022/2025

1. What is represented by scale 3:5?

   (A) Plain scale
   (B) Reduced scale
   (C) Isometric scale
   (D) Enlarged scale

2. Picture plane is same as that of projection plane in :

   (A) Oblique view
   (B) Perspective view
   (C) Orthographic view
   (D) Isometric view

3. Chain line is used for representing :

   (A) Centre line
   (B) Trajectories
   (C) Lines of symmetry
   (D) All of the above

4. Interior angle of a regular heptagon is :

   (A) 120°
   (B) 108°
   (C) 128.5°
   (D) 135°

5. A point moves in such a way that its distance from a fixed straight line is always 1.5 times the distance from fixed point, 50 mm away from the fixed line. Name the above curve.

   (A) Parabola
   (B) Ellipse
   (C) Hyperbola
   (D) Circle

6. Method adopted for drawing ellipse is :

   (A) Eccentricity method
   (B) Foci method
   (C) Oblong method
   (D) All of the above

7. What is the standard size of an A2 sheet?

   (A) 297 mm × 420 mm
   (B) 315 mm × 449 mm
   (C) 210 mm × 297 mm
   (D) 420 mm × 594 mm

8. The length in isometric drawing of line is 20 cm. What is the true length of it?

   (A) 24.4 cm
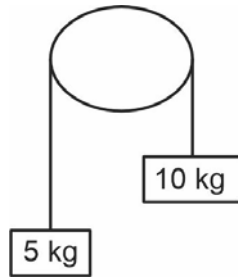   (B) 25.4 cm
   (C) 23.4 cm
   (D) 26.6 cm

9. In the absence of protractor, the following scale is used to construct angle :

(A) Diagonal scale

(B) Scale of chords

(C) Vernier scale

(D) Plain scale

10. The angle between plane of projection and Line of protection in cabinet oblique projection is :

(A) 63°26'

(B) 45°

(C) 33°50'

(D) 90°

11. Isometric view will be larger than isometric projection by :

(A) 63.28

(B) 128.5

(C) 81.6

(D) 122.5

12. Method for drawing the isometric projection is :

(A) Parallel method

(B) Coordinated method

(C) Oblique method

(D) None of these

13. Three-point perspective view are used to draw :

(A) Building in architectural drawing

(B) Lamp post on the road side

(C) Tall building

(D) Long verandah

14. Which one of the following metals will readily fracture if hit with hammer?

(A) Mild steel

(B) Nickel silver

(C) Brass

(D) Cast iron

15. Stiffness of a metal is characterized by its :

(A) Modulus of elasticity

(B) Yield strength

(C) Ultimate tensile strength

(D) Elongation

16. Total area under stress strain curve of mild steel specimen tested up to failure under tension is measure of :

(A) Ductility

(B) Ultimate strength

(C) Stiffness

(D) Toughness

17. Heat treatment process for hardening of high carbon steel is :

(A) Tempering

(B) Hardening

(C) Normalizing

(D) annealing

18. A bolt's identification M 60 × 2 indicates :

    (A) metric threads of 60 nos is 2 cm

    (B) metric threads with a cross-section of 60 mm³

    (C) bolt of 60 mm nominal diameter having threads per cm

    (D) metric threads of 60 mm outside diameter and 2 mm pitch

19. When a washer is positioned underneath a nut to tighten it, the bolt will be subjected to :

    (A) shear stress   (B) compression stress

    (C) tensile stress   (D) none of these

20. Two plates each of thickness t are to be riveted together. If the length of the shank portion necessary to form the closing head is a, then the length of the rivet shank is given by :

    (A) $2t + a$ (B) $2(t + a)$

    (C) $t + 2a$ (D) Can't be determined

21. According to the Unwin formula, the diameter of the rivet hole and plate thickness are related by :

    (A) $d = 2t$ (B) $d = 1.5t$

    (C) $d = 6t$ (D) $d = 6\sqrt{t}$

22. Weld spatter defects in welding are typically caused by :

    (A) low current during welding   (B) low voltage during welding

    (C) too high current during welding (D) too high voltage during welding

23. How are the base metals to be welded connected in spot welding?

    (A) Electric contact   (B) Mechanical pressure

    (C) Magnetic field   (D) Direct contact

24. Which of the following materials is not used in alloy steels?

    (A) Molybdenum   (B) Nickel

    (C) Chromium   (D) Sodium

25. Pinch effect in welding is caused by :

    (A) Electric forces   (B) Electrostatic forces

    (C) Magnetic forces   (D) Electromagnetic forces

26. The distance from the centre of the face to the root of the weld is known :

    (A) Root   (B) Toe

    (C) Throat   (D) Puddle

27. Which of the following defects occur due to melting or burning away of parent metal?

   (A) Undercut   (B) Spatter

   (C) Cracking in weld metal   (D) Cold cracking

28. Which of the following defects occur when the deposited metal is not focused on the root of the weld?

   (A) Inclusion of slag   (B) Porosity

   (C) Incomplete fusion   (D) Inadequate penetration

29. In which of the following operation jigs are preferred over fixtures?

   (A) Grinding   (B) Turning

   (C) Milling   (D) Drilling

30. Upon annealing, eutectoid steel changed to which of the following?

   (A) Perlite   (B) Cementite

   (C) Martensite   (D) Austenite

31. A taper provided on the pattern for its easy removal from the mould is known as :

   (A) Rapping allowance   (B) Draft allowance

   (C) Finish allowance   (D) Contraction allowance

32. A gimlet is a hand tool used for which of the following manufacturing process?

   (A) Reaming   (B) Marking

   (C) Drilling   (D) None of these

33. What is the combustion in a spark ignition engine?

   (A) heterogeneous   (B) laminar

   (C) homogeneous   (D) none of the mentioned

34. In a micrometre, the anvil is made of :

   (A) Carbon steel   (B) Cast iron

   (C) Mild steel   (D) Alloy steel

35. What function is M06 code in part programming?

   (A) Coolant on   (B) Tool change

   (C) Programme end   (D) Spindle stop

36. Iso-octane is characterised by :

   (A) It has an octane number of 0   (B) It has an octane number of 50

   (C) It has an octane number of 100   (D) None of the mentioned

37. Mass in kg of a rectangular steel plate of dimensions 200 mm × 300 mm × 10 mm is _____ (given the density of steel = 7.82 gm/cm³) :

(A) 7.672 kg   (B) 4.692 kg

(C) 0.0130 kg   (D) 2.6823 kg

38. Shafts A and B are made of same material. If the radius of shaft A is one-third that of shaft B, the ratio of torque transmitted by shaft B to that of shaft A is :

(A) 3 : 1   (B) 9 : 1

(C) 27 : 1   (D) 81 : 1

39. Which one of the following keys is semi-circular in shape?

(A) Feather key   (B) Flat saddle key

(C) Gibb head key   (D) Woodruff key

40. Which among the following statement/statements is/are true?

(i) Flexible couplings are used where the axes of the shafts are laterally misaligned.

(ii) Rigid coupling is used where there is a perfect alignment of shafts to be joined.

(iii) Oldham coupling is an example for rigid couplings.

(A) (i) only   (B) (ii) only

(C) (i) and (ii) only   (D) (i), (ii) and (iii)

41. Which among the following statement/statements is/ are true about journal bearings?

(i) Journal bearing is an anti-friction bearing.

(ii) In journal bearing, the loading is parallel to the bearing axis.

(iii) In journal bearing, the bearing pressure acts normal to the shaft axis.

(iv) Journal bearings rotate along with the shaft.

(A) (i) and (iii) only   (B) (ii) only

(C) (iii) only   (D) (i), (ii), (iii) and (iv)

42. For a gear, circular pitch is defined as :

(A) $\pi \times$ module   (B) π/module

(C) module/π (D) module/π^2

43. Find the tension in the string in the frictionless pulley system shown in the figure (g = 10 m/s²) :

10 kg

5 kg

(A) 33.33 N

(B) 66.67 N

(C) 133.33 N

(D) 166.67 N

44. Which among the following statement/statements is/are true?

(i) An idler pulley is used to maintain constant tension on the belt.

(ii) Belt drive is a positive drive.

(iii) 'V' belt drives are used when the distance between the driver and driven pulleys is more.

(iv) Crowning of pulley is done to avoid the belt from slipping.

(A) (i) and (iv) only

(B) (i) and (ii) only

(C) (iii) and (iv) only

(D) (i) and (iii) only

45. Choose the correct statement/statements from below :

(i) In cross belt drivers, the shaft are arranged parallel and rotate in the opposite direction.

(ii) The power transmitted by the belt drive is dependent on the belt velocity.

(iii) The tension in the tight side of the belt is greater than that of the slack side.

(iv) In case of a 6 × 7 wire rope, the numbers 6 and 7 stand for the number of strands and wires used in the wire rope respectively.

(A) (i) only

(B) (i) and (ii) only

(C) (i), (ii) and (iii) only

(D) (i), (ii) , (iii) and (iv)

46. When a chain of pitch 'p' is wrapped around a sprocket having "T" number of teeth and pitch circle diameter 'D', then choose the correct relation from below :

(A) $p/D = \sin(90°/T)$

(B) $D/p = \sin(45°/T)$

(C) $p/D = \sin(180°/T)$

(D) $D/p = \sin(360°/T)$

47. 1 Joule is :

(A) 10^4 dyne cm

(B) 10^5 dyne cm

(C) 10^6 dyne cm

(D) 10^7 dyne cm

48. The heat absorbed by a substance without changing its Physical state is :

(A) Sensible heat   (B) Latent heat

(C) Specific heat   (D) Heat capacity

49. The kinetic energy gained by a body of 10g, falling from a height of 10 m is :

(Take g = 10 m/s²)

(A) 1 J   (B) 2 J

(C) 3 J   (D) 4 J

50. Very high temperatures are measured using :

(A) Bolometer   (B) Pyrometer

(C) Rotameter   (D) Anemometer

51. The power generated by the engine is called :

(A) Brake power   (B) Indicated power

(C) Mechanical power   (D) Real power

52. The process in which the sheet metal is cut through part of its length and the cut portion is then bend to form tabs and louvers is called :

(A) Parting   (B) Slitting

(C) Lancing   (D) Blanking

53. The associated state of stress in blanking is :

(A) Tension   (B) Compression

(C) Shear   (D) Tension and shear

54. To punch a square hole of side length 'a' from a sheet material of thickness 't' and ultimate shear strength of τ_u, the force required is :

(A) $4at\tau_u$ (B) $\pi at\tau_u$

(C) $4at/\tau_u$ (D) $\pi at/\tau_u$

55. For a blanking operation :

(A) die size = blank size

(B) die size = blank size – 2 × clearance

(C) punch size = blank size

(D) punch size = blank size + 2 × clearance

56. The heights and base perimeters of two right circular cones are in the ratios 1:10 and 10:5 respectively. The ratio of their volumes is :

(A) 1:10   (B) 1:100

(C) 2:5   (D) 2:25

57. If the length of a rectangle is increased by 10% and breadth decreased by 10%, then the new area of the rectangle :

(A) increases by 1%   (B) decreases by 1%

(C) increases by 10%   (D) decreases by 10%

58. The time taken to fill water in a cylindrical tank of radius 7 m and height 10 m at the rate of 2 m^3/s is :

(A) 770 s   (B) 670 s

(C) 570 s   (D) 470 s

59. If the ratio of length of the breadth of a rectangle having perimeter of 500 m is 3 : 2, the area of the rectangle will be :

(A) 12000 m^2 (B) 12500 m^2

(C) 15000 m^2 (D) 15500 m^2

60. In order to block the pipe at one end, which of the following is used :

(A) Coupling   (B) Plug

(C) Bend   (D) Cross

61. Once through boilers are :

(A) Water tube boilers

(B) Fire tube boilers

(C) Super critical boilers

(D) Combination of fire tube and water tube boilers

62. Pipe fitting used to connect a branch right angle to the main pipe :

(A) Coupling   (B) Elbow

(C) Tee   (D) Union

63. Which of the following type of actuators is most commonly used in control valves?

(A) Manual   (B) Hydraulic

(C) Electric   (D) Pneumatic

64. If the ratio of inner diameter to wall thickness of a cylinder is more than 15, it is called :

(A) Moderate cylinder   (B) Thin cylinder

(C) Thick cylinder   (D) Long cylinder

65. Choose a boiler accessory from the following :

    (A) Air preheater   (B) Pressure gauge

    (C) Blow down cock   (D) Fusible plug

66. The pressure switch is used to :

    (A) Start a motor   (B) Energize a solenoid

    (C) Stop a motor   (D) All of the above

67. The compressed air flows to the actuator through

    (A) Shafts   (B) Motor

    (C) Flow control valve   (D) Pipes and valves

68. The boiler accessories used to recover some of the heat carried away in the flue gases up the chimney and to heat the feed water :

    (A) Economizer   (B) Air preheater

    (C) Inter cooler   (D) Super heater

69. Selection of a compressor is based on the following factor :

    (A) Viscosity of the liquids used   (B) Volumetric efficiency

    (C) Type of oil filter required   (D) None of the above

70. The instrument not used for measuring angles :

    (A) Bevel protractor   (B) Clinometer

    (C) Optical flat   (D) Protractor head

71. Distance of the centre of gravity of a right circular cone from its base :

    (A) h/4   (B) h/3

    (C) h/5   (D) h/2

72. The instrument used for measuring the hole of diameter 1.5 mm :

    (A) Ring gauge   (B) Go and No-go gauge

    (C) Slip gauge   (D) Pin gauge

73. What is the direction of frictional force against a moving object?

    (A) Inclined to the object   (B) Opposite to the object

    (C) Parallel to the object   (D) Perpendicular to the object

74. Find out the length of an arc of a sector, whose perimeter is 64.8 cm and radius is 12.4 cm :

    (A) 42 cm   (B) 40 cm

    (C) 45 cm   (D) 41 cm

75. What is the ratio of change in length to original length?

    (A)   Volumetric strain   (B)   Poisson's ratio

    (C)   Linear strain   (D)   Lateral strain

76. Find the value of x if $(x + 2)/3 = 19$?

    (A)   55   (B)   33

    (C)   57   (D)   53

77. The total area of a plane figure is assumed to be concentrated at a point called

    (A)   Inertial point   (B)   Central point

    (C)   Centroid   (D)   Centre of gravity

78. _____ tool is used for laying out large circles.

    (A)   Divider   (B)   Scriber

    (C)   Try square   (D)   Trammel

79. What is the primary objective of designing a machine foundation?

    (A)   To support the machine's weight   (B)   To absorb machine vibrations

    (C)   To maximize machine efficiency   (D)   To enhance aesthetics

80. Which material is commonly used for machine foundations due to its high resistance to vibrations?

    (A)   Steel   (B)   Wood

    (C)   Concrete   (D)   Aluminum

81. The goal of optimizing process paths in a production system is to :

    (A)   Maximize machine idle time

    (B)   Improve product aesthetics

    (C)   Increase work-in-progress inventory

    (D)   Minimize production cost and time

82. Which of the following processes involves heating a metal to a high temperature and then cooling it rapidly in water or oil?

    (A)   Quenching   (B)   Annealing

    (C)   Normalizing   (D)   Tempering

83. Which heat treatment process involves heating the material to a specific temperature and then cooling it slowly in air?

    (A)   Quenching   (B)   Annealing

    (C)   Normalizing   (D)   Case hardening

84. Which component of the computer is responsible for temporary data storage while the computer is running?

    (A)   RAM   (B)   Hard Drive

    (C)   ROM   (D)   Cache

85. What is the purpose of the OFFSET command in AutoCAD?

    (A)   To move objects   (B)   To create parallel lines

    (C)   To change object properties   (D)   To measure distances

86. Which AutoCAD command is used to trim unwanted parts of an object?

    (A)   CUT   (B)   EXTEND

    (C)   TRIM   (D)   ERASE

87. Which of these commands is used to join two objects in AutoCAD?

    (A)   UNION   (B)   JOIN

    (C)   GROUP   (D)   MERGE

88. In 3D modeling, which axis is added to define depth?

    (A)   X-axis   (B)   Y-axis

    (C)   Z-axis   (D)   W-axis

89. What does the EXTRUDE command do in AutoCAD?

    (A)   Creates a 3D solid from a 2D shape   (B)   Moves objects along the Z-axis

    (C)   Rotates a 3D object   (D)   Splits a 3D solid

90. Which command is used to create a hollow space within a solid object in AutoCAD?

    (A)   OFFSET   (B)   HOLLOW

    (C)   CHAMFER   (D)   SHELL

91. In AutoCAD, what does the PURGE command do?

    (A)   Exports the file to a different format

    (B)   Cleans up the drawing area

    (C)   Compresses the file size

    (D)   Deletes unused layers, blocks and styles

92. What is the purpose of the POLYLINE command in AutoCAD?

    (A)   To draw a single straight line

    (B)   To create a connected sequence of line and arc segments

    (C)   To join multiple objects

    (D)   To erase multiple lines

93. What is the density of a material with a mass of 500 kg and a volume of 2 m³?

    (A) 250 kg/m³
    (B) 1000 kg/m³

    (C) 500 kg/m³
    (D) 200 kg/m³

94. In assembly drawings, which symbol represents a threaded hole?

    (A) A circle with diagonal lines
    (B) A circle with a cross inside

    (C) A circle with a single dashed line
    (D) A hexagonal outline

95. A shopkeeper buys an item for Rs. 400 and sells it for Rs. 500. What is the profit percentage?

    (A) 20%
    (B) 25%

    (C) 15%
    (D) 10%

96. Which geometric constraint in Solid Works ensures that two lines lie along the same infinite line?

    (A) Parallel
    (B) Coincident

    (C) Collinear
    (D) Perpendicular

97. In Autodesk Inventor, which feature ensures that a sketch entity is tangent to a curve or circle?

    (A) Coincident
    (B) Tangent

    (C) Perpendicular
    (D) Concentric

98. In AutoCAD Inventor, which operation is used to create a solid body from a closed sketch by adding material perpendicular to the sketch?

    (A) Extrude
    (B) Sweep

    (C) Revolve
    (D) Loft

99. Which Solid Works feature is used to create a feature by adding material along a guide curve?

    (A) Extrude
    (B) Loft

    (C) Revolve
    (D) Sweep

100. What is the purpose of the 'Construction Geometry' feature in Solid Works sketches?

    (A) To create reference geometry for design purposes

    (B) To add decorative elements to the sketch

    (C) To reduce the number of constraints

    (D) To convert 3D models into sketches

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