

210/2023

Maximum : 100 marks

Time : 1 hour and 30 minutes

1. What is the standard size of trimmed A₄ size drawing sheet?
(A) 148 mm × 210 mm (B) 290 mm × 300 mm
(C) 210 mm × 297 mm (D) 220 mm × 297 mm
2. Which is the three dimensional view whose front corner line is vertical and other bottom edges inclined 30 degrees to the horizontal line?
(A) Front view (B) Top view
(C) Isometric view (D) Rare view
3. What is “italics”?
(A) Vertical letters (B) Upper case letters
(C) Lower case letters (D) Inclined letters
4. What is an arc?
(A) Part of a circle between any two points on the circumference
(B) Quarter part of a circle
(C) Semi circle
(D) Radius of a circle
5. What is the ratio of the length of the drawing to the actual length of the object?
(A) Vernier scale (B) Diagonal scale
(C) Plain scale (D) RF scale
6. Which of the following is correct, when the plane of projection placed in between object and the observer?
(A) First angle projection (B) Third angle projection
(C) Both (A) and (B) (D) Neither (A) nor (B)
7. What will be the plan of a line which is perpendicular to the vertical plane?
(A) Smaller than actual length (B) Longer than the actual length
(C) A point (D) Equal to the actual length
8. Which type of assembly provides interchangeability between the components?
(A) Selective assembly (B) Non selective assembly
(C) Both (A) and (B) (D) Neither (A) nor (B)
9. What is the difference between the ‘maximum limit of size’ and the ‘minimum limit of size’ in the system of limits and fits?
(A) Upper deviation (B) Lower deviation
(C) Actual deviation (D) Tolerance

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10. How many fundamental deviations are there in the system of limits and fits?
(A) 18 (B) 26
(C) 25 (D) 16
11. Which among the following statements is correct about the eccentricity of an ellipse?
(A) Less than one (B) Zero
(C) Greater than one (D) None of (A), (B) or (C)
12. What is the name of the orthographic view made after removing the part between the cutting plane and the observer to reveal the internal details?
(A) Elevation (B) Plan
(C) Side view (D) Sectional view
13. What is the name of the curve formed while cutting a right circular cone by a plane perpendicular to its axis?
(A) Ellipse (B) Parabola
(C) Hyperbola (D) Circle
14. What is thread angle of British Standard Fine thread (BSF)?
(A) 30 degrees (B) 60 degrees
(C) 29 degrees (D) 55 degrees
15. What is the taper of a gib head key?
(A) 1 : 25 (B) 1 : 50
(C) 1 : 100 (D) 1 : 40
16. What is the value of one micron?
(A) 0.1 mm (B) 0.01 mm
(C) 0.001 mm (D) 0.0001 mm
17. Which is the type of file with its edges along the width of the file, are parallel through out the length?
(A) Half round file (B) Hand file
(C) Triangular file (D) Round file
18. What is the angle formed between the top face of the cutting point and normal to the work surface at the cutting edge of a chisel while chipping?
(A) Rake angle (B) Clearance angle
(C) Cutting edge angle (D) Point angle
19. Which is the part of a three jaw chuck of a lathe on which scroll thread is cut at its one side?
(A) Crown wheel (B) Back plate
(C) Body (D) Pinion

20. To which among the following “Caulking and fullering” is related?
(A) Pipe joints (B) Welded joints
(C) Carpentry joints (D) Rivetted joints
21. Which is the cutting tool material contains Aluminium oxide as its main constituent?
(A) High speed steel (B) Ceramics
(C) Stellite (D) Cemented carbide
22. What is the method of feeding the work against the direction of rotation of the milling cutter while milling?
(A) Down cut milling (B) Plain milling
(C) Side milling (D) Up cut milling
23. 24 main scale divisions of a vernier caliper are divided into 25 equal parts on the vernier scale. Value of one main scale division is one millimeter. What is the least count of the vernier caliper?
(A) 0.02 mm (B) 0.04 mm
(C) 0.01 mm (D) 0.004 mm
24. In which micrometer the graduations are numbered in the reverse direction, to that marked on an outside micrometer?
(A) Depth micrometer (B) Vernier outside micrometer
(C) Inside micrometer (D) Three point internal micrometer
25. Which is the “grade of slip gauges” used as a calibration grade for reference, to test all the other grades?
(A) Grade ‘O’ accuracy (B) Grade ‘T’ accuracy
(C) Grade ‘II’ accuracy (D) Grade ‘OO’ accuracy
26. What is the use of “stakes” in sheet metal works?
(A) To cut in straight lines (B) To transfer dimensions
(C) For bending, seaming or forming (D) For circular cuts
27. In which type of engine the combustion in the cylinder is initiated by an external ignition source?
(A) Spark ignition engine (B) Compression ignition engine
(C) Four stroke engine (D) Two stroke engine
28. What is the distance measured along the pitch circle, from a point on one tooth to a corresponding point on the adjacent tooth of a spur gear?
(A) Module Pitch (B) Chordal Pitch
(C) Circular Pitch (D) Diametrical Pitch

29. What is the melting temperature of Tungsten?
 (A) 1495°C (B) 1310°C
 (C) 1100°C (D) 3380°C
30. Which among the following is not a non-ferrous metal?
 (A) Copper (B) Aluminium
 (C) Zinc (D) Pig iron
31. Which is the property of a metal to withstand shock or impact?
 (A) Toughness (B) Elasticity
 (C) Brittleness (D) Hardness
32. How to calculate the specific gravity of a substance?
 (A) $\frac{\text{Density of the substance}}{\text{Density of the water at } 4^\circ\text{C}}$ (B) $\frac{\text{Density of the substance}}{\text{Density of the water at } 40^\circ\text{C}}$
 (C) $\frac{\text{Density of the water at } 4^\circ\text{C}}{\text{Density of the substance}}$ (D) $\frac{\text{Density of the water at } 40^\circ\text{C}}{\text{Density of the substance}}$
33. What is work done in unit time?
 (A) Energy (B) Force
 (C) Power (D) Speed
34. What is the energy possessed by a body by virtue of its position?
 (A) Electrical Energy (B) Kinetic Energy
 (C) Potential Energy (D) None of (A), (B) or (C)
35. What is the quantity of heat required to raise the temperature of one gram of a substance through one degree celsius?
 (A) Thermal capacity (B) Latent heat
 (C) Specific heat (D) Sensible heat
36. What is the ratio of Break horse power and the Indicated horse power, which is expressed in percentage?
 (A) Volumetric efficiency (B) Thermal efficiency
 (C) Frictional horse power (D) Mechanical efficiency
37. Which among the following is the moulders hand tool used for making a series of holes on the mould?
 (A) Swab (B) Gaggers
 (C) Vent wire (D) Strike off bar
38. What is the included angle of an Acme thread?
 (A) 35° (B) 55°
 (C) 29° (D) 60°

39. What is the name of the quadrilateral with all the four sides are different and only two sides are parallel?
 (A) Rhombus (B) Rhomboid
 (C) Trapezium (D) Trapezoid
40. What is the advantage of using herring-bone gears?
 (A) Can transmit power between intersecting shafts
 (B) Can transmit power between the shafts at 90°
 (C) Used for large speed reduction
 (D) Resisting the thrust loads in the shaft bearings
41. The lead of a tripple start thread is 4.5 mm. What will be the pitch of the thread?
 (A) 9 mm (B) 13.5 mm
 (C) 1.5 mm (D) 2.25 mm
42. What is the least count of a metric vernier bevel protractor?
 (A) 5 minutes (B) 5 seconds
 (C) 10 minutes (D) 5 degrees
43. Where is the position of plan in first angle projection?
 (A) Right of elevation (B) Left of elevation
 (C) Above elevation (D) Below the elevation
44. What is the name of thin line projecting from feature and extending beyond dimension line?
 (A) Construction line (B) Leader line
 (C) Extension line (D) Centre line
45. What is the direction of rotation of driving and driven shafts in cross-belt drive?
 (A) Opposite (B) Same
 (C) Either (A) or (B) (D) Neither (A) nor (B)
46. What is force?
 (A) $\text{Mass} \times \text{Volume}$ (B) $\text{Mass} \times \text{Acceleration}$
 (C) $\frac{\text{Mass}}{\text{Acceleration}}$ (D) $\frac{\text{Mass}}{\text{Volume}}$
47. What is the latent heat of fusion of ice?
 (A) 50 cal/gram (B) 30 cal/gram
 (C) 110 cal/gram (D) 80 cal/gram
48. What is the name of the gears whose axes are parallel and whose teeth are parallel to the centre line of gears?
 (A) Bevel gear (B) Helical gear
 (C) Spur gear (D) None of (A), (B) or (C)

49. Which pulley is used to increase the arc of contact, and also to produce a more tension in the belts?
- (A) Wooden pulley (B) Stepped pulley
(C) Jockey pulley (D) Fast and loose pulley
50. What is used to make a long shaft by joining the pieces of shaft?
- (A) Bearing (B) Keys
(C) Couplings (D) Clutches
51. Which among the following converts mechanical energy in to electrical energy?
- (A) Transistor (B) Generator
(C) Motor (D) Transformer
52. Which of the following statement is/are correct about welded pipe fittings?
- (i) Used for making permanent connections
(ii) These fittings will have the same thickness as that of the pipe
- (A) Only (i) (B) Only (ii)
(C) All of the above (i) and (ii) (D) Both (i) and (ii) are not correct
53. Which of the following statement is/are correct about Ball valve?
- (i) A spherical shaped rotating part with a hole at the centre to keep the flow in ON or OFF position through the pipe lines
(ii) It is called as junction valve
- (A) Only (i) (B) Only (ii)
(C) All of the above (i) and (ii) (D) Both (i) and (ii) are not correct
54. The motion of the follower away from the center is known as :
- (A) Dwell (B) Rise
(C) Eccentricity (D) Concentricity
55. Which of the following reciprocates or oscillates in a direction vertically upward and downward?
- (A) Cylindrical cams (B) Disk cam follower
(C) End cam followers (D) None of these
56. Which of the following statement is/are correct about reciprocating pump?
- (i) These pumps are positive displacement pump
(ii) The suction and delivery pipes are provided with non-return valves
(iii) These are also known as rotodynamic pump
- (A) Only (i) (B) Only (i) and (ii)
(C) Only (ii) (D) All of the above (i), (ii) and (iii)

57. Which of the following statement is/are correct about steam boilers?
(i) It should produce maximum quantity of steam with minimum fuel consumption
(ii) It should rapidly meet the fluctuation of load
(iii) It should be capable of quick starting
(A) Only (i) and (iii) (B) Only (ii) and (iii)
(C) Only (i) and (ii) (D) All of the above (i), (ii) and (iii)
58. Which of the following boiler mountings object is to put off the fire in the furnace of the boiler when the level of water in the boiler falls to an unsafe limit, and avoid explosion due to overheating of the furnace plate?
(A) Feed check valve (B) Blow off Cock
(C) Fusible plug (D) Safety valve
59. Which one of the following is not a boiler accessory?
(A) Safety valve (B) Feed pump
(C) Super heater (D) Economiser
60. Which of the following statement is/are correct about the Design criteria of pressure vessels?
(i) Internal/external pressure
(ii) Dead loads due to the weight of the vessel and contents
(iii) Startup and shutdown loads
(A) Only (i) and (iii) (B) Only (ii) and (iii)
(C) Only (i) and (ii) (D) All of the above (i), (ii) and (iii)
61. Which of the following statement is/are correct about Double acting cylinder?
(i) Stroke length is unlimited
(ii) Stroke is limited by the compressed length of the spring
(A) Only (i) (B) Only (ii)
(C) Both (i) and (ii) (D) None of the above
62. When a component is produced with one single punch and die where the entire outer profile is cut in a single stroke the tool is called?
(A) Cut off tool (B) Blanking tool
(C) Trimming tool (D) Piercing tool
63. Which tool transform flat sheets of metal into cups, shells or other drawn shapes by subjecting the material to severe plastic deformation?
(A) Forming tool (B) Combination tool
(C) Drawing tool (D) Compound tool
64. Which of the following statement is/are correct about a Progressive press tool?
(i) The final component is obtained by progressing the sheet metal or strip in more than one stage
(ii) Two or more operations such as bending and trimming will be performed simultaneously
(A) Only (i) (B) Only (ii)
(C) Both (i) and (ii) (D) (i) and (ii) are not correct

65. Which of the following is used for alignment between top and bottom halves of the press tools?
- (A) Bottom plate and Stripper plate (B) Top plate and Punch back plate
(C) Die plate and Die back plate (D) Guide pillar and Guide Bush
66. What is the side of the largest square cut out from a circle of 50 cm diameter?
- (A) 70.7 cm (B) 157 cm
(C) 35.36 cm (D) 17.68 cm
67. Find out the area of a regular hexagon whose side is 2 cm?
- (A) 12.0 cm² (B) 10.392 cm²
(C) 1.732 cm² (D) 8.484 cm²
68. The ratio between the distances moved by the effort to the distance moved by the load is known as :
- (A) Effort (B) Efficiency of Machine
(C) Mechanical advantage (D) Velocity ratio
69. Calculate the mechanical advantage of machine, if effort applied 250 kg and load of 1000 kg is lifted by a simple machine having a velocity ratio of 5 :
- (A) 4 (B) 0.25
(C) 200 (D) 50
70. Which part of a Vernier bevel protractor should be kept in contact with the datum surface from which the angle is measured?
- (A) Blade (B) Disc
(C) Stock (D) Dial
71. Which of the following statement is/are correct about spring joint caliper?
- (i) Spring joint calipers have the advantage of quick setting
(ii) Fine setting is done by tapping the caliper lightly on a wooden surface
(iii) The setting made will not change unless the nut is turned
- (A) Only (i) and (ii) (B) Only (i) and (iii)
(C) Only (ii) and (iii) (D) All of the above (i), (ii) and (iii)
72. Which of the following statement is/are correct about Go and No-Go gauges?
- (i) The dimension of the Go-end is equal to the minimum permissible dimension
(ii) The dimension of the No-Go end is equal to the maximum permissible dimension
- (A) Only (i) (B) Only (ii)
(C) Both (i) and (ii) (D) (i) and (ii) are not correct

73. Which of the following statement is/are correct about Laws of friction?
 (i) Frictional force is directly proportional to the normal reaction between contacting surfaces
 (ii) Frictional force acts opposite to the direction of motion
 (iii) Frictional force is dependent over the area and shape of contacting surfaces
 (A) Only (i) and (ii) (B) Only (i) and (iii)
 (C) Both (ii) and (iii) (D) All of the above (i), (ii) and (iii)
74. Which of the following statement is/are correct about centre of gravity?
 (i) The centre of gravity of a circle is its centre
 (ii) The centre of gravity of a right circular Cone is at a $1/8$ distance of from its base
 (iii) The centre of gravity of a triangle is at the point where the medians of the triangle meet
 (A) Only (i) and (ii) (B) Only (i) and (iii)
 (C) Both (ii) and (iii) (D) All of the above (i), (ii) and (iii)
75. Which of the following statement is/are correct about Centesimal system?
 (i) This is called British System and in this system, one right angle is divided into 90 equal parts which are called degrees
 (ii) This is called French System and in this system, the right angle is divided into 100 equal parts which are called grades
 (iii) In this system, the unit of measuring angles is radian
 (A) Only (i) (B) Only (ii)
 (C) Only (iii) (D) All of the above (i), (ii) and (iii)
76. Find the length of arc of a sector of circle, whose radius is 14 cm and the angle of sector is 90° :
 (A) 22 cm (B) 11 cm
 (C) 44 cm (D) 88 cm
77. Which of the following statement is/are correct about stress?
 (i) When a material is subjected to two equal and opposite axial pulls, the material tends to increase in length. The resistance offered against this increase in length is called tensile stress
 (ii) When a material is subjected to two equal and opposite axial pushes, the material tends to decrease in length. The resistance offered against the decrease in length is called compressive stress
 (iii) When a material is subjected to two equal and opposite forces acting tangentially across the resisting section, the body tends to be sheared off across the cross section. The stress included is called shear stress
 (A) Only (i) and (ii) (B) Only (i) and (iii)
 (C) Only (ii) and (iii) (D) All of the above (i), (ii) and (iii)
78. If $x + y = 10$ and $xy = 24$ Find $x^2 + y^2$?
 (A) 148 (B) 100
 (C) 52 (D) 48

79. Which of the following statement is/are correct about types of machine foundations?
- (i) Block type machine foundations consist of a pedestal resting on a footing
 - (ii) Frame type consists of vertical columns having a horizontal frame at their tops
 - (iii) Box type machine foundation consists of a solid concrete block
- (A) Only (i) and (ii) (B) Only (ii) and (iii)
(C) Only (i) and (iii) (D) All of the above (i), (ii) and (iii)
80. Which of the following decides the size of the foundation?
- (i) The type of the soil
 - (ii) The weight of the machine
 - (iii) The vibration when it is operating
- (A) Only (i) (B) Only (ii)
(C) Both (i) and (ii) (D) All of the above (i), (ii) and (iii)
81. What is the value of lower critical temperature for all plain carbon steels?
- (A) 900°C (B) 650°C
(C) 723°C (D) 750°C
82. When the steel on being heated reaches the required temperature, it is held in the same temperature for a period of time. This allows the heating to take place throughout the section uniformly. This process is called :
- (A) Heating (B) Soaking
(C) Quenching (D) Preheating
83. Which heat treatment process is used to refine the grain structure of the steel?
- (A) Normalising (B) Tempering
(C) Hardening (D) Annealing
84. Which of the following statement is/are correct?
- (i) RAM is a permanent memory
 - (ii) Bit is the smallest storage unit in the computer
 - (iii) Set of characters that has been gathered and translated for some purpose, usually analysis
- (A) Only (i) and (ii) (B) Only (ii) and (iii)
(C) Only (i) and (iii) (D) All of the above (i), (ii) and (iii)
85. Which one of the following is a computer program designed to perform a group of coordinated functions, tasks, or activities?
- (A) Von-Neumann architecture of the computer
(B) Operating System
(C) Application Software
(D) Storing device

86. Which of the following is/are the components of a CAD package?
(i) Design
(ii) Analysis
(iii) Visualization
(A) Only (i) and (ii) (B) Only (i) and (iii)
(C) Only (ii) and (iii) (D) All of the above (i), (ii) and (iii)
87. Which of the following statement is/are correct?
(i) User coordinate system is an indication to the use of for which plane the drawing is drawn
(ii) Cross hair is the pointer used to draw, select and to locate
(iii) Layout tabs are used to select the particular plane the drawing
(A) Only (i) and (iii) (B) Only (ii) and (iii)
(C) Only (i) and (ii) (D) All of the above (i), (ii) and (iii)
88. Which command in auto cad creates a repeating pattern of the selected objects?
(A) Fillet (B) Array
(C) Mirror (D) Chamfer
89. Which of the following statement is/are correct about object snaps in Auto Cad?
(i) A rectangular system of measurement to locate points in the drawing area
(ii) A system to locate of the coordinate system
(iii) A method for indicating point locations using existing drawing object as a reference
(A) Only (i) (B) Only (ii)
(C) Only (iii) (D) All of the above (i), (ii) and (iii)
90. Which co ordinate system is used to draw a line to a known distance at a particular known angle?
(A) Absolute co-ordinates (B) Polar co-ordinates
(C) Relative co-ordinates (D) Cartesian coordinates
91. Which of the following statement is/are correct about surface modeling?
(i) A volume that represents a 3D object, and has properties such as mass, center of gravity and moments of inertia
(ii) Consists of vertices, edges, and faces that use polygonal representation to define a 3D shape
(iii) A thin shell that does not have mass or volume
(A) Only (i) (B) Only (ii)
(C) Only (iii) (D) All of the above (i), (ii) and (iii)
92. Which 3D command allows to extrude several shapes and make one continuous object?
(A) Loft (B) Extrude
(C) Revolve (D) Sweep

93. Which function key is used for activating Ortho command in auto cad?
 (A) F5 (B) F8
 (C) F3 (D) F7
94. A Scooty is sold for Rs. 15,000 and fetches a loss of 20%. Find the cost price of the Scooty :
 (A) 12,000 (B) 18,000
 (C) 18,750 (D) 16,000
95. What is the total estimation cost for making the component of 10 drilled hole dia 12 mm and 6 Nos of M10 taps in the plate, if Rs. 10 per drilled holes and Rs. 20 per drill and tap?
 (A) Rs. 200 (B) Rs. 220
 (C) Rs. 120 (D) Rs. 110
96. Which one of the tool in solid works to create solid 3D models like block, cube, cylinder, 3D polygon, 3D elliptical shapes?
 (A) Fillet (B) Extrude Cut
 (C) Chamfer (D) Extrude boss
97. Which of the following statement is/are correct about Feature Manager-Design Tree in solid works?
 (i) Names of features are displayed from top to bottom in the order created in the Feature Manager design tree, unless recorded them
 (ii) The Feature Manager design tree in assemblies displays components, a mates folder, and assembly features
 (iii) The Feature Manager design tree in drawings contains an icon for each sheet
 (A) Only (i) (B) Only (ii)
 (C) Only (iii) (D) All of the above (i), (ii) and (iii)
98. Which one is a means to create, select, and view multiple configurations of parts and assemblies in solid works?
 (A) Dim Xpert Manager (B) Display Manager
 (C) Configuration Manager (D) Splitting the manager pane
99. Which 3D feature in solid works is used for creating 3D cylinder by selecting the axis and rectangular profile?
 (A) Loft (B) Revolve
 (C) Extrude (D) Sweep
100. Which one lists and provides editing access to appearances, decals, scene, lights and cameras that are applied to the current model in solid works?
 (A) Display Manager (B) Configuration Manager
 (C) Splitting the Manager pane (D) Dim Xpert Manager

SPACE FOR ROUGH WORK

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