

146/2023

Maximum : 100 marks

Time : 1 hour and 30 minutes

1. Which of the following statement is true for L-head Engines?
 - (A) Valves are operated with the help of two cam shafts
 - (B) Valves are operated with the help of over Head cam shaft
 - (C) Intel Valve is provided on Cylinder head
 - (D) Both valves are provided on one side of Cylinder Block

2. Which is correct for Slot Skirt Pistons?
 - (A) These are also called Constant Clearance Pistons
 - (B) These are also called Affin Pistons
 - (C) These are also called Camground Pistons
 - (D) These are also called Ring Carrier Pistons

3. In which type of Scavenging, as Exhaust Valve is provided on top of cylinder?
 - (A) Crossflow Scavenging
 - (B) Uniflow Scavenging
 - (C) Loop Flow scavenging
 - (D) None of these

4. Which of the following is not a part of Crankshaft of an Engine?
 - (A) Crank Pin
 - (B) Crank Arm
 - (C) Counter Weight
 - (D) Crank Throw

5. In Semi Floating type Piston Pins:
 - (A) Piston Pin is free to rotate both in Piston and Connecting Rod
 - (B) Bronze Bush bearing is commonly used between small end of Connecting rod and Piston pin
 - (C) Piston Pin is fastened to the Connecting Rod
 - (D) Two Circlips are used on either side of the Piston Pin

6. Which is the correct flow route of Exhaust gas from Cylinder?
- (A) Exhaust Manifold - Tail pipe - Catalytic Converter - Muffler
 (B) Exhaust Manifold - Catalytic Converter - Muffler - Tail pipe
 (C) Exhaust Manifold - Muffler - Catalytic Converter - Tail pipe
 (D) None of these
7. V G T is associated with :
- (A) Super Charger (B) Turbo Charger
 (C) Catalytic Converter (D) Engine Control Unit
8. Which Sensor gives information about the Valve Timing to ECU in Engines?
- (A) C M P Sensor (B) M A P Sensor
 (C) T P Sensor (D) I A T sensor
9. Which of the following statements are true in open belt drive?
- (I) It is used between parallel shafts
 (II) Driving and driven shafts are in same direction
 (III) It is used in intersecting shafts
 (IV) Driving and driven shafts in opposite direction
- (A) (I) and (II) (B) (I) only
 (C) (I) and (IV) (D) (I), (III) and (IV)
10. The difference between the tooth thickness and tooth space of a gear measured on the pitch circle is termed as :
- (A) Clearence (B) Interference
 (C) Backlash (D) None of the above
11. Which of the following drive is used as speed reducer for non-intersecting, right angled shafts with high velocity ratio?
- (A) Helical gear (B) Rack and pinion
 (C) Worm gears (D) Bevel gears
12. In 14.5° full depth involute standard gear the addendum in terms of module (m) is:
- (A) m (B) $1.157m$
 (C) $2.157m$ (D) $0.157m$

13. Which of the followings are the essential properties of bearing materials?
- (I) Good thermal conductivity
 - (II) Ability to deform slightly for compensating minor misalignments and surface irregularities
 - (III) Ability to operate in the required temperature range
- (A) (I) only (B) (I) and (III)
(C) (II) and (III) (D) (I), (II) and (III)
14. What is the width of a saddle key in terms of the diameter of shaft 'd'?
- (A) $0.25d + 2$ mm (B) $0.50d + 2$ mm
(C) $0.55d + 3$ mm (D) $0.7d + 1$ mm
15. In the rope drive system, the diameter of the pulley should be :
- (A) Less than 30 times of rope dia
 - (B) Greater than 30 times of rope dia
 - (C) Between 15 to 30 times of rope dia
 - (D) None of the above
16. Which standard lays down the standards for parallel or feather keys?
- (A) IS:1366 (B) IS:2269
(C) IS:2292 (D) IS:2048
17. Which one of the following is used as lubricant where oil film cannot be maintained because of the pressures or temperature?
- (A) Graphite (B) Carbon
(C) Synthetic Oil (D) Mineral Oil
18. How many tolerance grades are there in Indian Standard System?
- (A) 20 (B) 18
(C) 25 (D) 27
19. What is the term represented by H in 25H7 tolerance size of a hole?
- (A) Fundamental deviation (B) Clearance
(C) Grade (D) Toughness value

20. The arithmetical difference between sizes of shaft and hole is negative before assembly that is called as :
- (A) Clearance (B) Transition
(C) Interference (D) None of the above
21. Match the following :
- | | |
|-----------------------------------|------------------------|
| (P) Zero line | (i) 25 Nos |
| (Q) Fundamental deviation | (ii) Internal features |
| (R) Hole | (iii) Actual size |
| (S) Measurement after manufacture | (iv) Basic size |
- (A) P-(iii), Q-(i), R-(iv), S-(ii) (B) P-(iv), Q-(ii), R-(iii), S-(i)
(C) P-(iv), Q-(i), R-(ii), S-(iii) (D) P-(iii), Q-(iv), R-(ii), S-(i)
22. Why the fundamental deviation symbol 'H' is chosen for holes?
- (A) Upper deviation of H is zero
(B) Lower deviation of H is zero
(C) Mean deviation of H is zero
(D) Fundamental deviation of H is zero
23. In double start thread the lead is expressed in terms of pitch is:
- (A) $L = 1p$ (B) $L = 1.5p$
(C) $L = 2p$ (D) $L = 3p$
24. Which thread uses in Instruments and other precision work?
- (A) BSW thread (B) BA thread
(C) BSF thread (D) Acme thread
25. Which thread has one of its flanks is perpendicular to the axis of thread?
- (A) Acme thread (B) Metric thread
(C) Buttress thread (D) Modified Buttress thread
26. Name the shape of grinding wheel used for sharpening milling cutters and reamers:
- (A) Straight cup (B) Flaring cup
(C) Disc wheel (D) Dish wheel

27. Which tool angle is ground to prevent the tool rubbing from the work in a lathe?
- (A) Clearance angle (B) Rake angle
(C) End cutting edge angle (D) Side cutting edge angle
28. What is name of the gear unit of the lathe which consists of three gears, each having same number of teeth?
- (A) Fixed stud gear (B) Spindle gear
(C) Tumbler gear unit (D) Change gear unit
29. What is the purpose of steady rest in a lathe?
- (A) To support a shorter job
(B) To support a long job
(C) To support a large diameter job
(D) To support an irregular shape job
30. How will be the face, if the tool is not set to the correct centre height while performing facing on a lathe?
- (A) Concave face (B) Correct face
(C) Convex face (D) Pip at the centre
31. What is the formula for Index crank movement for Simple Indexing?
- (A) $24/N$ (B) $N/24$
(C) $40/N$ (D) $N/40$
32. What is the shape of Angle gauge?
- (A) Wedge (B) Rectangle
(C) Square (D) Cylinder
33. Which type of Cutter is used for Milling the flutes on Taps or Reamers?
- (A) Single angle milling cutter
(B) Slitting saw
(C) Equal angle milling cutter
(D) Double and unequal angle cutter

34. Name the process of enlarging a hole to a given depth to accommodate heads of socket screw:
- (A) Boring (B) Counter-boring
(C) Spot-facing (D) Counter-sinking
35. Which type of Maintenance is having the advantage of reduced Equipment failure?
- (A) Breakdown maintenance (B) Predictive maintenance
(C) Preventive maintenance (D) Corrective maintenance
36. What is the expansion of “rpm” used in Drilling?
- (A) Revolution per meter (B) Revolution per minute
(C) Revolution per microns (D) Revolution per mile
37. What is the property of Lubricant to withstand Pressure and remain on bearing surface?
- (A) Viscosity (B) Flash point
(C) Fire point (D) Oilness
38. Which one is an Example for Semi-liquid Lubricant?
- (A) Synthetic Oil (B) Mineral Oil
(C) Graphite (D) Grease
39. Which is the common Cutting fluid used to reduce the heat produced by Tool and work?
- (A) Water (B) Soluble Oil
(C) Animal Oil (D) Mineral Oil
40. In which portion of Drill the Flutes are cut?
- (A) Body (B) Tang
(C) Point (D) Shank
41. Why the Tap drill size to be calculated before Drilling?
- (A) To avoid drill breaking
(B) To avoid material wastage
(C) To maintain sufficient material for the tap
(D) To calculate sufficient cutting speed

42. What is the point angle of a general purpose drill?
- (A) 90° (B) 118°
(C) 120° (D) 80°
43. Which of the following statement is/are correct about the basic components of CNC system?
- (I) Program of Instructions
(II) Machine Control Unit (MCU)
(III) Machine tool or processing unit
- (A) Only (I) and (III) (B) Only (I) and (II)
(C) Only (II) and (III) (D) All of the above (I), (II) and (III)
44. Which of the following statement is/are correct about the general safety precautions for the safe machine operation on CNC Turning centers?
- (I) First know all the emergency switches location before proceeding with operation
(II) Check the speed override position
(III) Do not use compressed air for cleaning
- (A) Only (I) and (II) (B) Only (I) and (III)
(C) Only (II) and (III) (D) All of the above (I), (II) and (III)
45. Which of the following statement is/are correct about the advantages of using linear motion guideways?
- (I) To decrease the heat smoothness
(II) To reduce the friction
(III) To reduce the amount of wear
- (A) Only (I) and (III) (B) Only (I) and (II)
(C) Only (II) and (III) (D) All of the above (I), (II) and (III)
46. Which of the following statement is/are correct about the absolute co-ordinate system?
- (I) Based on the work end point
(II) Based on the origin
(III) Based on the tool geometry
- (A) Only (I) (B) Only (II)
(C) Only (I) and (II) (D) All of the above (I), (II) and (III)

47. Which one of the following command the G02 code Indicates?
- (A) Circular interpolation clockwise direction
 - (B) Linear Interpolation
 - (C) Circular interpolation counter clockwise direction
 - (D) Data input in mm
48. Which mode is used for moving the turret in X and Z direction?
- (A) MDI mode
 - (B) Jog mode
 - (C) Manual mode
 - (D) Edit mode
49. Which of the following machine is/are correct about the use for flat type of work where the machining is done on only one face of the part in single set up?
- (I) CNC horizontal machining centre
 - (II) CNC vertical machining centre
 - (III) CNC horizontal boring mil
- (A) Only (I)
 - (B) Only (II)
 - (C) Only (II) and (III)
 - (D) Only (I) and (II)
50. Which code is used for “Program end and reset”?
- (A) M02
 - (B) M05
 - (C) M19
 - (D) M30
51. In Fire extinguishers, which colour band denotes carbon dioxide content?
- (A) Blue
 - (B) Maroon
 - (C) Grey
 - (D) Black
52. Different colour codes are available for waste segregation bins, which one of the following coloured bin is used for collecting plastic waste?
- (A) Blue
 - (B) Yellow
 - (C) Red
 - (D) Green
53. In ABC of first aid, what is the abbreviation of letter ‘B’?
- (A) Breating
 - (B) Breaking
 - (C) Beware of accident
 - (D) Blood circulation

54. Which of the following are the benefits of 5S methodology?
- (I) Increases in productivity
 - (II) Increases in quality
 - (III) Reduction in initial investment
 - (IV) Improve operator efficiency.
- (A) (I), (II) and (III) (B) (I), (III) and (IV)
(C) (I), (II) and (IV) (D) (II), (III) and (IV)
55. In case of a medical emergency, which time period is referred as golden period?
- (A) First 20 Minutes (B) First 30 Minutes
(C) First 40 Minutes (D) First 50 Minutes
56. In First aid, what is the abbreviation of CPR?
- (A) Cardio-Pulmonary Restoration
 - (B) Cardio-Pulmonary Resuscitation
 - (C) Cardio-Pulmonary Rectification
 - (D) Cardio-Pulmonary Resolution
57. Which one of the following tool is used for marking lines parallel to an edge, the edge may curved or in any other profile shape?
- (A) Scriber (B) Divider
(C) Inside caliper (D) Jenny caliper
58. What is the leastcount of vernier caliper having 24 main scale divisions coincide with 25 divisions of the vernier?
- (A) 0.01 mm (B) 0.02 mm
(C) 0.04 mm (D) 0.06 mm
59. Which of the following statements are correct about jenny caliper?
- (I) Jenny caliper is used for locating centre of round bars.
 - (II) Jenny caliper is otherwise called leg and point caliper.
 - (III) Jenny caliper is otherwise called Hermaphrodite caliper.
 - (IV) Jenny caliper is otherwise called Odd leg caliper.
- (A) (II), (III) and (IV) (B) (I), (III) and (IV)
(C) (II) and (III) (D) (I), (II), (III) and (IV)

60. Which one of the following statement is correct about Eye hole of Hammer?
- (A) Eye hole is an oval shaped parallel hole
 - (B) Eye hole is an oval shaped taper hole
 - (C) Eye hole is a circular parallel hole
 - (D) Eye hole is a circular taper hole.
61. Bench vice is used for holding work pieces, which one of the following material is used for making vice clamps?
- (A) Grey cast iron
 - (B) High carbon steel
 - (C) Mild steel
 - (D) Aluminium
62. Which one of the following statement is not correct about Combination set?
- (A) Spirit level is the integral part of the combination set
 - (B) The accuracy of protractor head is one degree
 - (C) Combination set may included with scriber for easy marking
 - (D) Square head is used for locating centre of round bars
63. In Micrometer, what is the distance advanced by the spindle in one complete revolution of the thimble?
- (A) 0.05 mm
 - (B) 0.01 mm
 - (C) 0.5 mm
 - (D) 1 mm
64. Which of the following statement is correct for Sandwich Jig?
- (I) Used to locate the piece part from its face
 - (II) Ideal for thin or soft work pieces
 - (III) Easy loading and unloading of components
 - (IV) Used for drilling small piece parts
- (A) Only (I)
 - (B) Only (III) and (IV)
 - (C) Only (II)
 - (D) All of the above

- 65.** Which of the following statement is true about slip gages?
- (I) Slip gages are made in sets and consist of a number of hardened blocks.
 - (II) Slip gages are precision measuring instrument for checking and setting of angles.
 - (III) Slip gages are used as standard for precision length measurement.
 - (IV) Slip gages is a tool used for marking purpose only.
- (A) Only (I) and (III) (B) Only (I) and (IV)
(C) Only (III) and (IV) (D) All of the above
- 66.** Which is the correct order in the stages of Heat treatment?
- (I) Heating
 - (II) Quenching
 - (III) Soaking
- (A) (I), (II), (III) (B) (I), (III), (II)
(C) (II), (III), (I) (D) (II), (I), (III)
- 67.** Which of the following statement is correct about the purpose of Gears?
- (I) To change the velocity ratio
 - (II) To change the direction of rotation
 - (III) To get a positive drive
 - (IV) Used to transmit torque or motion from the driving shaft to the driven shaft
- (A) Only (I), (II) and (III) (B) Only (I) and (IV)
(C) Only (III) and (IV) (D) All of the above
- 68.** Which file is not under the category of special files?
- (I) Riffer file
 - (II) Barrette file
 - (III) Knife edge file
 - (IV) Mil saw file
- (A) (I) and (II) (B) (III) and (IV)
(C) Only (IV) (D) Only (III)

73. Which of the following statement is correct for Galvanizing?
- (I) Mild steel is coated with zinc.
 - (II) Medium carbon steel is coated with zinc.
 - (III) High speed steel is coated with zinc.
 - (IV) Cast iron is coated with zinc
- (A) (IV) (B) (III)
(C) (II) (D) (I)
74. Which one of the following purpose is not true about a Lubricant?
- (I) Reduce friction
 - (II) Prevents wear
 - (III) Prevents adhesion
 - (IV) Can absorb shocks
- (A) Only (II) and (IV) (B) Only (IV)
(C) Only (II) and (III) (D) Only (I) and (II)
75. Which of the following statement is correct about Lapping?
- (I) Improves geometrical accuracy
 - (II) Refines surface finish
 - (III) Improve the quality of fit between the mating components.
 - (IV) To relieve the internal stresses
- (A) Only (I) and (III) (B) Only (III) and (IV)
(C) Only (I), (II) and (III) (D) Only (II) and (IV)
76. How many electrons are there in the third shell of the Aluminium atom?
- (A) 18 (B) 3
(C) 8 (D) 13
77. Two resistors when connected in series give the total resistance 4Ω and when connected in parallel the total resistance become 1Ω , what are the values of each resistors?
- (A) 1Ω and 2Ω (B) 2Ω and 2Ω
(C) 1Ω and 4Ω (D) 3Ω and 1Ω

78. Which of the following effect of electric current is used in electric bell?
- (A) Heating effect (B) Chemical effect
(C) Magnetic effect (D) Shock effect
79. What is the formula for quantity of electricity (Q)?
- (A) Current / Time (B) Current \times resistance
(C) Voltage \times Current (D) Current \times time
80. Which of the following is the example of semiconductor?
- (A) Manganin (B) Gallium
(C) Boron (D) Germanium
81. What is the unit of conductance?
- (A) Ohm (B) Mho
(C) Coulomb (D) Tesla
82. If _____ electrons passes through a conductor per second having 1Ω resistance with a potential difference of 1 V causes 1 A current.
- (A) 6.24×10^{16} (B) 6.24×10^{17}
(C) 6.24×10^{18} (D) 6.24×10^{20}
83. What is the indication of neon polarity indicator used for checking DC supply?
- (A) Both electrodes will glow
(B) Only one electrode will glow
(C) Both electrodes will be flickering
(D) One electrode will glow and other will be flickering
84. Which law states that in a closed electric circuit the applied voltage is equal to the sum of the voltage drops?
- (A) Ohm's law (B) Kirchhoff's first law
(C) Kirchhoff's second law (D) Laws of resistance

85. What is the change of resistance value of the conductors as its diameter is doubled?
(A) Increases to two times (B) Decreases to half of the value
(C) Decreases to four times (D) No change in value of resistance
86. Which method is used for measuring $1\ \Omega$ to $100\ \text{K}\ \Omega$ range resistance?
(A) Kelvin bridge method (B) Wheatstone bridge method
(C) Substitution method (D) None of the above
87. Calculate the total power of the circuit having two lamps rated as $200\ \text{W} / 240\ \text{V}$ are connected in series across $240\ \text{V}$ supply?
(A) $100\ \text{W}$ (B) $400\ \text{W}$
(C) $200\ \text{W}$ (D) $300\ \text{W}$
88. An ammeter in a short circuit indicates :
(A) No deflection (B) Maximum value
(C) Minimum value (D) None of the above
89. In Sensistors
(A) As temperature increases, resistance increases
(B) As temperature increases, resistance decreases
(C) As temperature increases, resistance doesn't change
(D) None of the above
90. Which type of ohm meter is particularly suitable for measuring low value of resistance?
(A) Shunt type ohm meter (B) Series type ohm meter
(C) Compound type ohm meter (D) Both (A) and (B)
91. Which material is having negative temperature co-efficient property?
(A) Copper (B) Eureka
(C) Silicon (D) Nichrome
92. Which electrical quantities are related in Ohm's law?
(A) Current, Resistance and Power
(B) Resistance, Voltage and Conductance
(C) Current, Voltage and Inductance
(D) Current, Voltage and Resistance

93. Which energy source is used for non conventional power generation?
(A) Steam (B) Diesel
(C) Wind (D) Water
94. Which type of turbine is suitable for high head hydro electric power plant?
(A) Kaplan turbine (B) Impulse turbine
(C) Francis turbine (D) Reaction turbine
95. Which device in a steam power plant is used to heats the feed water on its way to boiler?
(A) Condenser (B) Super Heater
(C) Air pre heater (D) Economiser
96. Which is the shape of mandatory sign symbol?
(A) Squaren (B) Circular
(C) Triangular (D) Rectangular
97. Which one is an example for class C fire?
(A) Fire on metal (B) Fire on paper
(C) Fire on liquified gas (D) Fire on flammable liquid
98. What is the use of pincer?
(A) Twisting the wires
(B) Extracting nails from the wood
(C) Bending the thin sheets
(D) Holding small objects
99. What is the angle of the tip of a centre punch?
(A) 72° (B) 75°
(C) 85° (D) 90°
100. Which device controls the sequence of operations in sequential control system?
(A) Timer (B) Relays
(C) Contactor (D) Control transformer

SPACE FOR ROUGH WORK

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