

180/2024

Maximum : 100 marks

Time : 1 hour and 30 minutes

1. In case of first aid 'golden hour' means :
 - (A) First 1 hour after getting hospital
 - (B) First 1 hour after accident took place
 - (C) First 30 minutes after accident took place
 - (D) First 24 hours after accident took place

2. Which coloured bin is used for segregating glass waste?
 - (A) Green
 - (B) Black
 - (C) Red
 - (D) Yellow

3. The reading accuracy of steel rule in British system of measurement is :
 - (A) 1/16 inch
 - (B) 0.5 mm
 - (C) 1/32 inch
 - (D) 1/64 inch

4. Of the following statements which is/are true about files?
 - (i) The upcut angle of a double cut flat file is 70 degree.
 - (ii) In a single cut file the cutting angle of teeth is 60 degree.
 - (iii) In file specification second cut is a grade of file.
 - (A) (i) and (ii) only
 - (B) (ii) and (iii) only
 - (C) (iii) only
 - (D) (i) and (iii) only

5. Which is wrong about metric outside micrometer?
 - (i) The working principle of micrometer is screw and thread.
 - (ii) In metric micrometer pitch of the spindle thread is 0.5 mm.
 - (iii) The work piece for measuring is mount between the anvil and thimble of an outside micrometer.
 - (iv) The least count of a metric micrometer is 0.02 mm.
 - (A) (i) and (iii) only
 - (B) (ii) and (iii) only
 - (C) (iii) and (iv) only
 - (D) (i), (ii), (iii) and (iv)

6. The accuracy of vernier bevel protractor is :
 - (A) 1 degree
 - (B) 1 minute
 - (C) 5 seconds
 - (D) 5 minutes

7. The metal particles get clogged in the pores of the grinding wheel while grinding soft metals. This condition is called :
 - (A) Glazing
 - (B) Loading
 - (C) Dressing
 - (D) Truing

8. Which of the following statement is/are correct when describing a flat or spade drill?
- (i) It is usually made from a piece of round tool steel which is forged to shape and ground to size
 - (ii) While drilling using a flat drill, the chips come out from the hole automatically.
 - (iii) The flat or spade drill cannot be relied upon to drill a true straight hole.
- (A) Only (ii) and (iii) correct (B) All of the above
(C) Only (i) and (ii) correct (D) Only (i) and (iii) correct
9. _____ is the angle included between the two lips projected upon a plane parallel to the drill axis and parallel to the two cutting lips.
- (A) Chisel edge angle (B) Point angle
(C) Lip clearance angle (D) Rake angle
10. In a 'tap', which of the following statement is/are correct?
- (i) A tap which cuts while rotating in anticlockwise direction when viewed from the entering end of the tap is termed as left hand tap.
 - (ii) A tap which cuts while rotating in clockwise direction when viewed from the entering end of the tap is termed as right hand tap.
 - (iii) The end of the rougher tap has about 2 to 3 threads tapered.
 - (iv) The finisher tap has almost full threads for the whole of its length.
- (A) Only (i), (ii) and (iv) correct (B) Only (ii), (iii) and (iv) correct
(C) Only (iii) correct (D) Only (iv) correct
11. What is the nearest drill size based on the given details. The diameter of tap or bolt is 10 mm, and pitch of thread is 1.5 mm?
- (A) 8.2 mm (B) 9 mm
(C) 8.6 mm (D) 9.2 mm
12. In a drilling machine, which is not used as a work holding device?
- (A) T-bolts and clamps (B) Tapered spindle
(C) Step block (D) Angle plate
13. By considering the size of a drilling machine, which of the following statement is /are correct?
- (i) A portable drilling machine is specified by the maximum diameter of the drill that it can hold.
 - (ii) The sensitive drilling machines are specified by the diameter of the largest piece that can be centred under the spindle.
 - (iii) The size of a radial drilling machine is specified by the diameter of column and length of arm.
- (A) Only (i) and (ii) correct (B) Only (ii) and (iii) correct
(C) All of the above (D) Only (i) and (iii) correct

14. Identify the correct statement regarding the vernier height gauge :
- (i) The steel beam is graduated with the main scale in 'mm' as well as 'inches'.
 - (ii) 'jaw' is not a part of Vernier height gauge.
 - (iii) The Vernier scale is attached to the main scale which has been graduated.
 - (iv) Vernier height gauge is used in conjunction with a surface plate.
- (A) Only (i) and (iii) correct (B) Only (i), (ii) and (iii) correct
(C) Only (i) and (iv) correct (D) Only (i), (iii) and (iv) correct
15. In a vernier bevel protractor, one main scale division equals :
- (A) 1 mm (B) 1 cm
(C) 1 degree (D) 2 degree
16. Find out the RPM of the spindle for a 50 mm diameter bar to cut at 25 m/min :
- (A) 159 (B) 149
(C) 150 (D) 170
17. The portion left between the flutes are called :
- (A) land (B) heel
(C) flank (D) tang
18. What is the carbon percentage in cast iron?
- (A) 2 to 4% (B) 8 to 1.4
(C) 0.1 to 0.8 (D) 4.5 to 6%
19. Major constituent of carbide tool material is :
- (A) Tantalum Carbide (B) Chromium
(C) Tungsten carbide (D) Cobalt
20. As per the BIS system of limit and fits 10 H7/p6 represent :
- (A) Clearance fit (B) Transition fit
(C) Running fit (D) Press fit
21. Which part of the lathe used to make steep taper on the workpiece?
- (A) Compound slide (B) Carriage
(C) Cross slide (D) Saddle
22. To turn taper on a workpiece of having following dimensions Major diameter 34 and minor diameter and 30 length 40, what will the amount of set over if the taper produced is on entire length of workpiece?
- (A) 4 (B) 0.1
(C) 2 (D) 0.05

23. The pitch of the lead screw is 6 mm and pitch of the thread to be cut is 1.5 mm. What will be the teeth of change gears?
- (A) Driver teeth 20 Driven teeth 60 (B) Driver teeth 30 Driven teeth 120
(C) Driver teeth 45 Driven teeth 60 (D) Driver teeth 120 Driven teeth 30
24. Expression 50 H7/p6 represent a type of Fit. In this number “7” denotes :
- (A) Upper deviation of hole (B) Fundamental deviation of hole
(C) Fundamental deviation of shaft (D) Grade of tolerance of hole
25. What is the speed of the drill having 10 mm diameter to cutting sheet at 30 m/min surface speed?
- (A) 955 RPM (B) 300 RPM
(C) 977 RPM (D) 1244 RPM
26. Find the time required for one complete cut on a workpiece of diameter 30 mm and length 300 mm at a cutting speed of 35 m/min, depth of cut is 0.8 mm per revolution and work piece rotates at 370 RPM :
- (A) 1.013 min (B) 1.532 min
(C) 2.120 min (D) 3.15 min
27. The specification of lathe which define the maximum diameter of the workpiece that can hold between centres is :
- (A) The maximum bar diameter
(B) The height of lathe centres
(C) The swing diameter over the bed
(D) The swing diameter over carriage
28. Fine grained grinding wheels are used to grind :
- (A) Hard and brittle material
(B) Soft and ductile material
(C) For removal of large quantity material
(D) None of the above
29. What is the time required for one complete cut using a face milling cutter of 200 mm diameter across mild steel, block of 200 mm wide and 300 mm length? Feed given is 1 mm/rev. Total length of table travel taken as 420 mm. spindle speed is 250 m/min. :
- (A) 1.54 min (B) 1.68 min
(C) 1.35 min (D) 1.56 min
30. Which of the following is NOT considered a basic block of a computer?
- (A) Central Processing Unit (CPU) (B) Memory Unit
(C) Input/Output Devices (D) Power Supply

31. The primary function of the ALU (Arithmetic Logic Unit) is to :
- (A) Store data for long-term use
 - (B) Perform calculations and logical operations
 - (C) Manage input/output devices
 - (D) Control the flow of instructions in the computer
32. Which part of the computer is responsible for executing instructions and performing basic operations?
- (A) RAM
 - (B) Hard Drive
 - (C) CPU
 - (D) GPU
33. Which of the following components stores data temporarily for quick access by the CPU?
- (A) ROM
 - (B) RAM
 - (C) Hard Drive
 - (D) Cache Memory
34. What is the primary function of the Control Unit (CU) in the CPU?
- (A) Perform arithmetic and logical operations
 - (B) Fetch and decode instructions
 - (C) Store data for quick retrieval
 - (D) Control peripheral devices
35. Which of the following is responsible for the permanent storage of data on a computer?
- (A) RAM
 - (B) ROM
 - (C) Hard Disk Drive (HDD)
 - (D) CPU Register
36. Which of the following input devices is primarily used for capturing text?
- (A) Mouse
 - (B) Keyboard
 - (C) Scanner
 - (D) Microphone
37. Two 120 V light bulbs are connected in series across a 240 V line. Light bulb L1 is 60 watts and L2 is 100 watts, how will be the bulb glows?
- (A) Both L1 and L2 will glow with equal brightness
 - (B) Bulb L2 will glow brighter than bulb L1
 - (C) Bulb L1 will glow brighter than bulb L2
 - (D) Both bulbs will not glow
38. A 12 ohms resistor is connect across 60 V DC source calculate the current flow through the resistor:
- (A) 12 A
 - (B) 4 A
 - (C) 10 A
 - (D) 5 A

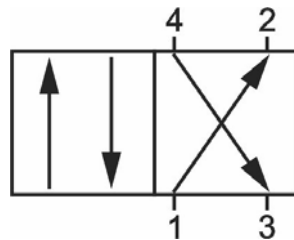
39. Why cells are connected in series?
(A) To increase output voltage
(B) To decrease output voltage
(C) To decrease internal resistance
(D) To increase the current capacity
40. Which one of the following is the SI unit of Flux?
(A) Maxwell (B) Weber
(C) Gauss (D) Tesla
41. Which one of the following reading is obtained in permanent magnet moving coil?
(A) Only AC quantities (B) Only DC quantities
(C) Both AC and DC quantities (D) Pulsating quantities
42. What is the purpose of capacitor in electric fan?
(A) Increase the speed
(B) Protect the fan when fault occurs
(C) Give phase shift
(D) Control the speed
43. Which one of the following statement is correct about the induces emf in DC motor?
(A) It assist the applied voltage
(B) It is opposite to the applied voltage
(C) It decrease the current
(D) It increase the current
44. Which one of the following is the function of step up transformer?
(A) To increase Voltage (B) To increase Current
(C) To increase Power (D) To increase Frequency
45. Which one of the following implies a good earth continuity?
(A) High resistance (B) Low resistance
(C) Open Circuit (D) Low conductivity
46. What is the height for fixing switch boards?
(A) 1.5 meter (B) 2 meter
(C) 4 meter (D) 3 meter
47. Which of the following diode contains a metal-semiconductor junction?
(A) Tunnel diode (B) Zener diode
(C) Schottky diode (D) Gunn diode

48. How many inputs and outputs does a Full Adder have?
 (A) Two inputs, two outputs (B) Three inputs, two outputs
 (C) Three inputs, one output (D) Two inputs, one output
49. Which one of the following is a “Date and Time” function in Excel?
 (A) FIND() (B) MOD()
 (C) MID() (D) NOW()
50. An AC circuit Resonates at 1000 KHz. It has a quality factor 100. The bandwidth and half power points shall be at?
 (A) BW = 20 KHz, $f_1 = 1000$ KHz, $f_2 = 1010$ KHz
 (B) BW = 20 KHz, $f_1 = 1000$ KHz, $f_2 = 1020$ KHz
 (C) BW = 10 KHz, $f_1 = 995$ KHz, $f_2 = 1005$ KHz
 (D) BW = 10 KHz, $f_1 = 990$ KHz, $f_2 = 1010$ KHz
51. What will be the feedback resistance R_F of the Op-amp circuit, if R is $10\text{ K}\Omega$, voltage gain $A_o = -47$:
 (A) $47\text{ K}\Omega$ (B) $47\ \Omega$
 (C) $470\text{ K}\Omega$ (D) $57\text{ K}\Omega$
52. The IC 7476 is a :
 (A) Decode (B) JK FlipFlop
 (C) Shift Register (D) D FlipFlop
53. Voltage gain of an amplifier is 100 with negative feedback and feedback factor 0.04 the gain will be :
 (A) 20 (B) 25
 (C) 4 (D) 0.4
54. Voltage regulation of an ideal regulated power supply is :
 (A) 100% (B) 20%
 (C) 0% (D) 50%
55. Which of the following commands will move the number 27H into the accumulator?
 (A) MOV A, R27 (B) MOV A, @27
 (C) MOV A, #27H (D) MOV A, 27
56. What will be the decimal equivalent of Hex number 3A.2F?
 (A) 30.1836 (B) 58.1836
 (C) 48.1836 (D) 58.3136
57. Which of the following is a type of pressure sensor?
 (A) Flow Sensor (B) PH Sensor
 (C) Strain Gauge (D) Temperature Sensor

58. What type of transducer used to convert linear motion into electrical signals?
 (A) Strain gauge
 (B) Load cell
 (C) Potentio meter
 (D) Linear Variable Differential Transformer
59. What is the primary function of a load cell?
 (A) Measuring force
 (B) Detecting light
 (C) Detecting displacement
 (D) Measuring temperature
60. Which proximity sensors are used to detect only metal objects?
 (A) Capacitive Sensor
 (B) Ultrasonic Sensor
 (C) Inductive Sensor
 (D) Photo electric Sensor
61. Numerical control is :
 (A) Applies only to milling Machines
 (B) A method for controlling by means of a set of instructions
 (C) Is a method of producing exact number of parts per hour
 (D) Programs
62. Which of the following is not the advantage of CNC Machine?
 (A) Reduced scrap rate
 (B) Higher flexibility
 (C) Improved quality
 (D) Improved strength of components
63. In CNC machine which system is to record the data from the sensor and compare it with input data?
 (A) Feed back system
 (B) Slide table and spindle system
 (C) Machine code unit system
 (D) Graphic user interface
64. In the block diagram of a CNC machine, data processing and control loop are a part of :
 (A) Machine control unit
 (B) Feed back system
 (C) Speed and position sensor
 (D) Input device
65. G-code stands for geometric code, G codes are also known as :
 (A) Miscellaneous codes
 (B) Preparatory codes
 (C) Tool selection codes
 (D) Spindle speed codes
66. Which of the following G-codes will give circular interpolation in a clock wise direction?
 (A) G00
 (B) G01
 (C) G02
 (D) G65

67. Which of the following statement is/are correct about Pneumatics?
- (i) The term 'Pneumatics' is taken from Greek language
 - (ii) Meaning of 'Pneuma' is Breathing
 - (iii) In Pneumatics, Compressible fluid is used
- (A) Only (i) and (ii)
 - (B) Only (ii) and (iii)
 - (C) Only (i) and (iii)
 - (D) All of the above (i) (ii) and (iii)
68. Which of the following statement is/are correct about FRL Unit?
- (i) FRL Unit maintain constant output pressure of Fluid
 - (ii) FRL Unit add oil into the compressed air
 - (iii) FRL Unit act as a safety valve in compressor
- (A) Only (i) and (ii)
 - (B) Only (ii) and (iii)
 - (C) Only (i) and (iii)
 - (D) All of the above (i) (ii) and (iii)
69. Which of the following statement is/are correct about 3/2 control valve?
- (i) 3/2 control valve has three ports
 - (ii) 3/2 control valve is used for actuating single acting cylinder
 - (iii) 3/2 control valve is used as a relief valve in compressor
- (A) Only (i) and (ii)
 - (B) Only (ii) and (iii)
 - (C) Only (i) and (iii)
 - (D) All of the above (i) (ii) and (iii)
70. Which one of the following symbol indicates Filter in Pneumatic system?
- (A) A diamond shape inscribed with vertical solid line
 - (B) A diamond shape inscribed with two parallel solid line
 - (C) A diamond shape inscribed with two parallel Dotted line
 - (D) A diamond shape inscribed with vertical Dotted line
71. In Pneumatic system, 5/3 control valve belongs to which one of the following category?
- (A) Pressure control valve
 - (B) Flow control valve
 - (C) Direction control valve
 - (D) Safety valve
72. Which one of the following valve is used for obtaining flow in one direction only?
- (A) Needle valve
 - (B) Check valve
 - (C) Globe valve
 - (D) Gate valve

73. In Electro Pneumatic system, Which one of the following valve is used as interface between the Electrical and Pneumatics system?
 (A) Pressure control valve (B) Flow control valve
 (C) Solenoid valve (D) Pressure relief valve
74. Which one of the following pressure valve is measured with respect to perfect Vacuum?
 (A) Vacuum pressure (B) Atmospheric pressure
 (C) Gauge pressure (D) Absolute pressure
75. In Pneumatic system, Which one of the following valve indicate with a symbol including minimum two combined square?
 (A) Pressure control valve (B) Flow control valve
 (C) Direction control valve (D) Safety valve
76. Which one of the following is the power source of Pneumatic system?
 (A) Compressor (B) Pressure Valve
 (C) Air receiver (D) Fluid pump
77. Example for axial flow pump is :
 (A) Screw pump (B) Vane pump
 (C) Gear pump (D) Lobe pump
78. Component in hydraulic system that convert input shaft torque into fluid pressure is :
 (A) Oil pump (B) DCV
 (C) Electric motor (D) Reservoir
79. Hydraulic system component that convert fluid energy into mechanical energy is :
 (A) Pump (B) Actuator
 (C) Valve (D) Power pack
80. Identify the direction control valve given in diagram :



- (A) 4/3 DCV (B) 3/2 DCV
 (C) 4/2 DCV (D) 5/2 DCV
81. Valve that allow free flow in one direction and prevent flow in reverse direction is known as :
 (A) DCV (B) Check valve
 (C) PCV (D) FCV

82. Flow in which control valve connected in series with cylinder control the input flow is called :
- (A) Meter out (B) Meter in
(C) Bleed off control (D) Manual control
83. Device temporarily store hydraulic energy in the form of pressurized oil is
- (A) Hydraulic pump (B) Reservoir
(C) Accumulator (D) Motor
84. Whenever there is an increase in pressure at any point in a confined fluid, there is an equal increase at every other point in the container. This law is :
- (A) Boyle's law (B) Pascal's law
(C) Charles' law (D) Gay Lussac's law
85. The unit for volume flow rate of a fluid is :
- (A) Kg/sec (B) m³/sec
(C) Ltr/sec (D) Either (B) or (C)
86. The continuity equation is related with conserving _____ in fluid flow.
- (A) Energy (B) Momentum
(C) Mass (D) None of these
87. The core part of PLC is :
- (A) CPU (B) RAM
(C) ROM (D) ALU
88. The type of memory in PLC that is volatile in nature :
- (A) ROM (B) RAM
(C) EPROM (D) ALU
89. The electrical isolation in PLC from external environment is obtained by :
- (A) Opto coupler (B) D/A converter
(C) A/D converter (D) None of the above
90. SIMATIC programming software is the product of :
- (A) MITSUBISHI (B) SIEMENS
(C) Allen Bradley (D) ABB
91. The type of sensor that used to detect position / displacement for input in PLC is :
- (A) LVDT (B) Thermocouple
(C) RTD (D) IR sensor

- 92.** Convert the given decimal number into binary 32 :
- (A) 100000 (B) 100010
(C) 100111 (D) 110000
- 93.** A number system with base value 16 is called :
- (A) Decimal (B) Hexadecimal
(C) Binary (D) Octal
- 94.** The acronym PLC stands for :
- (A) Personal logic computer (B) Programmable logic computer
(C) Personal logic controller (D) Programmable logic controller
- 95.** How many degrees of freedom does a rigid body free in 3D space have?
- (A) 3 (B) 6
(C) 9 (D) 12
- 96.** Which tool is most effective for identifying the source of harmonic distortion in an industrial power system?
- (A) Spectrum Analyzer (B) Oscilloscope
(C) Multimeter (D) Insulation Tester
- 97.** In a simulated electrical circuit, what effect does increasing the capacitance in an LC circuit have on the resonant frequency?
- (A) Frequency increases proportionally (B) Frequency oscillates
(C) Frequency remains constant (D) Frequency decreases
- 98.** During assembly, which test ensures that a hydraulic system is free of leaks before full operation?
- (A) Static pressure test (B) Dynamic flow test
(C) Ultrasonic inspection (D) Load simulation test
- 99.** What is the primary function of a resolver in a robotic drive system?
- (A) Measure linear displacement (B) Detect motor shaft position
(C) Control robot speed (D) Generate electrical power
- 100.** Which of the following end effectors comes under the category of grippers?
- (A) Spot welding gun (B) Rotating spindle
(C) Scoops (D) Heating torch

SPACE FOR ROUGH WORK

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