



रेल भर्ती बोर्ड / RAILWAY RECRUITMENT BOARDS

सी ई एन - ०१/२०२५ - CEN - 01/2025

सहायक लोको पायलट की भर्ती/ Recruitment of Assistant Loco Pilot



Test Date	28/07/2026
Test Time	9:30 AM - 12:00 PM
Subject	ALP Stage 2 Millwright Mechanic Machine Tool Maintenance

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

- Options shown in green color with a tick icon are correct.
- Chosen option on the right of the question indicates the option selected by the candidate.

Q.1 A car travels on a highway, and its odometer records a reading of 180 km at 8:00 am and 240 km at 9:30 am. Based on this information, which statement best describes the car's average speed during this interval?

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

Correct Answer: A

Q.2 Find the LCM of 72, 78, and 90.

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

Correct Answer: A

Q.3 P, Q, R, S and T have different ages. T is elder than only one person. S is elder than P but younger than Q. R is elder than Q. Who is the youngest?

- Ans** A). R B). P C). Q D). S

Correct Answer: B

Q.4 An engineer uses fault tree analysis to assess a machine-related injury in a factory. Which step should be taken first according to standard procedure?

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

Correct Answer: A

Q.5 What should come in place of the question mark (?) in the given series?

74, 83, 101, 128, ?, 209

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

Correct Answer: C

Q.6 Which of the following statements correctly describes average velocity and its SI unit?

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

Correct Answer: C

Q.7 What is an email used for?

Ans A). Data processing B). File storage C). Creating documents D). Sending messages

Correct Answer: D

Q.8 Which of the following best describes a key environmental concern associated with improper disposal of e-waste?

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

Correct Answer: C

Q.9 In this question, a question is followed by two statements numbered (I) and (II). You have to decide whether the data provided in the statements are sufficient to answer the question. Read both the statements and decide the appropriate answer.

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

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

(II) D is taller than E.

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

Correct Answer: A

Q.10 A train X crosses a man who is sitting in another train Y, which is moving in the opposite direction, in 8 seconds. However, when both trains are moving in the same direction, train X takes 20 seconds to pass the same man. If the length of train X is 360 meters and the length of train Y (in which the man is sitting) is 240 meters, what is the speed of train Y?

Ans A). 48.6 km/h B). 45.8 km/h C). 46.5 km/h D). 45.3 km/h

Correct Answer: A

Q.11 A roller coaster at the top of its track has maximum potential energy. As it descends and speeds up, what principle explains why the sum of its kinetic and potential energies remains constant if we ignore friction and air resistance?

Ans A). Law of inertia B). Principle of superposition C). Law of conservation of energy D). Principle of inertia

Correct Answer: C

**Q.12 In a certain code language,
A + B means 'A is the mother of B',
A – B means 'A is the brother of B',
A × B means 'A is the wife of B' and
A % B means 'A is the father of B'.**

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

Ans A). Mother's sister B). Father's mother C). Father's sister D). Mother's mother

Correct Answer: D

Q.13 Which component makes up the largest proportion of Earth's atmosphere by volume?

Ans A). Argon B). Carbon dioxide C). Oxygen D). Nitrogen

Correct Answer: D

**Q.14 Refer to the following letter and symbol series and answer the question that follows.
Counting to be done from left to right.**

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

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

Ans A). None B). Four C). Two D). Three

Correct Answer: B

Q.15 If 'A' stands for '+', 'B' stands for '–', 'C' stands for '×' and 'D' stands for '÷', then what will come in place of the question mark (?) in the following equation?

31 B 35 D 7 A 9 C 2 = ?

Ans A). 44 B). 48 C). 42 D). 46

Correct Answer: A

Q.16 Which of the following letter-number clusters will replace the question mark (?) in the given series to make it logically complete?

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

Ans A). JHZ 24 B). HIZ 30 C). IHS 23 D). IGA 25

Correct Answer: D

Q.17 A shopkeeper marks a product 75% above cost price and offers two successive discounts of 30% and 40%. What is the profit or loss percentage?

Ans A). 20.9% profit B). 22.6% profit C). 26.5% loss D). 15.7% profit

Correct Answer: C

Q.18 Which integrated strategy best addresses soil pollution, falling crop yields, and low microbial activity near an industrial zone?

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

Correct Answer: C

Q.19 A trader marks an article 25% above its cost price. He allows a discount of 10% on the marked price. After giving the discount, he makes a profit of ₹180 on the article. What is the cost price of the article?

Ans A). ₹1,260 B). ₹1,440 C). ₹1,200 D). ₹1,380

Correct Answer: B

Q.20 A tangent PQ at a point P of a circle of radius 5 cm meets a line through the center O at a point Q such that OQ = 12 cm. What is the length of PQ?

Ans A). $\sqrt{117}$ cm B). $\sqrt{107}$ cm C). $\sqrt{97}$ cm D). $\sqrt{119}$ cm

Correct Answer: D

Q.21 If 'A' stands for '÷', 'B' stands for '×', 'C' stands for '+' and 'D' stands for '−', what will come in place of the question mark '?' in the following equation?

14 A 30 B 45 C 15 D 9 = ?

Ans A). 29 B). 25 C). 27 D). 28

Correct Answer: C

Q.22 A car travels 90 km east and then 30 km west along the same straight road. If the entire journey takes 3 hours, what is the average velocity of the car?

Ans A). 50 km/h north B). 20 km/h east C). 30 km/h east D). 40 km/h east

Correct Answer: B

Q.23 PJAE is related to JOWH in a certain way based on the English alphabetical order. In the same way, OIVC is related to INRF. To which of the following is NEZF related to following the same logic?

Ans A). IJVJ B). HKVJ C). HJVI D). IKUH

Correct Answer: C

Q.24 A boat sails 40 km downstream and then 40 km upstream in a river. The boat's speed in still water is 12 km/hr and the speed of the stream is 4 km/hr. How much time does the boat take to cover the entire distance (both upstream and downstream)?

Ans A). 10 hours B). 7.5 hours C). 8 hours D). 6 hours

Correct Answer: B

Q.25 Select the pair which follows the same pattern as that followed by the two pairs given below. Both pairs follow the same pattern.

BIP : EMU
GNU : JRZ

Ans A). VCD : GRD B). FMT : IQY C). CGW : NHT D). XDE : PON

Correct Answer: B

Q.26 Which line symbol is commonly used in engineering drawings to represent a hidden edge that is not directly visible?

Ans A). Solid thick line B). Chain thin line C). Zigzag line D). Dashed line

Correct Answer: D

Q.27 A cyclist covers 120 meters in 16 seconds on a straight road, then immediately covers 180 meters in 24 seconds on a similar road segment. What is the average speed of the cyclist during the entire journey?

Ans A). 8.0 meters per second B). 7.0 meters per second C). 6.5 meters per second D). 7.5 meters per second

Correct Answer: D

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

Correct Answer: A

Q.29 What is the simplified value of the expression $\left[\frac{\cos A}{(1 - \tan A)} \right] + \left[\frac{\sin A}{(1 - \cot A)} \right]$?

Ans A). 1 B). 0 C). $\sin A - \cos A$ D). $\cos A + \sin A$

Correct Answer: D

Q.30 A diamond ring costs ₹85,000. Its price is reduced first by 11% and then by 4% on the reduced price. Find the final price of the ring after both discounts.

Ans A). ₹72,624 B). ₹72,604 C). ₹74,624 D). ₹73,624

Correct Answer: A

Q.31 In this question, a question is followed by two statements numbered (I) and (II). You have to decide whether the data provided in the statements are sufficient to answer the question. Read both the statements and decide the appropriate answer.

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

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

(II) H is taller than L.

Ans A). Both statements I and II together (and not statement I alone or statement II alone) are sufficient to answer the question

B). Data in statement II alone is sufficient to answer the question while data in statement I is not

C). Data in statement I alone is sufficient to answer the question while data in statement II is not

D). Both statements I and II together are NOT sufficient to answer the question

Correct Answer: D

Q.32 Which property of a fuse wire ensures it melts quickly when excess current flows?

Ans A). Low melting point B). High electrical resistance C). High melting point D). Thick wire

Correct Answer: A

Q.33 A, B, C, D, X, Y and Z are sitting around a circular table facing the centre of the table. Only two people sit between X and Z when counted from the right of X. Only two people sit between Z and D. Only three people sit between X and B. A sits to the immediate left of C. Who sits third to the left of Y?

Ans A). X B). C C). A D). Z

Correct Answer: B

Q.34 If 'A' stands for '+', 'B' stands for '−', 'C' stands for '×' and 'D' stands for '÷', then what will come in place of the question mark (?) in the following equation?

$28 A 16 C 3 B 12 D 4 = ?$

Ans A). 73 B). 71 C). 72 D). 70

Correct Answer: A

Q.35 A runner completes one lap of a 200 meter circular track in 50 seconds. What is the average speed of the runner?

Ans A). 3 meter per second B). 3.5 meter per second C). 4.5 meter per second D). 4 meter per second

Correct Answer: D

Q.36 Which of the following statements correctly reflects the characteristics of a Local Area Network (LAN) and the role of Ethernet within it?

Ans A). Ethernet is a standard that governs how devices in a LAN communicate via wired connections, supporting speeds from 10 Mbps to 1000 Mbps.

B). A LAN always requires Gigabit Ethernet to function and is insecure because it allows open access to all network devices.

C). LANs are designed for long-distance communication and use Ethernet primarily for wireless data exchange.

D). Ethernet in a LAN provides low-speed data transfer and connects users over public Internet infrastructure.

Correct Answer: A

Q.37 In a certain code language, 'KING' is coded as '9713' and 'ITCH' is coded as '2945'. What is the code for 'I' in the given code language?

Ans A). 7 B). 2 C). 9 D). 4

Correct Answer: C

Q.38 An engineer is tasked with creating the front view of a mechanical part. The part has a rectangular base with a vertical circular hole passing through it and a triangular prism attached on top. Which of the following best describes what will be visible in the front view?

Ans A). The outline of triangular prism and circular hole will be visible in front view only

B). Only the rectangular base outline will be visible in the front view drawing

C). Only the triangular prism will be clearly visible in the front view drawing

D). The outline of rectangular base and triangular prism will be visible but hole is not shown

Correct Answer: D

Q.49 If the mean of the following data is 40, then what is the value of x?

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

Ans A). 99 B). 93 C). 98 D). 82

Correct Answer: D

Q.50 Which situation best describes an entanglement hazard in a mechanical workshop?

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

Correct Answer: A

Q.51 What do touch gestures in Microsoft Windows allow users to do?

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

Correct Answer: B

Q.52 Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.

Statements:

Some glasses are spoons.
All spoons are forks.

Conclusions:

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

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

Correct Answer: A

Q.53 When a moving car suddenly applies brakes, its kinetic energy is transformed mainly into which form of energy?

Ans A). Potential energy B). Light energy C). Sound energy D). Heat energy

Correct Answer: D

Q.54 If $\left(x + \frac{1}{x}\right) = 3$, find the value of $\left(x^3 + \frac{1}{x^3}\right)$.

Ans A). 18 B). 15 C). 20 D). 16

Correct Answer: A

Q.55 Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which letter-cluster pair DOES NOT belong to that group?
(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)

Ans A). BG – EJ B). DJ – GM C). AF – DI D). CH – EK

Correct Answer: D

Q.56 Which approach most effectively reduces both nitrogen and phosphorus concentrations during wastewater treatment?

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

Correct Answer: C

Q.57 A laboratory record shows a distance of 0.004 kilometers between two points. How should this be written in SI units of length for a scientific report?

Ans A). 4 m B). 0.4 m C). 4000 mm D). 400 cm

Correct Answer: A

Q.58 If Rohan's income increases by 20% and his expenditure increases by 10%, then his savings increase by ₹1,200. If his original income was ₹12,000, what was his original expenditure? (Assume that savings = income – expenditure.)

Ans A). ₹11,000 B). ₹12,000 C). ₹9,000 D). ₹10,000

Correct Answer: B

Q.59 A car of mass 1200 kg accelerates from rest to a speed of 20 m/s on a straight road. If the kinetic energy gained by the car is completely due to the work done by the engine, which of the following best represents the total kinetic energy acquired by the car at this speed?

Ans A). 240,000 joules B). 480,000 joules C). 24,000 joules D). 12,000 joules

Correct Answer: A

Q.60 A thermometer shows a reading of 37 degrees Celsius. What is the corresponding temperature in Kelvin?

Ans A). 320 K B). 300 K C). 310 K D). 270 K

Correct Answer: C

Q.61 Which of the following is both, an input and output device?

Ans A). Printer B). Touchscreen monitor C). Keyboard D). Projector

Correct Answer: B

Q.62 Which of the following best defines 'work' in physics?

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

Correct Answer: D

Q.63 G is the mother of Y. Y is the sister of V. S is the father of L. L is the husband of V. How is G related to S?

Ans A). Son's wife's mother B). Mother's mother C). Son's wife's sister D). Son's wife

Correct Answer: A

Q.64 A car travels 60 km north in 2 hours, then 40 km south in the next 1 hour. What is the car's average velocity over the entire trip?

Ans A). 6.7 km/h north B). 0 km/h C). 20 km/h south D). 33.3 km/h north

Correct Answer: A

Q.65 What is the main purpose of ambient air quality standards?

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

Correct Answer: A

Q.66 The median of the following data is :
25, 15, 23, 25, 17, 27, 20, 18, 24, 30, 19, 28, 35, 10, 31, 40

Ans A). 23.5 B). 24.5 C). 25 D). 20.5

Correct Answer: B

Q.67 Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which letter-cluster pair DOES NOT belong to that group?

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

Ans A). TN-ZD B). EY-KO C). QK-VA D). WQ-CG

Correct Answer: C

Q.68 A mechanical engineer must design a flange joint where two pipes are to be connected at a 45-degree angle. Which method should the engineer use to accurately represent the intersection line on a technical drawing of the two cylindrical pipes?

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

Correct Answer: C

Q.69 What is the best description of the purpose of multi-view drawing in engineering drawing?

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

Correct Answer: D

Q.70 Refer to the given letter series and answer the question that follows. Counting to be done from left to right.

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

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

Ans A). 5 B). 6 C). 4 D). 7

Correct Answer: A

Q.71 Two students move identical boxes through a distance of 10 m. Student A applies a force of 50 N, while Student B applies a force of 100 N. What is the difference in the work done by the two students?

Ans A). 500 J B). 1000 J C). 0 J D). 50 J

Correct Answer: A

Q.72 A sample of water is heated from 15 degrees Celsius to 35 degrees Celsius. What is the temperature change in Kelvin?

Ans A). The temperature change is 30 K. B). The temperature change is 15 K. C). The temperature change is 20 K. D). The temperature change is 50 K.

Correct Answer: C

Q.73 Simplify: $60 - \{(-8) \times (-16 - 19 - 2)\} \div [5 \times \{2 + (-1) \times (-1)\}]$

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

Correct Answer: B

Q.74 What should come in place of the question mark (?) in the given series?

98, 104, 116, 134, 158, ?

Ans A). 184 B). 188 C). 190 D). 186

Correct Answer: B

Q.75 What is the primary function of a fire hydrant in a workplace safety system?

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

Correct Answer: B

Q.76 What should come in place of the question mark (?) in the given series based on the English alphabetical order?

UMD ZQG EUJ JYM ?

Ans A). NDO B). OCP C). PDP D). NBQ

Correct Answer: B

Q.77 An engineer is tasked with creating a hollow cone for a machine part, where the wall thickness must be consistent and the slant height is critical for assembly. Which factor is most important to ensure the cone will fit correctly in the final design?

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

Correct Answer: D

Q.78 If a scooter travels at a constant speed of 25 km per hour, how far will it travel in 4 hours?

Ans A). 80 km B). 100 km C). 75 km D). 120 km

Correct Answer: B

Q.79 The simple interest earned on a certain sum of money for 3 years at 15% per annum is ₹2,700. Find the sum.

Ans A). ₹9,000 B). ₹6,000 C). ₹5,000 D). ₹8,000

Correct Answer: B

Q.80 Solve the system of equations:

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

Ans A). $x=1, y=2, z=2$ B). $x=2, y=1, z=-3$ C). $x=-2, y=2, z=11$ D). $x=2, y=2, z=-1$

Correct Answer: D

Q.81 A pendulum takes 60 seconds to complete 24 oscillations. If its length is increased and it now takes 72 seconds for the same number of oscillations, what has happened to its time period?

Ans A). It has increased to 3.0 seconds B). It remains at 2.5 seconds C). It has decreased to 1.5 seconds D). It has decreased to 2.0 seconds

Correct Answer: A

Q.82 Namia is facing the west. She turns left and walks 15 m. She turns left and walks 25 m. She again turns left and walks 40 m. She finally turns left and walks 40 m to reach home. In which direction is her home with respect to the starting point?

Ans A). South-East B). North-East C). South-West D). North-West

Correct Answer: D

Q.83 When using a hand file during fitting operations, which action demonstrates adherence to tool safety protocols?

Ans A). Filing above shoulder height for better leverage B). Applying excessive downward force when filing
C). Holding the file near its tang during filing work D). Fitting a proper handle securely to the tang

Correct Answer: D

Q.84 A father distributed two different amounts among his sons P, Q, R and S. First amount was distributed in the ratio 5 : 4 : 3 : 2 and the second amount was distributed in the ratio 6 : 7 : 8 : 9. If the second amount is thrice the first amount, then which son will get the maximum amount?

Ans A). Q B). P C). S D). R

Correct Answer: C

Q.85 What is the typical temperature range covered by a laboratory thermometer used in school experiments?

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

Correct Answer: D

Q.86 An object has a mass of 10 kilograms. How does its weight on the Moon compare to its weight on Earth?

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

Correct Answer: B

Q.87 In a spreadsheet application, a user selects a range of cells and presses Ctrl + C, followed by Ctrl + V in a different worksheet. What happens to the data?

Ans A). The selected cells are deleted from the original worksheet. B). The selected cells are copied to the new worksheet.
C). The selected cells are moved to the new worksheet. D). The selected cells are saved to a new file.

Correct Answer: B

Q.88 Which is the most important safety check before operating any machine in a workshop?

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

Correct Answer: B

Q.89 A trader buys 187 pens at ₹23 each. During transportation, 7 pens get damaged and cannot be sold. He sells the remaining pens at ₹27 each. Find his profit percentage. (rounded off to one decimal place)

Ans A). 12.6% B). 13.0% C). 13.7% D). 14.1%

Correct Answer: B

Q.90 A worker's hand is at risk of injury from a mechanical shearing action. Which situation best describes a shearing hazard?

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

Correct Answer: C

Ans A). 45 kg B). 50 kg C). 48 kg D). 52 kg **Correct Answer: B**

Q.99 Which statement best describes a 'point' in engineering drawing?

Ans A). A point is a short line segment used to mark measurements.

B). A point is the intersection of two lines and always has measurable length.

C). A point indicates a precise location but has no size, length, or width. D). A point represents a small area with both length and width.

Correct Answer: C

Q.100 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 cm³) of the cylinder?

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

Ans A). 92450

B). 92500

C). 92400

D). 92550

Correct Answer: C

Q.1 What needs to be checked when a threaded pipe connection becomes loose after cutting?

Ans A). Type of tap used

B). Die adjustment setting

C). Cutting speed applied

D). Amount of lubricant used

Correct Answer: B

Q.2 Which type of operation is most commonly performed on a vertical milling machine?

Ans A). Face milling of flat surfaces B). Slot milling with side cutters C). Angular milling with swivelling head D). End milling of narrow profiles

Correct Answer: A

Q.3 Which specification parameter is most critical for ensuring a flat belt fits properly on pulleys in a power transmission system?

Ans A). The material of the belt

B). The thickness of the belt

C). The pitch length of the belt

D). The width of the belt

Correct Answer: D

Q.4 In a mechanical workshop, what is the main purpose of wearing safety goggles while operating grinding machines?

Ans A). To prevent hearing loss from loud equipment

B). To reduce inhalation of dust particles

C). To protect the eyes from flying debris and sparks

D). To avoid electric shock from faulty wiring

Correct Answer: C

Q.5 A maintenance engineer observes that the input and output shafts in a gearbox are neither parallel nor intersecting and there is a need for smooth, quiet operation under high loads. Which gear arrangement is most suitable in this context?

Ans A). Hypoid gear

B). Spiral bevel gear

C). Helical gear

D). Worm gear

Correct Answer: A

Q.6 Which cutting tool material is most appropriate for high-speed CNC machining of hard metals?

Ans A). Cast iron

B). Cemented carbide

C). High-speed steel

D). Tool steel

Correct Answer: B

Q.7 In the British Standard system, how is the tolerance zone typically represented in diagrams?

Ans A). As a horizontal line representing measured dimension of component

B). As a region located relative to the zero line representing basic size C). As an average value obtained from repeated dimensional readings

D). As a numerical value representing the machining allowance

Correct Answer: B

Q.8 A lathe machine is being installed in a new workshop. Which of the following must be checked first to ensure proper installation according to standard maintenance practices?

Ans A). Filling with recommended lubricant

B). Foundation level and alignment

C). Checking electrical wiring

D). Trial running and observation

Correct Answer: B

Q.9 In a fabrication sketch, which line correctly indicates the edge of a mounting bracket that is visible from the front view?

Ans A). Object line

B). Dimension line

C). Hidden line

D). Center line

Correct Answer: A

Q.10	Which symbol is used to indicate a pressure source in pneumatic drawings?				
Ans	A). Square	B). Rectangle	C). Triangle	D). Circle	Correct Answer: D
Q.11	Where should the measuring probe be placed to obtain reliable vibration readings for bearing condition monitoring?				
Ans	A). On the machine foundation away from all rotating mechanical components B). Directly on the rotating shaft during normal machine operating conditions C). Loosely against the protective guard covering the rotating machine assembly D). Firmly on the bearing housing near the monitored bearing location				Correct Answer: D
Q.12	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	A). Reducing operator involvement in upkeep B). Assigning repairs only after breakdown C). Scheduling routine checks for all machines D). Allowing machines to run until failure				Correct Answer: C
Q.13	Which component in a PLC architecture is primarily responsible for executing control instructions and managing logic operations?				
Ans	A). Output Module	B). Central Processing Unit (CPU)	C). Input Module	D). Power Supply	Correct Answer: B
Q.14	What safety feature is designed to shield the operator from fragments in case a grinding wheel breaks on a pedestal grinder?				
Ans	A). Wheel guard	B). Base	C). Tool rest	D). Motor cover	Correct Answer: A
Q.15	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	A). The threads will experience reduced wear B). The nut may seize onto the shaft C). The nut may loosen due to vibration or movement D). The nut will transmit more torque to the shaft				Correct Answer: C
Q.16	Why is the root of a screw thread often rounded in high-stress applications?				
Ans	A). To improve thread fit B). To reduce stress concentration C). To increase holding power D). To reduce friction				Correct Answer: B
Q.17	A maintenance team finds that predictive maintenance alerts from a cloud-based dashboard are delayed by several hours. All smart sensors and PLCs on the production line show normal operation with no device errors. Which connectivity issue is most likely causing this delay?				
Ans	A). Outdated firmware on smart sensors causing local data loss B). Incorrect PLC address configuration in local controllers C). Sensor power supply fluctuations affecting sensor readings D). Unstable internet connection between factory network and cloud				Correct Answer: D
Q.18	Which tool is commonly used for lifting heavy stone blocks during foundation erection in mechanical engineering works?				
Ans	A). Wedge bolt	B). Expansion bolt	C). Eye bolt	D). Lewis bolt	Correct Answer: D
Q.19	What key synchronization challenge arises in systems using multiple 5 by 2 valves for controlling different actuators?				
Ans	A). Avoiding mixing of supply and exhaust air B). Ensuring all valves operate in correct sequence C). Matching all valve cycle times for safety D). Preventing excessive pressure drop across all valves				Correct Answer: B
Q.20	Which modification would reduce the force output of a pneumatic actuator without altering supply pressure or stroke length?				
Ans	A). Change mounting style B). Shorten the stroke length C). Decrease the piston diameter D). Use a longer piston rod				Correct Answer: C
Q.21	Which part of a fan system is most susceptible to vibration-related damage during surge conditions?				
Ans	A). Electrical wiring	B). Blades assembly	C). Housing	D). Bearings and shaft assembly	Correct Answer: D

Q.22 Before lifting a heavy machine with a chain pulley block, which action should be performed first to ensure safety?

- Ans A). Secure the load properly using ropes only before lifting B). Apply suitable lubricants to the machine before lifting
C). Inspect all lifting equipment for any visible defects D). Position all workers directly under the load during lifting

Correct Answer: C

Q.23 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 A). Excessive viscosity loss has occurred in the oil B). Oxidation has degraded the hydraulic oil significantly
C). Thermal degradation has increased oil acidity D). Water contamination is present in the hydraulic oil

Correct Answer: D

Q.24 For a hypoid gear set transmitting power at 90° with an offset, what is the main advantage over straight bevel gears?

- Ans A). Quieter operation at all speeds compared to straight bevel gears. B). Capability to function with intersecting axes at higher speeds.
C). Transmits power between non-intersecting axes with high torque. D). Lower initial cost for equivalent size and torque rating.

Correct Answer: C

Q.25 What is the common cause of fluid leakage from a pump shaft seal after maintenance?

- Ans A). Improper installation of gland packing B). Misaligned coupling C). Excessive discharge pressure D). Presence of air lock in pump

Correct Answer: A

Q.26 A resistor has the color bands Yellow, Violet, Brown, and Silver. What resistance value is indicated by this color code?

- Ans A). 47 kilo ohm $\pm 20\%$ B). 470 ohm $\pm 10\%$ C). 47 ohm $\pm 10\%$ D). 470 ohm $\pm 5\%$

Correct Answer: B

Q.27 How does reducing the supply air pressure to a pneumatic actuator affect its performance if all other factors remain constant?

- Ans A). Increases the stroke length B). Increases the actuator speed C). Reduces the force output D). Actuator to move a greater distance

Correct Answer: C

Q.28 Which rigging safety strategy should be emphasized when lifting a delicate piece of machinery?

- Ans A). Use padding at sling contact points B). Place slings directly on machine edges C). Use a thicker sling for extra strength
D). Lift the machine quickly to reduce risk

Correct Answer: A

Q.29 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 A). Mechanical advantage decreases B). Mechanical advantage remains unchanged C). Mechanical advantage becomes zero
D). Mechanical advantage increases

Correct Answer: D

Q.30 Which component of an industrial automation system directly converts physical parameters into electrical signals for processing?

- Ans A). Actuator B). Controller C). Sensor D). Human Machine Interface (HMI)

Correct Answer: C

**Q.31 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 A). 0.6 mm B). 0.006 mm C). 6 mm D). 0.06 mm

Correct Answer: A

Q.32 A maintenance drawing shows a tapped hole in the base plate of a machine support system. In the plan view, dashed lines are used to represent the major diameter of the thread. What does this indicate?

- Ans A). The thread is a decorative groove unrelated to fastening. B). The thread is internal and hidden within the base plate.
C). The thread is a partial thread cut only on the lower half of the fastener. D). The thread is external and fully visible on the fastener shaft.

Correct Answer: B

Q.33 What is the main function of a flat key in mechanical fasteners?

Ans A). To prevent axial movement of the shaft B). To act as a sealing device between components C). To align the shaft with the hub precisely
D). To transmit rotational force from the shaft to the hub

Correct Answer: D

Q.34 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 A). Closed filled arrow head B). Double dot terminator C). Oblique stroke terminator D). Open arrow head

Correct Answer: C

Q.35 Which operation is NOT suitable for a single cut file?

Ans A). Heavy stock removal B). Truing flat surfaces C). Deburring edges D). Fine finishing

Correct Answer: A

Q.36 In a 2-input AND gate used as an enable control circuit, which logic signal must be applied to the enable input to allow pulses to pass through?

Ans A). A high-impedance open circuit connection B). An alternating signal that matches the pulse frequency exactly
C). A constant logic HIGH (1) signal D). A constant logic LOW (0) signal

Correct Answer: C

Q.37 Calculate the area of an irregular plot using the Trapezoidal Rule, given the offsets are 2 m, 4 m, 3 m, and 5 m at an equal spacing of 1 m.

Ans A). 7 m² B). 12 m² C). 9.5 m² D). 10.5 m²

Correct Answer: D

Q.38 Which part of the belt conveyor supports and guides the belt along its path?

Ans A). Idler rollers B). Drive pulley C). Motor D). Gearbox

Correct Answer: A

Q.39 A workshop mixes coolant concentrate and water in a 3:2 ratio for a machine cooling system. If the total mixture required is 25 liters, how many liters of coolant concentrate are required?

Ans A). 15 liters B). 12.5 liters C). 17 liters D). 10 liters

Correct Answer: A

Q.40 A compressor motor in a workshop is connected to a 240 V supply through a wiring system with a total resistance of 2 ohms. If the motor draws 12 A during operation, what is the voltage measured at the motor terminals?

Ans A). 228 V B). 216 V C). 192 V D). 240 V

Correct Answer: B

Q.41 What is the relationship between axis limit switches and the machine zero point in a CNC machine?

Ans A). Limit switches help protect the machine zero location B). Limit switches determine tool length offset
C). Limit switches control spindle speed D). Limit switches set workpiece zero automatically

Correct Answer: A

Q.42 In an oxy-acetylene cutting torch, which part is responsible for blending oxygen and acetylene before the gases reach the nozzle?

Ans A). Mixer chamber B). Oxygen control valve C). Flashback arrestor D). Welding tip

Correct Answer: A

Q.43 While interpreting the drawing of a double-riveted butt joint with equal-width butt straps, which feature indicates a zig-zag riveting arrangement?

Ans A). Each plate shows a single rivet row along the joint line B). Both butt straps extend equally across the joint section
C). Rivet centers in adjacent rows are offset by half the pitch D). Rivet centerlines in successive rows remain perfectly aligned

Correct Answer: C

Q.44 If a Profibus-DP network in PLC, at 12 Mbps allows only 100 meters per segment, what is the maximum total network length if three segments are connected with repeaters?

Ans A). 400 meters B). 1200 meters C). 300 meters D). 200 meters

Correct Answer: C

Q.45 What is a critical operator action after completing an Auto mode cycle?

Ans A). Inspecting the finished part for quality assurance B). Immediately rerunning the same program
C). Starting the next program without checks D). Ignoring the finished part and moving on

Correct Answer: A

Q.46	A V-belt is specified by its cross-sectional dimensions. Which pair best represents these dimensions?			
Ans	A). Only thickness	B). Only width	C). Width and depth	D). Length and width
Correct Answer: C				
Q.47	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	A). Travel speed	B). Arc length	C). Current setting	D). Electrode angle
Correct Answer: C				
Q.48	An engineer is inspecting a batch of bolts in a manufacturing unit. To quickly check if these bolts conform to a specific pitch and profile, which instrument should the engineer use?			
Ans	A). Snap gauge	B). Thread gauge	C). Plug gauge	D). Ring gauge
Correct Answer: B				
Q.49	What could most likely cause a pneumatic actuator to move in an irregular or jerky manner?			
Ans	A). Incorrect mounting on the frame	B). Short circuit in electrical wiring	C). Moisture or debris in the air supply	
	D). Lack of grease in actuator gears			
Correct Answer: C				
Q.50	In a PLC STL, the sequence LD I2.0, AND I2.1, ORN I2.2, = Q2.0 is used. If I2.0 is ON, I2.1 is ON, and I2.2 is OFF, what does Q2.0 become?			
Ans	A). Q2.0 will be ON	B). Q2.0 will be OFF	C). Q2.0 will hold previous value	D). Q2.0 will toggle
Correct Answer: A				
Q.51	Which design feature is most important when upgrading a roller valve for high-cycle applications?			
Ans	A). Increased air flow capacity	B). Durable, wear-resistant material	C). Smaller diameter for faster actuation	
	D). Requiring higher actuation force			
Correct Answer: B				
Q.52	An engineer suspects that wind is affecting plumb bob readings during outdoor equipment erection. Which approach best minimizes error due to wind?			
Ans	A). Shield the plumb bob from wind using a temporary screen		B). Wait for wind to stop before taking any measurement	
	C). Take multiple readings and average the values		D). Use a heavier plumb bob to resist wind movement	
Correct Answer: A				
Q.53	What is the decimal equivalent of the binary number 101101?			
Ans	A). 47	B). 43	C). 45	D). 49
Correct Answer: C				
Q.54	Electric current in a metallic conductor is due to the flow of:			
Ans	A). Power	B). Resistance	C). Electrons	D). Voltage
Correct Answer: C				
Q.55	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	A). Install and regularly inspect machine guards	B). Rotate staff to different workstations	C). Offer refresher safety training to workers	
	D). Increase supervision during operations			
Correct Answer: A				
Q.56	What kind of improper practice most significantly reduces hacksaw blade life during cutting operations?			
Ans	A). Using a blade with inappropriate Teeth Per Inch for the workpiece thickness			
	B). Applying excessive cutting pressure beyond recommended limits		C). Operating at inconsistent stroke speed during cutting	
	D). Maintaining improper blade tension during operation			
Correct Answer: B				
Q.57	An engineer needs to select a coupling for joining two shafts transmitting high torque with precise alignment. Which type of flange coupling is most suitable for this application?			
Ans	A). Muff coupling	B). Bush pin type flange coupling	C). Rigid flange coupling	D). Flexible flange coupling
Correct Answer: C				
Q.58	How does the thickness of the zinc coating on a GI pipe affect its performance?			
Ans	A). Increases corrosion resistance	B). Makes pipe more flexible	C). Reduces internal friction	D). Decreases pipe diameter
Correct Answer: A				

Q.59 A universal coupling is primarily used to transmit rotary motion between shafts that are:

Ans A). Parallel and collinear B). Inclined to each other and not collinear C). In the same axis and coplanar D). Perpendicular but coplanar

Correct Answer: B

Q.60 A supervisor notices that cotton waste is being disposed of with regular garbage. What is a likely consequence of this improper practice in terms of workshop safety?

Ans A). Noticeable decrease in air quality B). Immediate breakdown of workshop machinery C). Chemical contamination of drinking water
D). Increased risk of fire incidents in the workshop

Correct Answer: D

Q.61 What is the primary function of a selector switch in an industrial control panel?

Ans A). Increase supply voltage B). Select different operating modes C). Store electrical charge D). Measure electrical current

Correct Answer: B

Q.62 Which pair of M codes is typically programmed before a manual tool change to stop spindle rotation and disable coolant flow?

Ans A). M03 and M08 B). M04 and M08 C). M05 and M08 D). M05 and M09

Correct Answer: D

Q.63 In a pair of meshing gears, what must be equal at the pitch circles?

Ans A). The tangential velocities B). The number of teeth C). The diameters D). The angular velocities

Correct Answer: A

Q.64 In limits and tolerances terminology, what is meant by deviation?

Ans A). The difference between the maximum size and minimum size limits
B). The theoretical dimension used as reference in engineering drawing
C). The algebraic difference between a size and the corresponding basic size
D). The measured dimension obtained after manufacturing process

Correct Answer: C

Q.65 What effect does improper feeder design have on the formation of bridges in hopper discharge systems?

Ans A). By creating uneven flow and restricting material discharge B). By automatically crushing oversized materials
C). By increasing the material flow uniformly D). By creating poor alignment between the feeder and hopper geometry

Correct Answer: A

Q.66 An ITI maintenance mechanic is analyzing a steel sample heated above the upper critical temperature. Which phase is primarily present in the iron-carbon diagram at this stage?

Ans A). Cementite B). Ferrite C). Austenite D). Pearlite

Correct Answer: C

Q.67 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 A). Spot facing tool B). Reamer C). Counterbore tool D). Countersink tool

Correct Answer: A

Q.68 What is the basic mechanism behind the working of a centrifugal pump?

Ans A). Conversion of mechanical energy into hydraulic energy B). Compression of air to increase liquid pressure
C). Direct displacement of liquid using pistons D). Expansion of gas inside a sealed chamber

Correct Answer: A

Q.69 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 A). Medium grit size B). Coarse grit size C). Large grit size D). Fine grit size

Correct Answer: D

Q.70 In BIS notation, what does the numerical value preceding the tolerance symbol indicate?

Ans A). The difference between upper and lower limits of size B). The tolerance value obtained during inspection process
C). The basic size of the component specified in the drawing D). The actual size obtained after manufacturing process

Correct Answer: C

Q.71 Which control method for a 3 by 2 valve would be most appropriate in a hands-free workstation?

Ans A). Manual lever operation by hand B). Automatic timer control C). Push button operation by hand D). Foot pedal actuation for the valve

Correct Answer: D

Q.72 Why is the point of a file important for finishing operations?

Ans A). It increases tooth sharpness B). It provides a comfortable grip C). It absorbs vibrations D). It allows access to narrow spaces

Correct Answer: D

Q.73 Which machine uses a linear reciprocating cutting motion to machine flat surfaces?

Ans A). Drilling machine B). Shaper machine C). Milling machine D). Lathe machine

Correct Answer: B

Q.74 Frequent machine breakdowns primarily cause a loss of downtime under which component of Overall Equipment Effectiveness (OEE)?

Ans A). Productivity B). Availability C). Performance D). Quality

Correct Answer: B

Q.75 Which of the following tool materials is most commonly used in multi-point cutting tools like drills and milling cutters?

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

Correct Answer: A