration
 - ☐ C. UV disinfection following secondary treatment
 - ☐ D. Surface-flow constructed wetlands

Q.69 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**
- ☐ A. It has decreased to 2.0 seconds
 - ☐ B. It remains at 2.5 seconds
 - ☒ C. It has increased to 3.0 seconds
 - ☐ D. It has decreased to 1.5 seconds

Q.70 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**
- ☒ A. 9568
 - ☒ B. 9856
 - ☒ C. 9865
 - ☒ D. 8956

Q.71 Which feature is a requirement of the BIS drawing standard in engineering drawings?

- Ans**
- ☒ A. Freehand sketches without scale
 - ☒ B. Title block with specific information
 - ☒ C. Margin lines of random width
 - ☒ D. Use of colored pencils for clarity

Q.72 Which of the following is both, an input and output device?

- Ans**
- ☒ A. Touchscreen monitor
 - ☒ B. Projector
 - ☒ C. Keyboard
 - ☒ D. Printer

Q.73 If 'A' stands for '÷', 'B' stands for '×', 'C' stands for '+' and 'D' stands for '-', what will come in place of the question mark '?' in the following equation?

$$14 \text{ A } 30 \text{ B } 45 \text{ C } 15 \text{ D } 9 = ?$$

- Ans**
- ☒ A. 27
 - ☒ B. 25
 - ☒ C. 28
 - ☒ D. 29

Q.74 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**
- ☒ A. 20 km/h south
 - ☒ B. 6.7 km/h north
 - ☒ C. 0 km/h
 - ☒ D. 33.3 km/h north

Q.75 A runner completes one lap of a 200 meter circular track in 50 seconds. What is the average speed of the runner?

- Ans**
- ☒ A. 3 meter per second
 - ☒ B. 4 meter per second
 - ☒ C. 3.5 meter per second
 - ☒ D. 4.5 meter per second

Q.76 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**
- ☒ A. 4000 mm
 - ☒ B. 0.4 m
 - ☒ C. 4 m
 - ☒ D. 400 cm

Q.77 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**
- ☐ A. Use only hidden lines for representing features on the far side in the view
 - ☐ B. Sketch the side view freely without using projections from the main view
 - ☐ C. Include all features even those not visible from the selected side view
 - ☒ D. Project all visible elements from the side and omit hidden features unless needed

Q.78 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**
- ☒ A. $\cos A + \sin A$
 - ☐ B. 0
 - ☐ C. 1
 - ☐ D. $\sin A - \cos A$

Q.79 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**
- ☒ A. Four
 - ☐ B. None
 - ☐ C. Three
 - ☐ D. Two

Q.80 Which line symbol is commonly used in engineering drawings to represent a hidden edge that is not directly visible?

- Ans**
- ☐ A. Zigzag line
 - ☐ B. Solid thick line
 - ☐ C. Chain thin line
 - ☒ D. Dashed line

Q.81 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**
- ☐ A. S
 - ☐ B. V
 - ☒ C. P
 - ☐ D. Q

Q.82 What is the typical temperature range covered by a laboratory thermometer used in school experiments?

- Ans**
- ☐ A. Zero to two hundred degrees Celsius
 - ☐ B. Minus fifty to fifty degrees Celsius
 - ☐ C. Thirty five to forty two degrees Celsius
 - ☒ D. Minus ten to one hundred and ten degrees Celsius

Q.83 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**
- ✓ A. 6.55 hours
 - ✗ B. 9.45 hours
 - ✗ C. 3.33 hours
 - ✗ D. 5.56 hours

Q.84 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?

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

- Ans**
- ✓ A. 92400
 - ✗ B. 92550
 - ✗ C. 92450
 - ✗ D. 92500

Q.85 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**
- ✗ A. Both conclusions (I) and (II) follow
 - ✗ B. Neither conclusion (I) nor (II) follows
 - ✓ C. Only conclusion (I) follows
 - ✗ D. Only conclusion (II) follows

Q.86 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**
- ✗ A. ₹73,624
 - ✗ B. ₹72,604
 - ✗ C. ₹74,624
 - ✓ D. ₹72,624

Q.87 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**
- ✓ A. 240,000 joules
 - ✗ B. 24,000 joules
 - ✗ C. 480,000 joules
 - ✗ D. 12,000 joules

Q.88 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
- ☒ A. XDE : PON
 - ☒ B. CGW : NHT
 - ☒ C. FMT : IQY
 - ☒ D. VCD : GRD

Q.89 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
- ☒ A. Principle of inertia
 - ☒ B. Principle of superposition
 - ☒ C. Law of conservation of energy
 - ☒ D. Law of inertia

Q.90 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
- ☒ A. 6 days
 - ☒ B. 8 days
 - ☒ C. 4 days
 - ☒ D. 5 days

Q.91 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
- ☒ A. Son's wife's sister
 - ☒ B. Mother's mother
 - ☒ C. Son's wife
 - ☒ D. Son's wife's mother

Q.92 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
- ☒ A. Father's sister
 - ☒ B. Mother's mother
 - ☒ C. Father's mother
 - ☒ D. Mother's sister

Q.93 In how many years will a sum of ₹16,000 at 10% per annum compounded semi-annually become ₹18,522?

- Ans
- ☒ A. 1.5 years
 - ☒ B. 2.5 years
 - ☒ C. 2 years
 - ☒ D. 1 year

Q.94 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**
- ☒ A. The selected cells are copied to the new worksheet.
 - ☐ B. The selected cells are deleted from the original worksheet.
 - ☐ C. The selected cells are moved to the new worksheet.
 - ☐ D. The selected cells are saved to a new file.

Q.95 What should come in place of the question mark (?) in the given series based on the English alphabetical order?

UMD ZQG EUJ JYM ?

- Ans**
- ☒ A. OCP
 - ☐ B. PDP
 - ☐ C. NDO
 - ☐ D. NBQ

Q.96 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**
- ☐ A. 53
 - ☐ B. 42
 - ☒ C. 39
 - ☐ D. 27

Q.97 What is an email used for?

- Ans**
- ☒ A. Sending messages
 - ☐ B. File storage
 - ☐ C. Creating documents
 - ☐ D. Data processing

Q.98 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**
- ☐ A. 4
 - ☐ B. 7
 - ☐ C. 6
 - ☒ D. 5

Q.99 What is the primary function of a fire hydrant in a workplace safety system?

- Ans**
- ☐ A. Detecting smoke and warning employees
 - ☒ B. Supplying large quantities of water to fight fires
 - ☐ C. Activating fire alarms automatically in emergencies
 - ☐ D. Removing hazardous fumes from the area

Q.100 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**
- ☒ A. 12 - 144 - 62 - 31
 - ☒ B. 8 - 64 - 32 - 14
 - ☒ C. 5 - 25 - 15 - 7
 - ☒ D. 4 - 16 - 8 - 4

Section : PART-B

Q.1 Which kind of drill is mainly used to enlarge an existing hole rather than create a new one?

- Ans**
- ☒ A. Center drill
 - ☒ B. Twist drill
 - ☒ C. Core drill
 - ☒ D. Spade drill

Q.2 Which method is often used to bend a flat bar accurately in a workshop without damaging its surface finish?

- Ans**
- ☒ A. Striking the bar with a hammer repeatedly
 - ☒ B. Using a bending block and applying uniform pressure
 - ☒ C. Clamping in a vice and twisting the bar
 - ☒ D. Heating the bar and then quenching in water

Q.3 A screw thread is specified as M12 × 1.75. What does 'M12' represent in this specification?

- Ans**
- ☒ A. Thread angle of twelve degrees
 - ☒ B. Major diameter of twelve millimeters
 - ☒ C. Minor diameter of twelve millimeters
 - ☒ D. Pitch of twelve millimeters

Q.4 A steel spring in a machine is compressed when a load is applied. When the load is removed, the spring returns to its original shape and length without any permanent deformation. Which mechanical property of the material is responsible for this behavior?

- Ans**
- ☒ A. Hardness
 - ☒ B. Brittleness
 - ☒ C. Plasticity
 - ☒ D. Elasticity

Q.5 In a pneumatic system, why is an air receiver tank placed after the compressor and before the distribution lines?

- Ans**
- ☒ A. To store compressed air and maintain pressure stability
 - ☒ B. To lubricate pneumatic tools in operation cycles
 - ☒ C. To reduce energy consumption of air compressor
 - ☒ D. To filter out dust particles from compressed air

Q.6 Which of the following best describes the main function of a solid pulley in power transmission systems?

- Ans**
- ☒ A. It transmits rotary motion between shafts using a belt
 - ☐ B. It changes the direction of motion in gear systems
 - ☐ C. It is used to connect electrical circuits in machines
 - ☐ D. It increases the force applied to the driven shaft

Q.7 In a bolt drawing, which line type is typically used to show the hidden portion of the thread inside a drilled hole?

- Ans**
- ☒ A. Dashed lines representing hidden details
 - ☐ B. Wavy lines showing internal details
 - ☐ C. Chain lines indicating center paths
 - ☐ D. Solid thick lines for visible outlines

Q.8 During the installation of a flat belt pulley system, which feature on the pulley face helps maintain the belt in the center during operation?

- Ans**
- ☐ A. A flat face with no curvature at all
 - ☒ B. A slightly convex shape across the pulley face
 - ☐ C. An entirely rough surface with no shape change
 - ☐ D. A slightly concave shape across the pulley face

Q.9 In a transition fit sketch, what does the overlapping region of tolerance zones represent?

- Ans**
- ☐ A. The maximum possible clearance between hole and shaft
 - ☒ B. The range in which either clearance or interference may occur
 - ☐ C. The minimum possible clearance between hole and shaft
 - ☐ D. The exact basic size of the mating components

Q.10 An engineer selects an M8 screw for assembling two steel plates. Which value indicates the nominal diameter in the specification M8 x 1.25 x 40?

- Ans**
- ☐ A. 1.25 mm
 - ☐ B. 40 mm
 - ☒ C. 8 mm
 - ☐ D. 16 mm

Q.11 Which feature should be included in a free hand sketch of a flat file used in the workshop?

- Ans**
- ☒ A. The tapered edge should be shown clearly in the sketch
 - ☐ B. The round handle should be shown clearly in the sketch
 - ☐ C. The curved blade should be shown clearly in the sketch
 - ☐ D. The serrated body should be shown clearly in the sketch

Q.12 Aluminium oxide abrasive is produced from:

- Ans**
- ☐ A. Iron ore
 - ☐ B. Copper ore
 - ☒ C. Bauxite ore
 - ☐ D. Zinc ore

Q.13 While assembling a pneumatic press, which valve type should be chosen to precisely manage the speed of the cylinder during operation?

- Ans**
- ☐ A. Directional control valve
 - ☐ B. Shuttle valve
 - ☒ C. Flow control valve
 - ☐ D. Pressure reducing valve

Q.14 Which tool is most suitable for tightening and loosening pipes in pipe fitting work?

- Ans**
- ☐ A. Hacksaw
 - ☐ B. Screwdriver
 - ☒ C. Pipe wrench
 - ☐ D. Adjustable spanner

Q.15 Which of the following is an example of a personal safety sign commonly used in a workshop environment?

- Ans**
- ☐ A. Emergency exit sign
 - ☒ B. Wear safety goggles symbol
 - ☐ C. Fire extinguisher location sign
 - ☐ D. First aid box sign

Q.16 Which situation requires the use of a castle nut as a locking device on a machine part?

- Ans**
- ☐ A. When frequent removal of the nut is required
 - ☐ B. When the nut is used only for adjustment
 - ☐ C. When a spring washer is enough to hold the nut
 - ☒ D. When a split pin is needed to prevent nut loosening

Q.17 Which of the following describes the main function of a double-acting cylinder in pneumatic systems used in workshop equipment?

- Ans**
- ☐ A. It uses spring force to return the piston after extension
 - ☒ B. It provides controlled force in both directions for movement
 - ☐ C. It creates a vacuum inside the cylinder for retraction
 - ☐ D. It only delivers force in one direction with air pressure

Q.18 Which feature of a pipe vice improves its ability to hold pipes during threading operations?

- Ans**
- ☐ A. Replaceable wooden jaws
 - ☐ B. Flat smooth jaw plates
 - ☐ C. Rubber padding
 - ☒ D. Serrated gripping surfaces

Q.19 Which is the primary constructional feature responsible for the greater impact energy of a sledge hammer compared with ordinary hammers?

- Ans**
- ☒ A. Greater head mass combined with longer handle producing higher striking momentum
 - ☐ B. Extended handle leverage increasing swing radius during forceful striking operations
 - ☐ C. Balanced head geometry improving directional stability during heavy impact striking
 - ☐ D. Solid forged head construction improving energy transfer during repeated heavy blows

Q.20 Which part of a depth gauge rests on the reference surface while taking a measurement?

- Ans**
- ☐ A. Vernier scale
 - ☐ B. Lock screw
 - ☐ C. Spindle
 - ☒ D. Base

Q.21 In an electro-pneumatic control system for a workshop machine, which component directly converts electrical energy into linear mechanical motion to operate a pneumatic valve?

- Ans**
- ☒ A. The pilot air signal from the compressor
 - ☒ B. The solenoid coil inside the valve assembly
 - ☒ C. The pressure switch attached to the manifold
 - ☒ D. The control relay in the circuit panel

Q.22 Why are calipers generally used along with a steel rule in workshop measurement?

- Ans**
- ☒ A. Because calipers cannot hold the dimension
 - ☒ B. Because calipers do not have a graduated scale
 - ☒ C. Because caliper replaces steel rule in machining
 - ☒ D. Because calipers cannot touch the workpiece directly

Q.23 Which of the following best describes a common use of a protractor in the ITI Fitter trade?

- Ans**
- ☒ A. Checking the thickness of material
 - ☒ B. Drawing parallel lines on metal surfaces
 - ☒ C. Measuring and marking angles on workpieces
 - ☒ D. Marking the center of a hole on a plate

Q.24 Which aspect must be checked first when interpreting the representation of a countersunk rivet in a workshop assembly drawing?

- Ans**
- ☒ A. The type of head illustrated in the sectional view
 - ☒ B. The rivet material specified in the notes
 - ☒ C. The method of insertion shown in the drawing
 - ☒ D. The rivet shank length dimensioned

Q.25 What do you call the sloping surface connecting the crest and root of a thread?

- Ans**
- ☒ A. Flank
 - ☒ B. Root
 - ☒ C. Crest
 - ☒ D. Major diameter

Q.26 Which feature in tolerance diagrams visually indicates transition fit?

- Ans**
- ☒ A. Completely separated tolerance zones of hole and shaft
 - ☒ B. Overlapping tolerance zones of hole and shaft relative to zero line
 - ☒ C. Shaft tolerance zone entirely above hole tolerance zone
 - ☒ D. Hole tolerance zone entirely above shaft tolerance zone

Q.27 Which type of gear has two sets of teeth inclined in opposite directions to form a 'V' shape on the same gear wheel?

- Ans**
- ☒ A. A bevel gear with conical teeth cut to transmit angular motion.
 - ☒ B. A herringbone gear with V-shaped teeth formed by opposing angles.
 - ☒ C. A worm gear with screw-like teeth designed to mesh with a wheel.
 - ☒ D. A spur gear with straight teeth cut parallel to the center axis.

Q.28 In improved white metal bearings, the thin white metal layer is usually supported by:

- Ans**
- ☒ A. A steel backing
 - ☒ B. A wooden backing
 - ☒ C. A brass backing
 - ☒ D. A cast iron backing

Q.29 In a fabrication unit, noisy operation is observed in a gear train using parallel shaft connections. If the goal is to minimize noise and axial force in future installations, which gear should be recommended?

- Ans**
- ☒ A. Helical gear for reduced noise but presence of axial force
 - ☒ B. Herringbone gear for smooth and quiet operation with no axial force
 - ☒ C. Spur gear for basic power transmission with higher noise levels
 - ☒ D. Bevel gear for changing shaft direction in noisy applications

Q.30 Which statement best explains how elasticity affects the behavior of a metal rod when a force is applied to it?

- Ans**
- ☒ A. Elasticity allows the rod to return to its original shape after the force is removed.
 - ☒ B. Elasticity prevents the rod from deforming under any force.
 - ☒ C. Elasticity causes permanent deformation in the rod after the force is applied.
 - ☒ D. Elasticity increases the hardness of the rod when a force is applied.

Q.31 While setting up a cross belt drive in a workshop, what practical disadvantage might be observed compared to an open belt drive system?

- Ans**
- ☒ A. The cross belt drive experiences increased wear due to belt rubbing and twisting
 - ☒ B. The cross belt drive improves pulley alignment and reduces power loss significantly
 - ☒ C. The cross belt drive requires less frequent maintenance than open belt drive systems
 - ☒ D. The cross belt drive reduces vibration and operates more quietly than open belt drive

Q.32 A technician is troubleshooting a circuit that is not working properly. The measured voltage across a resistor is much lower than expected, even though the power supply is functioning and all connections appear intact. Which of the following is the most likely cause?

- Ans**
- ☒ A. There is a high resistance connection or partial break in wiring path
 - ☒ B. The resistor is shorted out by a parallel path
 - ☒ C. The power supply is providing insufficient current to the circuit load
 - ☒ D. The resistor value is too small for proper circuit operation conditions

Q.33 A lifting system has equal number of pulleys in upper and lower blocks, with the upper block fixed and the lower block movable. A single rope passes around all the pulleys and a load is attached to the lower block. If the number of pulleys is 4, what will be the velocity ratio (VR)?

- Ans**
- ☒ A. 2
 - ☒ B. 16
 - ☒ C. 4
 - ☒ D. 8

Q.34 During the assembly of a pneumatic circuit for a machine, the FRL unit is mounted upstream of all control valves. What is the purpose of placing the FRL unit at this location in a workshop's air supply line?

- Ans**
- ☒ A. To supply compressed air at a constant temperature to all actuators in the system
 - ☒ B. To ensure that all downstream components receive cleaned, regulated, and lubricated air
 - ☒ C. To provide lubrication only to the last pneumatic tool in the workshop line
 - ☒ D. To isolate specific actuators from the main line during maintenance operations

Q.35 While assembling two mild steel plates using dowel pins, which method ensures the most accurate alignment without relying on visual inspection?

- Ans**
- ☒ A. Holding plates together with spring clamps only
 - ☒ B. Measuring edge distances with a steel scale
 - ☒ C. Applying chalk to mark direct contact points
 - ☒ D. Using a jig with reference holes for positioning

Q.36 Which solder is most suitable for joining electrical wires in a control panel without damaging sensitive electronic components?

- Ans**
- ☒ A. Resin core solder
 - ☐ B. Silver solder
 - ☐ C. Solid wire plumbing solder
 - ☐ D. Acid core solder

Q.37 In a thrust bearing, the load acts along which direction in relation to the shaft axis?

- Ans**
- ☐ A. Perpendicular to the shaft axis
 - ☐ B. Along a circular path
 - ☒ C. Parallel to the shaft axis
 - ☐ D. In a random direction

Q.38 What is the primary purpose of a straight peen hammer in workshop operations?

- Ans**
- ☒ A. To shape metal along a direction parallel to the hammer handle axis
 - ☐ B. To cut metal sheets into required shapes
 - ☐ C. To measure the thickness of metal components precisely
 - ☐ D. To hold workpieces firmly during machining operations

Q.39 Which combination of root gap and bevel angle is most suitable for preparing a butt joint to ensure proper weld penetration in metal joining?

- Ans**
- ☐ A. A root gap of 1 mm and a bevel angle of 30 degrees
 - ☐ B. A root gap of 3 mm and a bevel angle of 20 degrees
 - ☒ C. A root gap of 2 mm and a bevel angle of 60 degrees
 - ☐ D. A root gap of 0.5 mm and a bevel angle of 45 degrees

Q.40 On which part of the lathe are the chucks and faceplates mounted?

- Ans**
- ☐ A. Tailstock
 - ☒ B. Spindle
 - ☐ C. Bed
 - ☐ D. Carriage

Q.41 Which type of bearing material is commonly referred to as Babbitt metal?

- Ans**
- ☒ A. Tin-based white metal
 - ☐ B. Antimony-hardened cast iron
 - ☐ C. Lead-coated steel alloy
 - ☐ D. Copper-based bearing alloy

Q.42 Ductility of a material refers to the ability of the material to:

- Ans**
- ☐ A. Resist surface indentation
 - ☒ B. Undergo plastic deformation before fracture
 - ☐ C. Return to its original shape after unloading
 - ☐ D. Conduct heat efficiently

Q.43 What distinguishes a shell reamer from a solid reamer?

- Ans**
- ☐ A. Shell reamer is used for soft materials only
 - ☒ B. Shell reamer lacks an integral shank
 - ☐ C. Shell reamer has spiral flutes only
 - ☐ D. Shell reamer is always adjustable

Q.44 What is the main use of a warding file?

- Ans**
- ☐ A. Diameter checking
 - ☐ B. Thread cutting
 - ☐ C. Surface polishing
 - ☒ D. Narrow filing

Q.45 Which property is most closely related to fusibility?

- Ans**
- ☐ A. Density
 - ☐ B. Thermal expansion
 - ☐ C. Electrical resistance
 - ☒ D. Melting point

Q.46 Which is the first step in the Five S concept used for workplace organization?

- Ans**
- ☐ A. Standardize
 - ☒ B. Sort
 - ☐ C. Shine
 - ☐ D. Set in order

Q.47 An AC welding transformer typically reduces the mains voltage to an open-circuit voltage ranging between:

- Ans**
- ☐ A. 10 to 20 volts
 - ☒ B. 40 to 100 volts
 - ☐ C. 200 to 250 volts
 - ☐ D. 120 to 180 volts

Q.48 Why is crowning provided on the face of a flat belt pulley in workshop machinery?

- Ans**
- ☐ A. It reduces the overall diameter of the pulley
 - ☒ B. It helps keep the flat belt centered during rotation
 - ☐ C. It decreases the thickness of the belt used
 - ☐ D. It significantly increases friction between belt and pulley

Q.49 When creating an orthographic projection of a rectangular block on a drawing sheet, which reference plane is used to project the top view accurately?

- Ans**
- ☒ A. Horizontal plane is used for projecting the top view
 - ☐ B. Profile plane is used for projecting the top view
 - ☐ C. Vertical plane is used for projecting the top view
 - ☐ D. Auxiliary plane is used for projecting the top view

Q.50 What is the purpose of the threading dial indicator during thread cutting?

- Ans**
- ☐ A. To indicate spindle speed during thread cutting
 - ☐ B. To synchronize spindle speed with feed rate during threading
 - ☐ C. To confirm depth of cut during threading operation
 - ☒ D. To indicate carriage position relative to leadscrew rotation

Q.51 Which of the following is an example of a lever?

- Ans**
- ☐ A. A hydraulic jack used for lifting heavy vehicles
 - ☒ B. A crowbar used to lift a heavy object
 - ☐ C. A pulley with a rope
 - ☐ D. A screw holding two boards together

Q.52 In a standard hand tap set used for internal threading, how can a plug (bottoming) tap be identified quickly?

- Ans**
- ☐ A. By four rings marked on the shank
 - ☐ B. By two rings marked on the shank
 - ☐ C. By one ring marked on the shank
 - ☒ D. By three rings marked on the shank

Q.53 How can the operator minimize the risk of tool collision with clamps during faceplate operations?

- Ans**
- ☐ A. By increasing spindle speed
 - ☐ B. By tightening clamps more firmly
 - ☐ C. By using longer cutting tools
 - ☒ D. By planning the tool path before machining

Q.54 Which of the following best describes the primary use of a pillar file in fitting work?

- Ans**
- ☐ A. Enlarging round holes in metal
 - ☐ B. Removing material from curved surfaces
 - ☐ C. Sharpening saw blades for cutting
 - ☒ D. Shaping flat surfaces and slots with parallel sides

Q.55 Which cutting tool material would lose effectiveness the fastest when used for continuous high-speed machining of steel?

- Ans**
- ☐ A. Cast alloy steel
 - ☐ B. High-speed steel (HSS)
 - ☐ C. Ceramic tool material
 - ☒ D. Carbon tool steel

Q.56 Tightening of the cap screw produces:

- Ans**
- ☐ A. Sliding motion
 - ☒ B. Clamping action
 - ☐ C. Cutting action
 - ☐ D. Rotational motion

Q.57 A machine in the workshop suddenly stops working and emits smoke during a critical operation. As the shift supervisor, which immediate action best demonstrates proper emergency management for system failure response?

- Ans**
- ☐ A. Notify the maintenance team immediately and await further assistance.
 - ☒ B. Shut down the machine immediately and activate emergency ventilation.
 - ☐ C. Begin repairing the machine immediately to restore normal operation.
 - ☐ D. Evacuate the work area immediately and leave the smoke unchecked.

Q.58 Which of the following welding methods joins metals by melting the base materials at the joint?

- Ans**
- ☐ A. Pressure welding
 - ☒ B. Fusion welding
 - ☐ C. Solid-state welding
 - ☐ D. Resistance welding

Q.59 A material that can withstand pressure, bending, and pulling forces without breaking is said to possess:

- Ans**
- ☒ A. Tenacity
 - ☐ B. Brittleness
 - ☐ C. Elasticity
 - ☐ D. Hardness

Q.60 Which main structural component supports the spindle in a pillar-type drilling machine?

- Ans**
- ☐ A. Belt cover
 - ☐ B. Table
 - ☒ C. Column
 - ☐ D. Foot pedal

Q.61 To check the accuracy of a spirit level, after taking the first reading, the level is rotated by:

- Ans**
- ☐ A. 45 degrees slight tilt
 - ☐ B. Full circular rotation
 - ☒ C. 180 degrees end-to-end
 - ☐ D. 90 degrees sideways turn

Q.62 A manufacturer needs to choose a metal for producing thin, complex-shaped sheets that must withstand bending and hammering without cracking. Which property should the manufacturer prioritize when selecting the material?

- Ans**
- ☐ A. Ductility
 - ☐ B. Hardness
 - ☒ C. Malleability
 - ☐ D. Brittleness

Q.63 In comparison with ball bearings of the same size, roller bearings can carry:

- Ans**
- ☒ A. Higher radial load
 - ☐ B. No radial load
 - ☐ C. Equal radial load
 - ☐ D. Lower radial load

Q.64 How is the grip size of a footprint wrench adjusted to suit different pipe diameters?

- Ans**
- ☐ A. By sliding an adjustable collar along the full length of the strap
 - ☒ B. By placing the pivot pin into different holes of the solid handle
 - ☐ C. By replacing the jaw insert with a different standardised size piece
 - ☐ D. By tightening a thumb-screw located on the side of the handle

Q.65 Which property of ceramic tool materials is most beneficial during dry machining operations?

- Ans**
- ☐ A. High toughness
 - ☒ B. High resistance to heat
 - ☐ C. Ease of sharpening
 - ☐ D. Low cost

Q.66 During the overhaul of a workshop drilling machine, what is the most appropriate initial step to ensure safety before any maintenance activity?

- Ans**
- ☐ A. Check accuracy of spindle alignment using dial indicator
 - ☒ B. Isolate power supply and secure moving parts
 - ☐ C. Remove dust and debris from the work area
 - ☐ D. Lubricate all gears and sliding surfaces thoroughly

Q.67 If a pneumatic system must alternate the air supply between two actuators based on manual control, which valve classification best suits this function?

- Ans**
- ☐ A. Pressure relief valve
 - ☐ B. Flow control valve
 - ☒ C. Directional control valve
 - ☐ D. Non-return valve

Q.68 A fitter is tasked with marking accurate parallel lines on a metal plate before cutting. He must select a divider with tips made of a suitable material for this job. Which divider tip material would be most appropriate to use to avoid rapid wear and ensure precise marking on the metal surface?

- Ans**
- ☐ A. Aluminum tips
 - ☐ B. High carbon steel tips
 - ☐ C. Brass tips
 - ☒ D. Hardened steel tips

Q.69 Which of the following elements is NOT normally present in high-speed steel?

- Ans**
- ☐ A. Tungsten
 - ☐ B. Vanadium
 - ☒ C. Nickel
 - ☐ D. Chromium

Q.70 A machine part is manufactured with a surface area of 169 square millimeters. If the unit is changed to square centimeters, what is the square root of the surface area in the new unit?

- Ans**
- ☒ A. 1.3
 - ☐ B. 0.13
 - ☐ C. 169
 - ☐ D. 13

Q.71 Which part of an outside micrometer remains fixed and supports the workpiece during measurement?

- Ans**
- ☐ A. Ratchet stop
 - ☒ B. Anvil
 - ☐ C. Spindle
 - ☐ D. Thimble

Q.72 What is the main reason for using a shuttle valve instead of a two-way valve in a system with two independent control points for a single actuator?

- Ans**
- ☐ A. A shuttle valve allows only one control point to function at a time by blocking the other.
 - ☐ B. A shuttle valve discharges air from both control points when either is activated.
 - ☐ C. A shuttle valve interlocks the signals from two control points to prevent simultaneous operation.
 - ☒ D. A shuttle valve enables actuator operation from either control point without signal interference or loss.

Q.73 Which advantage of a D.C. welding generator allows control of heat distribution between the electrode and the base metal?

- Ans**
- ☒ A. Polarity selection capability
 - ☐ B. Electrode coating selection
 - ☐ C. Welding cable insulation
 - ☐ D. Cooling fan operation

Q.74 Which feature most distinguishes a GI pipe from other common types of pipes used in pipe fitting?

- Ans**
- ☐ A. It is made from copper for high conductivity
 - ☒ B. It is coated with a layer of zinc to prevent rusting
 - ☐ C. It is made from plastic and is lightweight
 - ☐ D. It is lined with rubber for flexibility

Q.75 What is the primary purpose of carrying out routine maintenance on workshop equipment?

- Ans**
- ☒ A. To ensure consistent performance and minimize downtime
 - ☐ B. To replace old machines with new equipment
 - ☐ C. To modify equipment design for new tasks
 - ☐ D. To increase production speed beyond design limits