



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



RRB ALP 2025 CBT 2

Assistant Loco Pilot | CEN 01/2025 | CBT 2 | Millwright Maintenance Mechanic

ENGLISH ANSWER KEY

Official Answer Key

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

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

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

Note: 45 of 350 questions are printed in Hindi (marked with a chip): our saved English papers do not carry them.

HOW TO USE THIS BOOK

- 1 Open the INDEX on the next page.
- 2 Click any row to jump straight to that date and shift.

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Compiled 28 October 2026

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RRB ALP 2025 CBT 2 (Millwright Maintenance Mechanic) (English) · 2 shifts

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Day 1	28-07-2026	Shift 2	14:30 - 17:00	25



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

*** Note**

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

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

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

3. 45 questions marked with a language chip are printed in that language because the English version is not in our saved papers.

Section : Part A

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

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

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

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

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

98, 104, 116, 134, 158, ?

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

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

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

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

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

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

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

Q.14 In a certain code language,
A + B means 'A is the mother of B',
A – B means 'A is the brother of B',
A × B means 'A is the wife of B' and
A % B means 'A is the father of B'.

How is Shreya related to Mahak if 'Shreya + Dev – Taran × Harshit % Mahak'?

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

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

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

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

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

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

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

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

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

Q.18 Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which letter-cluster pair DOES NOT belong to that group?
(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

- Ans ☐ 1. 42
☐ 2. 27
☒ 3. 39
☐ 4. 53

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

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

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

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

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

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

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

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

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

- Ans ☐ 1. 20
☐ 2. 16
☒ 3. 18
☐ 4. 15

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

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

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

- Ans ☐ 1. 2
☒ 2. 9
☐ 3. 7
☐ 4. 4

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

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

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

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

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

UMD ZQG EUJ JYM ?

- Ans ☐ 1. PDP
☐ 2. NBQ
☐ 3. NDO
☒ 4. OCP

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

- Ans ☐ 1. 120 km
☒ 2. 100 km
☐ 3. 75 km
☐ 4. 80 km

Q.36 Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.

Statements: All girls are hens. No hen is a cat.

Conclusion (I): No girl is a cat.

Conclusion (II): Some cats are hens.

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

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

- Ans ☒ 1. $\cos A + \sin A$
☐ 2. $\sin A - \cos A$
☐ 3. 1
☐ 4. 0

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

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

Q.39 Solve the system of equations:

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

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

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

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

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

(II) H is taller than L.

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

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

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

Conditions:

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

What will be the code for the following group?

+ 6 \$ 2 7

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

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

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

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

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

Q.44 Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.

Statements:

Some glasses are spoons.
All spoons are forks.

Conclusions:

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

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

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

Ans ☒ 1. V
☒ 2. S
☒ 3. P
☒ 4. Q

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

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

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

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

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

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

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

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

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

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

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

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

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

28 A 16 C 3 B 12 D 4 = ?

- Ans ☐ 1. 72
☒ 2. 73
☐ 3. 70
☐ 4. 71

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

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

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

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

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

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

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

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

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

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

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

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

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

(II) D is taller than E.

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

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

14 A 30 B 45 C 15 D 9 = ?

- Ans ☒ 1. 27
☐ 2. 29
☐ 3. 25
☐ 4. 28

Q.60 Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which letter-cluster pair DOES NOT belong to that group?

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

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

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

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

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

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

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

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

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

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

Q.65 What is an email used for?

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

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

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

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

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

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

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

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

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

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

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

- Ans ☒ 1. X
☒ 2. C
☒ 3. Z
☒ 4. A

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

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

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

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

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

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

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

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

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

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

31 B 35 D 7 A 9 C 2 = ?

- Ans ☒ 1. 46
☒ 2. 48
☒ 3. 44
☒ 4. 42

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

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

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

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

Q.78 Below are given two sets of numbers. In each set of numbers, certain mathematical operation(s) on the first number result(s) in the second number. Similarly, certain mathematical operation(s) on the second number result(s) in the third number and so on. Which of the given options follows the same set of operations as in the given sets?

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

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

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

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

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

Q.80 The median of the following data is :

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

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

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

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

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

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

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

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

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

How many people are shorter than P?

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

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

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

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

BIP : EMU
GNU : JRZ

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

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

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

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

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

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

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

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

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

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

74, 83, 101, 128, ?, 209

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

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

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

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

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

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

- Ans ☒ 1. S
☒ 2. R
☒ 3. Q
☒ 4. P

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

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

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

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

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

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

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

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

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

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

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

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

Section : Part B (Millwright Maintenance Mechanic)

Q.101 स्ट्रेट बेवेल गियर (straight bevel gears) की तुलना में एक ऑफसेट के साथ 90° पर संचारित शक्ति हेतु एक हाइपॉइड गियर सेट के लिए मुख्य लाभ क्या है?

HINDI

- Ans ☒ 1. उच्च चालों पर प्रतिच्छेदी अक्षों के साथ कार्य करने की क्षमता।
☒ 2. स्ट्रेट बेवेल गियर की तुलना में सभी चालों पर शांत प्रचालन।
☒ 3. उच्च बलाघूर्ण के साथ गैर-प्रतिच्छेदी अक्षों के बीच शक्ति संचारित करना।
☒ 4. तुल्य आकार और बलाघूर्ण निर्धारण के लिए निम्न प्रारंभिक लागत।

Q.102 A maintenance team noticed an increase in machine breakdowns and wants to reduce unplanned stoppages. Which of the following actions supports total productive maintenance principles?

- Ans ☒ 1. Reducing operator involvement in upkeep
☒ 2. Assigning repairs only after breakdown
☒ 3. Scheduling routine checks for all machines
☒ 4. Allowing machines to run until failure

Q.103 प्रोत्कर्ष स्थितियों के दौरान पंखा प्रणाली का कौन-सा भाग कंपन-जनित क्षति के प्रति सर्वाधिक सुग्राही होता है? **HINDI**

- Ans ☐ 1. विद्युत तार-स्थापन (Electrical wiring)
☐ 2. ब्लेड समन्वायोजन (Blades assembly)
☐ 3. वेशन (Housing)
☒ 4. बेयरिंग और शैफ्ट समन्वायोजन (Bearings and shaft assembly)

Q.104 Which cutting tool material is most appropriate for high-speed CNC machining of hard metals?

- Ans ☐ 1. Tool steel
☐ 2. High-speed steel
☒ 3. Cemented carbide
☐ 4. Cast iron

Q.105 What needs to be checked when a threaded pipe connection becomes loose after cutting?

- Ans ☐ 1. Amount of lubricant used
☐ 2. Cutting speed applied
☒ 3. Die adjustment setting
☐ 4. Type of tap used

Q.106 बेयरिंग की स्थिति की मॉनिटरिंग के लिए विश्वसनीय कंपन पाठ्यांक प्राप्त करने हेतु मापन प्रोब (measuring probe) को कहाँ रखा जाना चाहिए? **HINDI**

- Ans ☐ 1. सामान्य मशीन प्रचालन परिस्थितियों के दौरान सीधे घूर्णी शैफ्ट पर
☐ 2. घूर्णी मशीन असेंबली को कवर करने वाले सुरक्षात्मक गार्ड के विरुद्ध शीथिल रूप से
☐ 3. सभी घूर्णी यांत्रिक घटकों से दूर मशीन फाउंडेशन पर
☒ 4. मॉनिटर किए जाने वाले बेयरिंग के स्थान के समीप बेयरिंग हाउसिंग पर मजबूती से

Q.107 If the 6th division of the vernier scale coincides with a main scale division, the vernier reading is:
[Take least count = 0.1 mm]

- Ans ☐ 1. 0.06 mm
☐ 2. 6 mm
☒ 3. 0.6 mm
☐ 4. 0.006 mm

Q.108 एक पर्यवेक्षक ने देखा कि कपास अवशेष (cotton waste) का निपटान नियमित कचरे के साथ किया जा रहा है। कार्यशाला सुरक्षा के संदर्भ में इस अनुचित कार्य का संभावित परिणाम क्या है? **HINDI**

- Ans ☒ 1. कार्यशाला में आग लगने की घटनाओं का बढ़ता जोखिम
☐ 2. पेयजल का रासायनिक संदूषण
☐ 3. वायु गुणवत्ता में ध्यान देने योग्य कमी
☐ 4. कार्यशाला की मशीनरी का तत्काल ब्रेकडाउन

Q.109 औद्योगिक नियंत्रण पैनल में वरक स्विच (selector switch) का प्राथमिक कार्य क्या होता है? **HINDI**

- Ans ☐ 1. विद्युत धारा को मापना
☐ 2. प्रदाय वोल्टता में वृद्धि करना
☒ 3. विभिन्न ऑपरेटिंग मोड का चयन करना
☐ 4. विद्युत आवेश को संग्रहीत करना

Q.110 An engineer suspects that wind is affecting plumb bob readings during outdoor equipment erection. Which approach best minimizes error due to wind?

- Ans ☒ 1. Shield the plumb bob from wind using a temporary screen
☐ 2. Wait for wind to stop before taking any measurement
☐ 3. Use a heavier plumb bob to resist wind movement
☐ 4. Take multiple readings and average the values

Q.111 Which part of the belt conveyor supports and guides the belt along its path?

- Ans ☐ 1. Motor
☐ 2. Gearbox
☒ 3. Idler rollers
☐ 4. Drive pulley

Q.112 एक अनुरक्षण आरेख, मशीन आधार प्रणाली की आधार प्लेट में एक टैप निर्मित चूड़ीदार छिद्र दर्शाता है। प्लान दृश्य में, चूड़ी के मुख्य व्यास को निरूपित करने के लिए डैशित रेखाओं का उपयोग किया जाता है। यह क्या इंगित करता है? **HINDI**

- Ans ☒ 1. चूड़ी आंतरिक है और आधार पट्ट के अंदर छिपी हुई है
☐ 2. चूड़ी एक सजावटी खांचा है जो बंधन से संबंधित नहीं है
☐ 3. चूड़ी बाह्य है और बंधक शैपट पर पूरी तरह दृश्य होती है
☐ 4. चूड़ी एक आंशिक चूड़ी है जो फास्टर के केवल निचले आधे हिस्से पर कर्तित है

Q.113 What is the main function of a flat key in mechanical fasteners?

- Ans ☐ 1. To act as a sealing device between components
☐ 2. To align the shaft with the hub precisely
☐ 3. To prevent axial movement of the shaft
☒ 4. To transmit rotational force from the shaft to the hub

Q.114 ऊर्ध्वाधर भ्रमिकर्तन मशीन (milling machine) पर किस प्रकार का प्रचालन सबसे अधिक किया जाता है? **HINDI**

- Ans ☒ 1. समतल पृष्ठों का फलक भ्रमिकर्तन
☐ 2. भंवरकली सिरे (swivelling head) के साथ कोणीय भ्रमिकर्तन
☐ 3. संकीर्ण प्रोफाइलों का सिरा भ्रमिकर्तन
☐ 4. पार्श्व कर्तक के साथ खांच भ्रमिकर्तन

Q.115 कौन-सी मशीन, समतल पृष्ठों के निर्माण के लिए, रैखिक प्रत्यागामी कर्तन गति का उपयोग करती है? **HINDI**

- Ans ☐ 1. ड्रिलिंग मशीन
☒ 2. शेपर मशीन
☐ 3. लेथ मशीन
☐ 4. मिलिंग मशीन

Q.116 In a fabrication sketch, which line correctly indicates the edge of a mounting bracket that is visible from the front view?

- Ans ☐ 1. Center line
☐ 2. Dimension line
☐ 3. Hidden line
☒ 4. Object line

Q.117 विभिन्न प्रवर्तकों (actuator) के नियंत्रण हेतु कई 5/2 वाल्वों का उपयोग करने वाली प्रणालियों में मुख्य तुल्यकालन (synchronization) चुनौती क्या है? **HINDI**

- Ans ☐ 1. प्रदाय और रेचन वायु को मिश्रित होने से रोकना
☒ 2. सभी वाल्वों के सही अनुक्रम में संचालन को सुनिश्चित करना
☐ 3. सुरक्षा हेतु सभी वाल्व चक्र काल का मिलान करना
☐ 4. सभी वाल्वों में अत्यधिक दाब पात को रोकना

Q.118 BIS संकेतन में, सहिष्णुता प्रतीक से पहले आने वाला संख्यात्मक मान क्या दर्शाता है? **HINDI**

- Ans ☐ 1. विनिर्माण प्रक्रिया के बाद प्राप्त वास्तविक आकार
☐ 2. निरीक्षण प्रक्रिया के दौरान प्राप्त सहिष्णुता मान
☐ 3. आकार की ऊर्ध्व और निम्न सीमाओं के बीच का अंतर
☒ 4. ड्राइंग में निर्दिष्ट घटक का मूल आकार

Q.119 How does the thickness of the zinc coating on a GI pipe affect its performance?

- Ans ☒ 1. Increases corrosion resistance
☐ 2. Reduces internal friction
☐ 3. Decreases pipe diameter
☐ 4. Makes pipe more flexible

Q.120 When dimensioning in a crowded or narrow space on a drawing, which of the following arrowhead types is commonly used to avoid confusion with overlapping lines?

- Ans ☐ 1. Open arrow head
☐ 2. Double dot terminator
☐ 3. Closed filled arrow head
☒ 4. Oblique stroke terminator

Q.121 A maintenance mechanic is preparing to create a flat bearing surface at the mouth of a drilled hole on a mild steel workpiece. Which tool is specifically designed for this operation?

- Ans
- ☒ 1. Counterbore tool
 - ☒ 2. Countersink tool
 - ☒ 3. Reamer
 - ☒ 4. Spot facing tool

Q.122 यदि 1 m के बराबर अंतरालन पर ऑफसेट 2 m, 4 m, 3 m और 5 m दिए गए हैं, तो समलंबी नियम का उपयोग करके अनियमित प्लॉट (irregular plot) का क्षेत्रफल ज्ञात कीजिए।

HINDI

- Ans
- ☒ 1. 12 m^2
 - ☒ 2. 9.5 m^2
 - ☒ 3. 10.5 m^2
 - ☒ 4. 7 m^2

Q.123 In a lever-operated compressor servicing tool (Class 1 lever), if the load arm length is decreased while the effort arm length is kept constant, what will be the effect on its mechanical advantage?

- Ans
- ☒ 1. Mechanical advantage remains unchanged
 - ☒ 2. Mechanical advantage becomes zero
 - ☒ 3. Mechanical advantage increases
 - ☒ 4. Mechanical advantage decreases

Q.124 समान चौड़ाई वाले बट स्ट्रैप्स युक्त डबल-रिवेटेड बट जोड़ (butt joint) के ड्राइंग की व्याख्या करते समय, कौन-सी विशेषता ज़िग-ज़ैग रिवेटिंग विन्यास को इंगित करती है?

HINDI

- Ans
- ☒ 1. प्रत्येक प्लेट, जोड़ रेखा के अनुदिश एक सिंगल रिवेट पंक्ति दर्शाती है
 - ☒ 2. दोनों बट स्ट्रैप्स, जोड़ सेक्शन के दोनों ओर समान रूप से विस्तारित होते हैं
 - ☒ 3. क्रमिक पंक्तियों में रिवेट केंद्र रेखाएं पूरी तरह संरेखित रहती हैं
 - ☒ 4. आसन्न पंक्तियों में रिवेट केंद्र आधे पिच से ऑफसेट होते हैं

Q.125 मशीन के बार-बार खराब होने के कारण ओवरऑल इक्विपमेंट इफेक्टिवनेस (OEE) के किस घटक के अंतर्गत प्राथमिक रूप से व्यवरोध काल की हानि (loss of downtime) होती है?

HINDI

- Ans
- ☒ 1. उत्पादकता (Productivity)
 - ☒ 2. निष्पादन (Performance)
 - ☒ 3. गुणवत्ता (Quality)
 - ☒ 4. उपलब्धता (Availability)

Q.126 Which operation is NOT suitable for a single cut file?

- Ans
- ☒ 1. Truing flat surfaces
 - ☒ 2. Fine finishing
 - ☒ 3. Heavy stock removal
 - ☒ 4. Deburring edges

Q.127 During routine inspection, an engineer notices a grooved nut applied on a shaft with a missing set screw. What is the most likely risk associated with this condition?

- Ans
- ☒ 1. The nut may loosen due to vibration or movement
 - ☒ 2. The nut will transmit more torque to the shaft
 - ☒ 3. The threads will experience reduced wear
 - ☒ 4. The nut may seize onto the shaft

Q.128 एक मॉटेनस टीम को पता चलता है कि क्लाउड-आधारित डैशबोर्ड से मिलने वाले प्रेडिक्टिव मॉटेनस अलर्ट कई घंटों के विलंब के साथ प्राप्त हो रहे हैं। प्रोडक्शन लाइन के सभी स्मार्ट सेंसर और PLC दिखा रहे हैं कि प्रचालन सामान्य है और कोई डिवाइस त्रुटि नहीं है। कनेक्टिविटी से संबंधित निम्न में से कौन-सी समस्या इस विलंब का सबसे संभावित कारण है?

HINDI

- Ans
- ☒ 1. फैक्ट्री नेटवर्क और क्लाउड के बीच अस्थिर इंटरनेट कनेक्शन
 - ☒ 2. सेंसर की विद्युत आपूर्ति में होने वाले उतार-चढ़ाव, जिससे सेंसर रीडिंग प्रभावित होती है
 - ☒ 3. स्मार्ट सेंसर पर अप्रचलित फर्मवेयर, जिससे स्थानीय डेटा की हानि हो रही है
 - ☒ 4. स्थानीय नियंत्रकों में गलत PLC एड्रेस कॉन्फिगरेशन

Q.129 एक नई कार्यशाला में खराद मशीन (lathe machine) अधिष्ठापित की जा रही है। मानक अनुरक्षण प्रक्रियाओं के अनुसार उचित अधिष्ठापन सुनिश्चित करने के लिए निम्नलिखित में से किसकी जाँच सर्वप्रथम की जानी चाहिए?

HINDI

- Ans
- ☐ 1. अनुशंसित स्नेहक से भराव
 - ☒ 2. फाउंडेशन लेवल और संरेखण
 - ☐ 3. इलेक्ट्रिकल वायरिंग की जांच
 - ☐ 4. ट्रायल रनिंग और ऑब्जर्वेशन

Q.130 किस प्रकार का अनुचित तरीका, कर्तन कार्यों के दौरान हैक्सॉ ब्लेड (hacksaw blade) की आयु को सबसे उल्लेखनीय रूप से कम करता है? HINDI

- Ans
- ☐ 1. कार्य के दौरान अनुचित ब्लेड तनाव बनाए रखना
 - ☒ 2. अनुशंसित सीमा से अधिक अत्यधिक कर्तन दाब लगाना
 - ☐ 3. वर्कपीस की मोटाई के लिए अनुपयुक्त दंत प्रति इंच वाले ब्लेड का उपयोग करना
 - ☐ 4. कर्तन के दौरान असंगत स्ट्रोक चाल पर प्रचालन करना

Q.131 In limits and tolerances terminology, what is meant by deviation?

- Ans
- ☒ 1. The algebraic difference between a size and the corresponding basic size
 - ☐ 2. The difference between the maximum size and minimum size limits
 - ☐ 3. The theoretical dimension used as reference in engineering drawing
 - ☐ 4. The measured dimension obtained after manufacturing process

Q.132 एक यांत्रिक कार्यशाला में, अपघर्षण यंत्र का संचालन करते समय सुरक्षा चश्मा पहनने का मुख्य उद्देश्य क्या है? HINDI

- Ans
- ☐ 1. तेज आवाज वाले उपकरणों से श्रवण हानि को रोकने के लिए
 - ☒ 2. नेत्रों को उड़ते हुए मलबे और चिंगारियों से बचाने के लिए
 - ☐ 3. धूल के कणों के अंतःश्वासन को कम करने के लिए
 - ☐ 4. दोषपूर्ण वायरिंग से होने वाले विद्युत आघात से बचने के लिए

Q.133 किसी कार्यशाला में एक कंप्रेसर मोटर 2 ओम के कुल प्रतिरोध वाली वायरिंग प्रणाली के माध्यम से 240 V की आपूर्ति से जुड़ी है। यदि प्रचालन के दौरान मोटर 12 A की धारा कर्षित करती है, तो मोटर के टर्मिनलों पर मापी गई वोल्टता ज्ञात कीजिए। HINDI

- Ans
- ☐ 1. 228 V
 - ☐ 2. 192 V
 - ☐ 3. 240 V
 - ☒ 4. 216 V

Q.134 कौन-सा आशोधन, आपूर्ति दाब या स्ट्रोक की लंबाई को परिवर्तित किए बिना, वातिल प्रवर्तक के बल उत्पादन को कम करेगा? HINDI

- Ans
- ☐ 1. स्ट्रोक की लंबाई कम करना
 - ☒ 2. पिस्टन का व्यास कम करना
 - ☐ 3. माउंटिंग स्टाइल को परिवर्तित करना
 - ☐ 4. लंबी पिस्टन रॉड का उपयोग करना

Q.135 Which rigging safety strategy should be emphasized when lifting a delicate piece of machinery?

- Ans
- ☐ 1. Lift the machine quickly to reduce risk
 - ☐ 2. Place slings directly on machine edges
 - ☐ 3. Use a thicker sling for extra strength
 - ☒ 4. Use padding at sling contact points

Q.136 न्युमेटिक ड्राइंग (pneumatic drawings) में दाब स्रोत को इंगित करने के लिए किस प्रतीक का उपयोग किया जाता है? HINDI

- Ans
- ☒ 1. वृत्त
 - ☐ 2. आयत
 - ☐ 3. वर्ग
 - ☐ 4. त्रिभुज

Q.137 पेडस्टल ग्राइंडर (pedestal grinder) में ग्राइंडिंग व्हील के टूटने की स्थिति में ऑपरेटर को टुकड़ों (fragments) से बचाने के लिए कौन-सा सुरक्षा फीचर डिजाइन किया गया है? HINDI

- Ans
- ☐ 1. मोटर कवर (Motor cover)
 - ☐ 2. बेस (Base)
 - ☐ 3. टूल रेस्ट (Tool rest)
 - ☒ 4. व्हील गार्ड (Wheel guard)

Q.138 एक ITI अनुरक्षण मेकैनिक, ऊपरी क्रांतिक तापमान से अधिक तप्त किए गए इस्पात प्रतिदर्श का विश्लेषण कर रहा है। इस चरण में लौह-कार्बन आरेख में मुख्य रूप से कौन-सी प्रावस्था (Phase) उपस्थित है? **HINDI**

- Ans
- ☒ 1. पर्लाइट (Pearlite)
 - ☒ 2. फेराइट (Ferrite)
 - ☒ 3. ऑस्टेनाइट (Austenite)
 - ☒ 4. सीमेंटाइट (Cementite)

Q.139 V-बेल्ट को इसकी अनुप्रस्थ-काट विमाओं द्वारा निर्दिष्ट किया जाता है। कौन-सा युग्म इन विमाओं को सर्वोत्तम रूप से निरूपित करता है? **HINDI**

- Ans
- ☒ 1. चौड़ाई और गभीरता
 - ☒ 2. केवल चौड़ाई
 - ☒ 3. लंबाई और चौड़ाई
 - ☒ 4. केवल मोटाई

Q.140 पेंच चूड़ी का रूट (root), प्रायः उच्च-प्रतिबल वाले अनुप्रयोगों में गोल क्यों किया जाता है? **HINDI**

- Ans
- ☒ 1. धारण शक्ति बढ़ाने के लिए
 - ☒ 2. घर्षण कम करने के लिए
 - ☒ 3. चूड़ी की फिट को बेहतर बनाने के लिए
 - ☒ 4. प्रतिबल संकेंद्रण कम करने के लिए

Q.141 Which of the following tool materials is most commonly used in multi-point cutting tools like drills and milling cutters?

- Ans
- ☒ 1. Cast alloy steel
 - ☒ 2. High-speed steel (HSS)
 - ☒ 3. Ceramic tool material
 - ☒ 4. Carbon tool steel

Q.142 ऑटो मोड चक्र पूरा करने के बाद महत्वपूर्ण प्रचालक कार्रवाई क्या है? **HINDI**

- Ans
- ☒ 1. जांच किए बिना अगला प्रोग्राम शुरू करना
 - ☒ 2. परिष्कृत भाग की उपेक्षा करना और आगे कार्य करना
 - ☒ 3. गुणता आश्वासन के लिए परिष्कृत भाग का निरीक्षण करना
 - ☒ 4. समान प्रोग्राम को तुरंत पुनः चालू करना

Q.143 एक अनुरक्षण इंजीनियर यह अवलोकन करता है कि गियरबॉक्स में इनपुट और आउटपुट शैफ्ट न तो समानांतर हैं और न ही एक-दूसरे को प्रतिच्छेदित करते हैं, और उच्च लोड के अंतर्गत सुचारू और शांत प्रचालन की आवश्यकता है। इस संदर्भ में कौन-सी गियर व्यवस्था सबसे उपयुक्त है? **HINDI**

- Ans
- ☒ 1. हाइपॉइड गियर (Hypoid gear)
 - ☒ 2. वर्म गियर (Worm gear)
 - ☒ 3. सर्पिल बेवल गियर (Spiral bevel gear)
 - ☒ 4. हेलिकल गियर (Helical gear)

Q.144 निम्नलिखित में से कौन-सा घटक PLC आर्किटेक्चर में कंट्रोल इंस्ट्रक्शंस (control instructions) को एजीक्यूट करने और लॉजिक ऑपरेशंस को प्रबंधित करने के लिए मुख्य रूप से उत्तरदायी है? **HINDI**

- Ans
- ☒ 1. सेंट्रल प्रोसेसिंग यूनिट (CPU)
 - ☒ 2. आउटपुट मॉड्यूल
 - ☒ 3. इनपुट मॉड्यूल
 - ☒ 4. पावर सप्लाई

Q.145 Which component of an industrial automation system directly converts physical parameters into electrical signals for processing?

- Ans
- ☒ 1. Actuator
 - ☒ 2. Sensor
 - ☒ 3. Controller
 - ☒ 4. Human Machine Interface (HMI)

Q.146 वायुचालित प्रवर्तक (pneumatic actuator) के अनियमित या झटके के साथ संचलन का सबसे संभावित कारण क्या हो सकता है? **HINDI**

- Ans
- ☒ 1. प्रवर्तक गियरों में ग्रीज की कमी
 - ☒ 2. फ्रेम पर त्रुटिपूर्ण आरोपण (mounting)
 - ☒ 3. वायु आपूर्ति में आद्रता या मलबा (debris)
 - ☒ 4. विद्युत तार-स्थापन में लघु परिपथन

Q.147 हस्तचालित रूप से टूल बदलने से पूर्व तर्कु (spindle) घूर्णन को रोकने और शीतलक प्रवाह को निष्क्रिय करने के लिए सामान्यतः M कोड का कौन-सा युग्म प्रोग्राम किया जाता है? **HINDI**

- Ans ✓ 1. M05 और M09
✗ 2. M05 और M08
✗ 3. M04 और M08
✗ 4. M03 और M08

Q.148 हस्त-मुक्त कार्यस्थल (hands-free workstation) में 3/2 वाल्व के लिए कौन-सी नियंत्रण विधि सबसे उपयुक्त होगी? **HINDI**

- Ans ✗ 1. स्वचालित काल नियामक (timer) नियंत्रण
✗ 2. हाथ द्वारा पुश बटन संचालन
✓ 3. वाल्व के लिए पाद-पदिक प्रवर्तन (Foot pedal actuation)
✗ 4. हाथ द्वारा लीवर संचालन

Q.149 एक कार्यशाला में मशीन शीतलन तंत्र के लिए शीतलक सांद्र और जल को 3 : 2 के अनुपात में मिलाया जाता है। यदि आवश्यक कुल मिश्रण 25 लीटर है, तो कितने लीटर शीतलक सांद्र की आवश्यकता होगी? **HINDI**

- Ans ✗ 1. 17 लीटर
✓ 2. 15 लीटर
✗ 3. 12.5 लीटर
✗ 4. 10 लीटर

Q.150 PLC STL में, अनुक्रम LD I2.0, AND I2.1, ORN I2.2, = Q2.0 का उपयोग किया जाता है। यदि I2.0, ON है, I2.1, ON है और I2.2, OFF है, तो Q2.0 की स्थिति क्या होगी? **HINDI**

- Ans ✗ 1. Q2.0, OFF हो जाएगा
✓ 2. Q2.0, ON हो जाएगा
✗ 3. Q2.0, टॉगल करेगा
✗ 4. Q2.0 का मान पूर्ववत रहेगा

Q.151 यांत्रिक अभियांत्रिकी कार्यों में नींव निर्माण के दौरान भारी पत्थर के खंडों को उठाने के लिए सामान्यतः किस उपकरण का उपयोग किया जाता है? **HINDI**

- Ans ✓ 1. लूइस बोल्ट (Lewis bolt)
✗ 2. अक्षि बोल्ट (Eye bolt)
✗ 3. प्रसारी बोल्ट (Expansion bolt)
✗ 4. फन्नीदार बोल्ट (Wedge bolt)

Q.152 एक इंजीनियर, विनिर्माण इकाई में बोल्ट के एक बैच का निरीक्षण कर रहा है। शीघ्रता से जांच करने के लिए कि क्या ये बोल्ट किसी विशिष्ट पिच और प्रोफाइल के अनुरूप हैं, इंजीनियर को किस मापयंत्र का उपयोग करना चाहिए? **HINDI**

- Ans ✗ 1. स्नैप गेज (Snap gauge)
✗ 2. प्लग गेज (Plug gauge)
✓ 3. थ्रेड गेज (Thread gauge)
✗ 4. रिंग गेज (Ring gauge)

Q.153 What effect does improper feeder design have on the formation of bridges in hopper discharge systems?

- Ans ✓ 1. By creating uneven flow and restricting material discharge
✗ 2. By automatically crushing oversized materials
✗ 3. By increasing the material flow uniformly
✗ 4. By creating poor alignment between the feeder and hopper geometry

Q.154 द्वि-आधारी संख्या (binary number) 101101 का दशमलव समतुल्य (decimal equivalent) क्या है? **HINDI**

- Ans ✗ 1. 49
✗ 2. 43
✗ 3. 47
✓ 4. 45

Q.155 शक्ति संचरण प्रणाली में पुली पर सपाट पट्टे (flat belt) के सही फिट होने के लिए कौन-सा विनिर्देश प्राचल सबसे महत्वपूर्ण है? **HINDI**

- Ans ✗ 1. पट्टे की पिच लंबाई
✗ 2. पट्टे की मोटाई
✓ 3. पट्टे की चौड़ाई
✗ 4. पट्टे में प्रयुक्त सामग्री

Q.156 What is the relationship between axis limit switches and the machine zero point in a CNC machine?

- Ans
- ✓ 1. Limit switches help protect the machine zero location
 - ✗ 2. Limit switches determine tool length offset
 - ✗ 3. Limit switches control spindle speed
 - ✗ 4. Limit switches set workpiece zero automatically

Q.157 How does reducing the supply air pressure to a pneumatic actuator affect its performance if all other factors remain constant?

- Ans
- ✗ 1. Increases the actuator speed
 - ✗ 2. Actuator to move a greater distance
 - ✗ 3. Increases the stroke length
 - ✓ 4. Reduces the force output

Q.158 An operator selects a grinding wheel for finishing a hardened steel shaft. Which grit size is most suitable for achieving a smooth surface finish in this scenario?

- Ans
- ✗ 1. Coarse grit size
 - ✗ 2. Large grit size
 - ✗ 3. Medium grit size
 - ✓ 4. Fine grit size

Q.159 ब्रिटिश मानक प्रणाली में, आरेखों में सहिष्णुता क्षेत्र को सामान्यतः किस प्रकार निरूपित किया जाता है? **HINDI**

- Ans
- ✗ 1. मशीनन छूट को निरूपित करने वाले संख्यात्मक मान के रूप में
 - ✗ 2. पुनरावृत्त विमीय पाठ्यांकों से प्राप्त औसत मान के रूप में
 - ✗ 3. कंपोनेंट की मापित विमा को निरूपित करने वाली एक क्षैतिज रेखा के रूप में
 - ✓ 4. मूल आकार को निरूपित करने वाली शून्य रेखा के सापेक्ष स्थित एक क्षेत्र के रूप में

Q.160 किसी प्रतिरोधक में पीले, बैंगनी, भूरे और रजत रंग के बैंड हैं। इस रंग कोड द्वारा कौन-सा प्रतिरोध मान दर्शाया गया है? **HINDI**

- Ans
- ✗ 1. 47 ओम $\pm 10\%$
 - ✗ 2. 470 ओम $\pm 5\%$
 - ✓ 3. 470 ओम $\pm 10\%$
 - ✗ 4. 47 किलो ओम $\pm 20\%$

Q.161 धात्विक चालक में विद्युत धारा _____ के प्रवाह के कारण उत्पन्न होती है। **HINDI**

- Ans
- ✓ 1. इलेक्ट्रॉन
 - ✗ 2. वोल्टता
 - ✗ 3. प्रतिरोध
 - ✗ 4. शक्ति

Q.162 यदि PLC में एक प्रोफिबस-DP नेटवर्क, 12 Mbps पर केवल 100 मीटर प्रति खंड की अनुमति देता है, तो यदि पुनरावर्तक से तीन खंड जुड़े हों, तो अधिकतम कुल नेटवर्क लंबाई ज्ञात कीजिए। **HINDI**

- Ans
- ✗ 1. 1200 मीटर
 - ✗ 2. 200 मीटर
 - ✓ 3. 300 मीटर
 - ✗ 4. 400 मीटर

Q.163 चैन पुली ब्लॉक वाली भारी मशीन के उत्थापन से पहले सुरक्षा सुनिश्चित करने के लिए सबसे पहले कौन-सी कार्रवाई की जानी चाहिए? **HINDI**

- Ans
- ✗ 1. उत्थापन के दौरान सभी श्रमिकों की स्थिति सीधे लोड के नीचे निर्धारित करना
 - ✗ 2. उत्थापन से पहले केवल रस्सियों का उपयोग करके लोड को कसकर बांधना
 - ✓ 3. सभी उत्थापक उपकरणों में किसी भी दृश्यमान दोष के लिए निरीक्षण करना
 - ✗ 4. उत्थापन से पहले मशीन पर उपयुक्त स्नेहक अनुप्रयुक्त करना

Q.164 In a pair of meshing gears, what must be equal at the pitch circles?

- Ans
- ✗ 1. The diameters
 - ✗ 2. The number of teeth
 - ✓ 3. The tangential velocities
 - ✗ 4. The angular velocities

Q.165 What is the basic mechanism behind the working of a centrifugal pump?

- Ans
- ☒ 1. Compression of air to increase liquid pressure
 - ☒ 2. Conversion of mechanical energy into hydraulic energy
 - ☒ 3. Direct displacement of liquid using pistons
 - ☒ 4. Expansion of gas inside a sealed chamber

Q.166 उच्च बलाघूर्ण संचारित करने वाले दो शैफ्ट्स को जोड़ने के लिए, एक इंजीनियर परिशुद्ध संरेखण के साथ एक युग्मक का चयन करना चाहता है। इस अनुप्रयोग के लिए किस प्रकार का फ्लैज युग्मक सबसे उपयुक्त होता है? **HINDI**

- Ans
- ☒ 1. नम्य फ्लैज युग्मक (Flexible flange coupling)
 - ☒ 2. दृढ़ फ्लैज युग्मक (Rigid flange coupling)
 - ☒ 3. मफ युग्मक (Muff coupling)
 - ☒ 4. बुश पिन टाइप फ्लैज युग्मक (Bush pin type flange coupling)

Q.167 इनेबल कंट्रोल सर्किट के रूप में उपयोग किए जाने वाले 2-इनपुट AND गेट में, स्पंद को गुजरने देने के लिए इनेबल इनपुट पर कौन-सा लॉजिक सिग्नल अनुप्रयुक्त किया जाना चाहिए? **HINDI**

- Ans
- ☒ 1. कॉस्टेंट लॉजिक HIGH (1) सिग्नल
 - ☒ 2. उच्च-प्रतिबाधा विवृत परिपथ कनेक्शन
 - ☒ 3. कॉस्टेंट लॉजिक LOW (0) सिग्नल
 - ☒ 4. स्पंद आवृत्ति से पूर्णतः सुमेलित प्रत्यावर्ती सिग्नल

Q.168 In an oxy-acetylene cutting torch, which part is responsible for blending oxygen and acetylene before the gases reach the nozzle?

- Ans
- ☒ 1. Mixer chamber
 - ☒ 2. Welding tip
 - ☒ 3. Oxygen control valve
 - ☒ 4. Flashback arrestor

Q.169 A universal coupling is primarily used to transmit rotary motion between shafts that are:

- Ans
- ☒ 1. In the same axis and coplanar
 - ☒ 2. Inclined to each other and not collinear
 - ☒ 3. Parallel and collinear
 - ☒ 4. Perpendicular but coplanar

Q.170 अनुरक्षण के बाद पंप शाफ्ट सील से तरल के रिसन का सामान्य कारण क्या होता है? **HINDI**

- Ans
- ☒ 1. पंप में वायु लॉक की उपस्थिति
 - ☒ 2. गलत-संरेखित युग्मन
 - ☒ 3. अत्यधिक निस्सरण दाब
 - ☒ 4. ग्लैंड पैकिंग का अनुचित इंस्टॉलेशन

Q.171 In a case where a worker suffers a minor hand injury due to slipping tools, the investigation reveals missing guards on several machines. According to safety regulations, what is the most appropriate corrective measure?

- Ans
- ☒ 1. Install and regularly inspect machine guards
 - ☒ 2. Offer refresher safety training to workers
 - ☒ 3. Increase supervision during operations
 - ☒ 4. Rotate staff to different workstations

Q.172 उच्च-चक्र (high-cycle) अनुप्रयोगों के लिए रोलर वाल्व को अपग्रेड करते समय कौन-सी डिज़ाइन विशेषता सबसे महत्वपूर्ण होती है? **HINDI**

- Ans
- ☒ 1. टिकाऊ, निघर्षण-प्रतिरोधी सामग्री
 - ☒ 2. उच्च प्रवर्तन बल की आवश्यकता
 - ☒ 3. तीव्र प्रवर्तन के लिए अपेक्षाकृत लघु व्यास
 - ☒ 4. वायु प्रवाह क्षमता में वृद्धि

Q.173 A welder is preparing to perform arc welding on mild steel plates. Which parameter should be set initially to ensure a stable arc and proper penetration?

- Ans
- ☒ 1. Electrode angle
 - ☒ 2. Arc length
 - ☒ 3. Current setting
 - ☒ 4. Travel speed

Q.174 A maintenance technician observes a cloudy or milky appearance in an oil sample taken from a hydraulic system. Which condition is most likely indicated by the lubricant analysis?

- Ans
- ☐ 1. Oxidation has degraded the hydraulic oil significantly
 - ☒ 2. Water contamination is present in the hydraulic oil
 - ☐ 3. Excessive viscosity loss has occurred in the oil
 - ☐ 4. Thermal degradation has increased oil acidity
-

Q.175 Why is the point of a file important for finishing operations?

- Ans
- ☒ 1. It allows access to narrow spaces
 - ☐ 2. It provides a comfortable grip
 - ☐ 3. It increases tooth sharpness
 - ☐ 4. It absorbs vibrations
-

Blackbook



रेल भर्ती बोर्ड / RAILWAY RECRUITMENT BOARDS

सी ई एन - ०१/२०२५ - CEN - 01/2025

सहायक लोको पायलट की भर्ती/ Recruitment of Assistant Loco Pilot



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

* Note

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

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

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

Section : Part A

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Q.24 Simplify the following expression.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

- Ans ☒ 1. 9
☒ 2. 6
☒ 3. 8
☒ 4. 7

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

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

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

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

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

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

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

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

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

MDB PHE SLH VPK ?

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

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

- Ans ☒ 1. 35
☒ 2. 28
☒ 3. 30
☒ 4. 32

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

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

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

Question:

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

Statements:

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

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

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

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

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

- Ans ☒ 1. A
☒ 2. C
☒ 3. Y
☒ 4. D

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

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

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

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

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

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

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

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

Q.44 Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which letter-cluster pair DOES NOT belong to that group?

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

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

Q.45 Read the given statement(s) and conclusions carefully. Assuming that the information given in the statement(s) is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statement(s).

Statements:

All chocolates are paneers.
No paneer is a milk.

Conclusions:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Conditions –

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

What will be the code for the following group?

& 8 \$ 9 5

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

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

- Ans ☒ 1. 15
☐ 2. 9
☐ 3. 18
☐ 4. 12

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

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

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

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

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

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

- Ans ☐ 1. 69
☒ 2. 65
☐ 3. 67
☐ 4. 63

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

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

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

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

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

- Ans ☐ 1. 7
☒ 2. 2
☐ 3. 1
☐ 4. 4

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

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

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

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

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

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

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

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

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

(II) M is taller than D.

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

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

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

- Q.70** A dealer buys a table for ₹2,750. He first marks it up by 28%, then allows a 12% discount to a customer. If the customer also pays 5% GST on the selling price, find the profit percentage (excluding GST) made by the dealer.
- Ans ☒ 1. 13.81%
☒ 2. 12.64%
☒ 3. 15.12%
☒ 4. 10.36%
-
- Q.71** Which of the following pairs of numbers is co-prime?
- Ans ☒ 1. (21, 33)
☒ 2. (14, 28)
☒ 3. (17, 54)
☒ 4. (28, 49)
-
- Q.72** A cyclist rides 60 meters north, then 80 meters south, and finally 70 meters north. What is the total distance the cyclist has traveled?
- Ans ☒ 1. 60 meters
☒ 2. 10 meters
☒ 3. 150 meters
☒ 4. 210 meters
-
- Q.73** 12 is related to 1730 following a certain logic. Following the same logic, 13 is related to 2199. To which of the given options is 11 related, following the same logic?
(NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into their constituent digits. E.g. 13 – Operations on 13 such as adding/subtracting/multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)
- Ans ☒ 1. 1443
☒ 2. 1543
☒ 3. 1433
☒ 4. 1333
-
- Q.74** Read the given statement(s) and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statement(s).
- Statements:
Some rugs are fans.
No fan is a car.
- Conclusion (I) : Some rugs are cars.
Conclusion (II) : Some fans are rugs.
- Ans ☒ 1. Neither conclusion (I) nor (II) follows
☒ 2. Only conclusion (I) follows
☒ 3. Both conclusions (I) and (II) follow
☒ 4. Only conclusion (II) follows
-
- Q.75** Which of the following best describes the function of a speedometer in a vehicle?
- Ans ☒ 1. It displays the current speed at which the vehicle is moving.
☒ 2. It measures the total distance the vehicle has traveled.
☒ 3. It shows the rate at which the vehicle's speed changes.
☒ 4. It calculates the average speed over a journey.
-
- Q.76** Find the compound interest on ₹5,70,000 for 1.5 years at 10% per annum compounded half-yearly.
- Ans ☒ 1. ₹92,846.25
☒ 2. ₹88,846.25
☒ 3. ₹89,846.25
☒ 4. ₹89,946.25
-
- Q.77** Seven boxes S, T, U, V, W, X, and Y are kept one over the other but not necessarily in the same order. U is kept exactly third from the top. Only one box is kept between U and T. W is kept immediately above T. Only three boxes are kept between X and S. V is kept on one of the positions below Y. Only two boxes are kept between U and S. Which box is kept second from the top?
- Ans ☒ 1. T
☒ 2. U
☒ 3. X
☒ 4. V
-
- Q.78** What is the primary color used in warning signs to alert workers of potential hazards?
- Ans ☒ 1. Green with white symbol or text
☒ 2. Blue with white symbol or text
☒ 3. Red with white symbol or text
☒ 4. Yellow with black symbol or text

Q.79 In a certain code language,
A + B means 'A is the mother of B',
A - B means 'A is the brother of B',
A × B means 'A is the wife of B' and
A % B means 'A is the father of B'.

How is Satish related to Mayank if 'Satish + Deep × Piyush - Hitesh % Mayank'?

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

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

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

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

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

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

ZOT - TLP
NIL - HFH

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

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

- Ans ☒ 1. W
☒ 2. P
☒ 3. S
☒ 4. T

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

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

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

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

Q.86 Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which letter-cluster pair DOES NOT belong to that group?

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

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

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

11, 22, 44, 88, 176, ?

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

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

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

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

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

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

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

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

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

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

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

Q.93 Two sets of numbers are given below. In each set of numbers, certain mathematical operation(s) on the first number result(s) in the second number. Similarly, certain mathematical operation(s) on the second number result(s) in the third number and so on. Which of the given options follows the same set of operations as in the given sets?

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

6 – 16 – 23 – 32; 7 – 19 – 26 – 35

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

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

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

Q.95 What does CPU stand for in computing?

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

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

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

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

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

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

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

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

1 2 7 20 61 ?

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

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

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

Section : Part B (Millwright Maintenance Mechanic)

Q.101 Which electrical switch configuration represents the working principle of a standard 2-input AND gate?

- Ans
- ☒ 1. A single-pole double-throw (SPDT) two-way staircase switch network.
 - ☒ 2. Two switches connected in a series configuration with the electrical load.
 - ☒ 3. A normally closed limit switch wired in parallel with an emergency stop button.
 - ☒ 4. Two switches connected in a parallel configuration across the electrical load.

Q.102 What is a key benefit of detailed process documentation in CNC planning?

- Ans
- ☒ 1. Increases the life of all cutting tools
 - ☒ 2. Guarantees lower machine purchase costs
 - ☒ 3. Maintain consistency in part quality
 - ☒ 4. Improves operator chair comfort

Q.103 While troubleshooting a machine, where can you find the recommended type of lubrication oil to use?

- Ans
- ☒ 1. Machine manual
 - ☒ 2. List table for spare parts
 - ☒ 3. Previous entry in maintenance log
 - ☒ 4. Operator shift schedule page

Q.104 A maintenance mechanic is drilling a 12 mm hole using a feed of 0.15 mm/rev and a spindle speed of 600 rpm. What is the total feed distance per minute?

- Ans
- ☒ 1. The total feed distance per minute is 180 mm
 - ☒ 2. The total feed distance per minute is 12 mm
 - ☒ 3. The total feed distance per minute is 90 mm
 - ☒ 4. The total feed distance per minute is 72 mm

Q.105 Which blower is commonly used in pneumatic conveying?

- Ans
- ☒ 1. Propeller blower
 - ☒ 2. Axial blower
 - ☒ 3. Roots blower
 - ☒ 4. Exhaust blower

Q.106 In screw threads, what does the term 'root' refer to?

- Ans
- ☒ 1. Bottom of the thread groove
 - ☒ 2. Side of the thread profile
 - ☒ 3. Distance between threads
 - ☒ 4. Top of the thread ridge

Q.107 In a workshop, a machine needs to transfer motion from a motor to a grinding wheel placed at a short distance, requiring smooth and quiet operation. Which method is most suitable for transmitting power?

- Ans ☒ 1. Using a gear drive for high torque transmission
☒ 2. Using a rope drive for long-distance power transmission
☒ 3. Using a belt drive between shafts
☒ 4. Using a chain drive for positive power transmission

Q.108 How does the anatomy of a file enhance its effectiveness in metalworking?

- Ans ☒ 1. Specific parts perform distinct roles in filing
☒ 2. The tang is the only working part on the file
☒ 3. All parts are used only for gripping
☒ 4. The point is used for measuring the angles

Q.109 Which dimensional value must lie within the upper and lower limits for acceptance of a manufactured component?

- Ans ☒ 1. Nominal dimension specified in engineering drawing sheet
☒ 2. Actual measured size of the manufactured component after machining
☒ 3. Average dimension obtained from repeated measurement process
☒ 4. Basic size used for tolerance specification during design stage

Q.110 A maintenance manager compares conventional preventive maintenance with predictive maintenance for a high-speed turbine. Which scenario best demonstrates the advantage of predictive maintenance in optimizing production continuity and reducing spare-parts inventory?

- Ans ☒ 1. Replacing components during every scheduled shutdown, regardless of actual equipment condition.
☒ 2. Performing routine component replacement at fixed calendar intervals without monitoring the condition.
☒ 3. Maintaining a large spare-parts inventory continuously to handle unexpected equipment breakdowns.
☒ 4. Using sensor data to schedule component replacement only when wear trends cross risk thresholds.

Q.111 What type of feedback might be used to monitor solenoid valve status in automation?

- Ans ☒ 1. Limit sensor detecting valve position
☒ 2. Manual inspection of the valve
☒ 3. Checking the air temperature
☒ 4. Using a larger solenoid coil

Q.112 In the British Standard system of limits and fits, what is the main basis for specifying tolerances?

- Ans ☒ 1. Standard tolerance grades and fundamental deviations relative to basic size
☒ 2. Average manufacturing size obtained from inspection measurements
☒ 3. Exact machining dimensions specified without tolerance variation
☒ 4. Arbitrary dimensional variations chosen by machine operators

Q.113 Which parameter must be adjusted to control the depth of weld penetration during manual arc welding?

- Ans ☒ 1. Electrode angle
☒ 2. Arc voltage
☒ 3. Travel speed
☒ 4. Welding current

Q.114 Which type of valve is best suited to prevent overpressure in a pneumatic system?

- Ans ☒ 1. Non-return valve
☒ 2. Flow control valve
☒ 3. Directional control valve
☒ 4. Pressure control valve

Q.115 Which of the following is a primary cause of electrical accidents in mechanical workshops?

- Ans ☒ 1. Wearing rubber-soled shoes
☒ 2. Keeping tools dry while working
☒ 3. Using insulated gloves when working
☒ 4. Handling live wires without insulation

Q.116 In BIS notation, what does the tolerance grade primarily influence?

- Ans ☒ 1. The position of tolerance zone relative to zero line
☒ 2. The measured dimension obtained during inspection
☒ 3. The basic size specified in engineering drawing
☒ 4. The magnitude or width of the tolerance zone

- Q.117** In an industrial conveyor system where a speed sensor continuously monitors the belt speed and automatically adjusts the motor voltage to keep the speed constant, what type of control system is being used?
- Ans ✓ 1. Closed-loop system
✗ 2. Manual control system
✗ 3. Non-feedback system
✗ 4. Open-loop system
-
- Q.118** Which practice helps maintain the accuracy and effectiveness of measuring tools?
- Ans ✓ 1. Store them in protective cases
✗ 2. Leave them in open toolboxes
✗ 3. Use them as substitutes for other tools
✗ 4. Clean them only when visibly dirty
-
- Q.119** In a machine workshop, workers frequently handle oils, chemicals, and metal particles during maintenance activities. Which occupational health practice is most effective in preventing skin-related diseases?
- Ans ✗ 1. Increasing machine speed during maintenance work
✗ 2. Switching off fans during maintenance work
✗ 3. Storing tools properly after maintenance work
✓ 4. Wearing protective gloves during maintenance work
-
- Q.120** What feature enables a cutting torch to perform effective oxy-acetylene cutting operations?
- Ans ✗ 1. Use of a wooden handle to reduce operator fatigue
✗ 2. Capability to produce electrical resistance heating
✓ 3. Ability to supply a high-pressure oxygen jet
✗ 4. Presence of a cooling fan inside the torch
-
- Q.121** What is the main function of the piston rings in a compressor piston assembly?
- Ans ✗ 1. Reduce the overall piston weight
✗ 2. Enhance the piston surface finish
✓ 3. Prevent air leakage past the piston
✗ 4. Increase piston rotational speed
-
- Q.122** What key property of GI (Galvanized Iron) pipes justifies their use over plastic pipes in main municipal water supply systems during retrofitting?
- Ans ✗ 1. Greater flexibility for complex routes
✗ 2. Lower cost than plastic pipes
✓ 3. Higher mechanical strength
✗ 4. Better resistance to all chemicals
-
- Q.123** An operator selects a grinding wheel for finishing a hardened steel shaft. Which structure type should be chosen to minimize the risk of workpiece overheating while ensuring efficient chip removal?
- Ans ✗ 1. Compact structure wheel
✗ 2. Dense structure wheel
✗ 3. Medium structure wheel
✓ 4. Open structure wheel
-
- Q.124** In milling cutter nomenclature, which term refers to the angle provided behind the cutting edge to reduce friction during cutting?
- Ans ✗ 1. Rake angle
✗ 2. Cutting angle
✓ 3. Clearance angle
✗ 4. Helix angle
-
- Q.125** Which property of a target object does not significantly affect an ultrasonic sensor?
- Ans ✗ 1. Shape and distance
✗ 2. Surface position
✓ 3. Colour of the object
✗ 4. Sound reflection
-
- Q.126** While grinding, why is it unsafe to use the side surface of a pedestal grinding wheel for regular grinding work?
- Ans ✗ 1. The side surface increases material removal rate beyond safe limits
✓ 2. The side surface is not designed to withstand regular grinding forces
✗ 3. The side surface causes automatic imbalance in all grinding operations
✗ 4. The side surface is more suitable only for polishing operations
-

Q.127 Which device uses a chain and pulley arrangement to lift heavy loads in a workshop?

- Ans
- ☐ 1. Jib crane
 - ☒ 2. Chain block
 - ☐ 3. Pulley wheel
 - ☐ 4. Belt conveyor

Q.128 Why should the outside micrometer not be dropped or handled roughly?

- Ans
- ☒ 1. It may disturb calibration and alignment
 - ☐ 2. It changes thimble graduation
 - ☐ 3. It increases the screw pitch
 - ☐ 4. It increases measurement capacity

Q.129 Which main component of a pipe cutter ensures the cutting wheel moves smoothly across the pipe surface?

- Ans
- ☒ 1. Guide rollers
 - ☐ 2. Adjusting screw
 - ☐ 3. Frame
 - ☐ 4. Handle

Q.130 An assembly layout in first angle projection uses auxiliary views for a slanted machine component. What is the main advantage of including these auxiliary views?

- Ans
- ☐ 1. Auxiliary views are only required for symmetrical objects in first angle projection
 - ☒ 2. Auxiliary views reveal true shape and size of inclined surfaces not shown in main views
 - ☐ 3. Auxiliary views primarily display hidden features behind solid surfaces
 - ☐ 4. Auxiliary views replace all side and top views in first angle projection

Q.131 Which part inside the shuttle valve moves to block one of the inlets?

- Ans
- ☐ 1. Diaphragm
 - ☐ 2. Spring
 - ☐ 3. Piston
 - ☒ 4. Ball element

Q.132 A maintenance dashboard shows Pump A has an MTTR of 2 hours and Pump B has an MTTR of 4 hours, both with similar failure rates. Which maintenance improvement action should be prioritized for Pump B?

- Ans
- ☐ 1. Increase frequency of failure reporting for Pump B
 - ☒ 2. Reduce the repair duration through better planning and training
 - ☐ 3. Ignore MTTR difference as it does not affect downtime
 - ☐ 4. Schedule more breakdowns to gather additional data

Q.133 Which procedure correctly confirms that a pipe wrench's jaws are adjusted properly to provide maximum grip and safe operation?

- Ans
- ☐ 1. Set the jaws loosely
 - ☐ 2. Apply grease to the jaws
 - ☒ 3. Ensure the jaws fully contact
 - ☐ 4. Position the wrench at edges

Q.134 A technician is assembling a gear train where the driver gear has 24 teeth and the driven gear has 72 teeth. What is the velocity ratio in this setup?

- Ans
- ☐ 1. 1.5:1
 - ☐ 2. 1:1.5
 - ☐ 3. 2:1
 - ☒ 4. 3:1

Q.135 According to Faraday's law, induced EMF is produced when there is a change in:

- Ans
- ☐ 1. Resistance
 - ☐ 2. Temperature
 - ☒ 3. Magnetic flux
 - ☐ 4. Power

Q.136 What is the key advantage of performing periodic vibration analysis in a preventive maintenance schedule for multiple pumps?

- Ans
- ☐ 1. Improves pump efficiency immediately
 - ☐ 2. Increases pump flow rate
 - ☒ 3. Detects signs of component deterioration
 - ☐ 4. Decreases pump power consumption

Q.137 In a machine safety system, four emergency switches are connected through an OR gate. Under which condition will the output become HIGH?

- Ans ☐ 1. Only when all switches are OFF
☒ 2. When at least one switch is ON
☐ 3. Only when all switches are ON
☐ 4. Only when two switches are ON

Q.138 A ladder is placed against a workshop wall, making an angle of 60 degrees with the floor. If the ladder is 5 meters long, what is the vertical height from the floor to the top of the ladder?

- Ans ☒ 1. 4.33 meters
☐ 2. 2.5 meters
☐ 3. 5 meters
☐ 4. 3.75 meters

Q.139 In power system protection, which device detects fault current and sends a trip signal to the circuit breaker?

- Ans ☐ 1. Ammeter
☐ 2. Capacitor
☐ 3. Fuse wire
☒ 4. Relay

Q.140 An engineering drawing for a compressor frame shows a welding symbol with a fillet triangle placed below the reference line, with the dimension '6' placed to its left and '100' placed to its right. What does this indicate?

- Ans ☐ 1. A 6 mm groove weld, 100 mm long, on arrow side
☒ 2. A 6 mm fillet weld, 100 mm long, on the arrow side
☐ 3. A 100 mm fillet weld, 6 mm long, on other side
☐ 4. A 6 mm fillet weld, 100 mm pitch, on both sides

Q.141 A fitter is required to replace a large pulley on a shaft without disturbing the shaft alignment or its mounted components. Which type of pulley should be selected for this scenario?

- Ans ☐ 1. Fast pulley
☐ 2. Loose pulley
☒ 3. Split pulley
☐ 4. Solid pulley

Q.142 A shaft and hub assembly requires a parallel key with standard side clearance. Which factor ensures the proper fit of the key in the keyway?

- Ans ☐ 1. The key should be longer than the shaft diameter
☐ 2. The height of the key should be larger than the keyway depth
☐ 3. The width of the key should be exactly equal to the keyway width
☒ 4. The width of the key should be slightly less than the keyway width

Q.143 What is the consequence of using a relay with a coil voltage rating lower than the supply voltage?

- Ans ☐ 1. Contact wear will be reduced
☐ 2. Improve relay performance
☒ 3. Coil may overheat and fail
☐ 4. Relay will operate at normal speed

Q.144 A spur gear has 40 teeth and a pitch diameter of 80 mm. What is the diametral pitch of this gear?

- Ans ☐ 1. 2 teeth per mm
☐ 2. 0.2 teeth per mm
☒ 3. 0.5 teeth per mm
☐ 4. 1 teeth per mm

Q.145 A lifting machine raises a 500 N load to a height of 4 meters in 10 seconds. What is the mechanical power delivered by the machine?

- Ans ☐ 1. 100 watts
☒ 2. 200 watts
☐ 3. 125 watts
☐ 4. 250 watts

Q.146 A team is preparing for a shift change in a mechanical workshop. According to best practices in maintaining a clean work area, which action should be taken before leaving the workstation?

- Ans ☐ 1. Leave tools on the bench for the next working team
☐ 2. Store waste under the worktables for later removal
☐ 3. Sweep only the floors and leave items out
☒ 4. Dispose waste and return tools to assigned places

Q.147 A shaper is used to machine a slot with a depth of 2 mm. If the recommended maximum depth of cut per pass for the tool and material is 1 mm, how many passes should the operator plan for?

- Ans ☒ 1. 2 passes
☒ 2. 4 passes
☒ 3. 1 pass
☒ 4. 3 passes

Q.148 A conical tank has a base diameter of 1.2 m and a height of 2 m. What is its total capacity in cubic meters?

- Ans ☒ 1. 0.754 m³
☒ 2. 1.507 m³
☒ 3. 2.712 m³
☒ 4. 0.377 m³

Q.149 When interpreting a sheet-metal fabrication drawing with a third angle projection symbol, what is the correct location for the left side view relative to the front view?

- Ans ☒ 1. The left side view is placed above the top view
☒ 2. The left side view is placed to the right of the front view
☒ 3. The left side view is placed below the front view
☒ 4. The left side view is placed to the left of the front view

Q.150 While erecting a foundation for a vertical pump, the fitter notices that the cotter bolt is not fitting properly in its slot, despite being of the correct nominal size. What is the most probable reason for this issue?

- Ans ☒ 1. The slot or hole has not been machined to the required tolerance
☒ 2. Excessive lubrication is preventing the cotter bolt from seating
☒ 3. The thread pitch on the cotter bolt does not match the nut
☒ 4. The cotter bolt is too short for the assembly

Q.151 A machine requires the transmission of motion between two parallel shafts with uniform velocity ratio. Which type of gear is most suitable for this application?

- Ans ☒ 1. Helical gear
☒ 2. Spur gear
☒ 3. Worm gear
☒ 4. Bevel gear

Q.152 Which property of a manila rope makes it suitable for lifting a medium-weight machine part in a workshop?

- Ans ☒ 1. Low cost and attractive surface appearance
☒ 2. High resistance to acids and chemicals
☒ 3. High flexibility and adequate tensile strength
☒ 4. Good electrical conductivity for industrial use

Q.153 What is the primary risk of not verifying approach and retract movements in a CNC program?

- Ans ☒ 1. Coolant flow may not reach the tool
☒ 2. Feed rate may be too aggressive
☒ 3. Spindle speed may be set too low
☒ 4. Tool may collide with the workpiece

Q.154 In which condition is a faceplate more suitable than a three-jaw chuck?

- Ans ☒ 1. Machining standard cylindrical shafts
☒ 2. Quick clamping of small components
☒ 3. Holding irregularly shaped workpieces
☒ 4. Automatic centering of round bars

Q.155 What should be ensured for safety when different teams work on separate levels of the same scaffold structure?

- Ans ☒ 1. Lock access to one level during work
☒ 2. Coordinate work to prevent dropping tools
☒ 3. Set strict time limits for each team
☒ 4. Assign a supervisor to each level

Q.156 A textile mill located in a humid coastal region requires a belt drive system for continuous operation. Which type of belt is most suitable for this environment based on weather conditions?

- Ans ☒ 1. Fabric belt
☒ 2. Rubber belt
☒ 3. Leather belt
☒ 4. Plastic belt

Q.157 What happens to the total resistance when two equal resistors are connected in parallel?

- Ans ☒ 1. It becomes half of one resistor
☒ 2. It becomes zero
☒ 3. It remains the same as one resistor
☒ 4. It doubles compared to one resistor

Q.158 Why is a reduced scale preferred over an enlarged scale for machine foundation layouts in fabrication workshops?

- Ans ☒ 1. Because measurement accuracy is improved with reduced scale
☒ 2. Because enlarged scales are always used for large drawings
☒ 3. Because foundations are large and must fit on standard drawing sheets
☒ 4. Because proportional representation is not required for foundations

Q.159 An engineer observes that the belt on a flat pulley is tracking off-center during operation. Which adjustment related to crowning is most likely to correct this issue?

- Ans ☒ 1. Reduce the pulley diameter only
☒ 2. Reduce the crowning at the pulley center
☒ 3. Increase the crowning at the pulley center
☒ 4. Make the pulley face completely flat

Q.160 Which operation benefits most from the use of a depth gauge in the fitting process?

- Ans ☒ 1. Assessing the pitch of a thread
☒ 2. Measuring the thickness of a metal plate
☒ 3. Determining the diameter of a washer
☒ 4. Checking the depth of a keyway slot

Q.161 During normalizing, a steel component is heated above its upper critical temperature and then cooled in air. How does air cooling in normalizing affect the final microstructure compared to furnace cooling in annealing?

- Ans ☒ 1. It leads to coarse pearlite and large grains
☒ 2. It results in the formation of martensite
☒ 3. It produces finer pearlite and smaller grains
☒ 4. It creates a structure with mostly bainite

Q.162 A rung in a ladder diagram of PLC has a counter (C1) incremented each time input I2 turns ON. If I2 is pulsed ON and OFF five times, what will be the value stored in C1?

- Ans ☒ 1. 5
☒ 2. 1
☒ 3. 0
☒ 4. 10

Q.163 An oil sample from a gearbox shows a high amount of iron (ferrous) particles, but the oil viscosity is normal, and there is no water. What should be done first?

- Ans ☒ 1. Inspect the gearbox for abnormal gear or bearing wear
☒ 2. Replace the lubricant immediately to prevent failure
☒ 3. Increase oil sampling frequency only for trend monitoring
☒ 4. Reduce gearbox operating temperature settings

Q.164 A sequence valve in a pneumatic system is used to:

- Ans ☒ 1. Ensure operations occurs
☒ 2. Regulate flow rate
☒ 3. Direct airflow
☒ 4. Maintain system pressure

Q.165 A mason cuts a dovetail-shaped hole in a stone block and inserts a lifting device that expands sideways when tension is applied, allowing the stone to be lifted. Which device is being used?

- Ans ☒ 1. Double hook
☒ 2. Lewis bolt
☒ 3. Eye bolt
☒ 4. Rivet

Q.166 An AI-based inspection system continues improving defect classification accuracy after exposure to additional production images. Which capability is primarily being demonstrated?

- Ans ☒ 1. Static optimization through application of predefined operating limits
☒ 2. Sequential processing through execution of fixed computational pathways
☒ 3. Incremental learning through adaptation of internal decision parameters
☒ 4. Deterministic control through repetition of predefined execution routines

Q.167 In a scenario where a newly installed conveyor system begins to vibrate excessively, but shows no clear external damage, what inspection strategy should the maintenance team adopt to diagnose the root cause?

- Ans
- ☒ 1. Tighten all external fasteners and check for immediate improvement
 - ☒ 2. Lubricate all moving parts and monitor vibration
 - ☒ 3. Perform a detailed inspection focusing on alignment, balance, and internal wear
 - ☒ 4. Increase the frequency of visual inspections for surface defects

Q.168 An engineering drawing specifies a surface finish symbol with a bar added below the basic symbol. What does this symbol indicate about the manufacturing process?

- Ans
- ☒ 1. No specific surface finish required
 - ☒ 2. Material removal by machining is required
 - ☒ 3. Maximum roughness value is specified
 - ☒ 4. Surface must be left as cast

Q.169 What is the shape of a Woodruff key used in machine assemblies?

- Ans
- ☒ 1. Wedge shape
 - ☒ 2. Rectangular bar
 - ☒ 3. Semicircular disc
 - ☒ 4. Flat plate

Q.170 Which geometric pattern results from the incremental coordinate sequence X0 Y10, X10 Y0, X0 Y-10, X-10 Y0?

- Ans
- ☒ 1. Circle
 - ☒ 2. Triangle
 - ☒ 3. Straight line
 - ☒ 4. Square

Q.171 In a smart factory, an intelligent conveyor system detects a jam and autonomously reroutes products using digital integration. Which Industry 4.0 feature does this scenario best illustrate?

- Ans
- ☒ 1. Batch processing of historical data for scheduled analysis
 - ☒ 2. Time-based scheduling for preventative maintenance cycles
 - ☒ 3. Centralized manual override via human-machine interfaces
 - ☒ 4. Real-time process adaptation through distributed control systems

Q.172 Why is closed loop control preferred over open loop control in high-precision CNC machining tasks?

- Ans
- ☒ 1. Speeds up machining by ignoring minor disturbances
 - ☒ 2. Reduces the need for operator supervision
 - ☒ 3. Checks for errors after the machining process
 - ☒ 4. Automatically corrects errors during machining

Q.173 A PLC program uses a retentive timer (RTO) set for 30 seconds. The timer is enabled for 10 seconds, then disabled for 5 seconds, and enabled again for 20 seconds. What is the final accumulated value of the timer?

- Ans
- ☒ 1. 10
 - ☒ 2. 20
 - ☒ 3. 30
 - ☒ 4. 0

Q.174 Which of the following should be removed regularly from the bench vice to maintain smooth operation?

- Ans
- ☒ 1. Guide rods
 - ☒ 2. Jaw plates
 - ☒ 3. Handle grip
 - ☒ 4. Dust and metal chips

Q.175 Which component symbol is commonly used to perform the pneumatic AND function?

- Ans
- ☒ 1. Pressure regulator
 - ☒ 2. Shuttle valve
 - ☒ 3. Quick exhaust valve
 - ☒ 4. Two-pressure valve