097/2026

Question Booklet Alpha Code: **A**

Question Booklet Serial Number:

Total No. of questions : 100 Time : 1 Hour 30 Minutes

Maximum : 100 Marks

INSTRUCTIONS TO CANDIDATES

1. The question paper will be given in the form of a Question Booklet. There will be four versions of question booklets with question booklet alpha code viz. A, B, C & D.
2. The Question Booklet Alpha Code will be printed on the top left margin of the facing sheet of the question booklet.
3. The Question Booklet Alpha Code allotted to you will be noted in your seating position in the Examination Hall.
4. If you get a question booklet where the alpha code does not match to the allotted alpha code in the seating position, please draw the attention of the Invigilator IMMEDIATELY.
5. The Question Booklet Serial Number is printed on the top right margin of the facing sheet. If your question booklet is un-numbered, please get it replaced by new question booklet with same alpha code.
6. The question booklet will be sealed at the middle of the right margin. Candidate should not open the question booklet, until the indication is given to start answering.
7. Immediately after the commencement of the examination, the candidate should check that the question booklet supplied to him contains all the 100 questions in serial order. The question booklet does not have unprinted or torn or missing pages and if so he/she should bring it to the notice of the Invigilator and get it replaced by a complete booklet with same alpha code. This is most important.
8. A blank sheet of paper is attached to the question booklet. This may be used for rough work.
9. **Please read carefully all the instructions on the reverse of the Answer Sheet before marking your answers.**
10. Each question is provided with four choices (A), (B), (C) and (D) having one correct answer. Choose the correct answer and darken the bubble corresponding to the question number using Blue or Black Ball-Point Pen in the OMR Answer Sheet.
11. **Each correct answer carries 1 mark and for each wrong answer 1/3 mark will be deducted. No negative mark for unattended questions.**
12. No candidate will be allowed to leave the examination hall till the end of the session and without handing over his/her Answer Sheet to the Invigilator. Candidates should ensure that the Invigilator has verified all the entries in the Register Number Coding Sheet and that the Invigilator has affixed his/her signature in the space provided.
13. Strict compliance of instructions is essential. Any malpractice or attempt to commit any kind of malpractice in the Examination will result in the disqualification of the candidate.

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Maximum : 100 marks

Time : 1 hour and 30 minutes

1. During a machine operation, a sudden power failure occurs and, almost simultaneously, smoke is noticed near the electrical control panel. Which sequence of actions is most appropriate?

(A) Continue working because the power failure has already stopped the machine

(B) Immediately restart the machine using the main switch, then investigate the smoke

(C) Raise the alarm, isolate the electrical supply if it is safe to do so, evacuate the area, and use the appropriate fire extinguisher only if trained and conditions permit

(D) Pour water on the control panel to prevent the fire from spreading

2. Which fire extinguisher is suitable for extinguish CLASS "D" fire?

(A) Pure Water (B) Dry powder extinguisher

(C) AFFF extinguishers (D) All of the above

3. Which of the following is not a cut of file?

(A) Second cut file (B) Single cut file

(C) Curved cut (D) Rasp cut

4. Which type of chisel is very suitable for cut metal after chain drilling?

(A) Flat chisel (B) Round nose chisel

(C) Diamond point chisel (D) Web chisel

5. What is the name of holes at the two ends of hacksaw blade, which is help to hold the blade to hacksaw frame?

(A) End hole (B) Round hole (C) Adapter hole (D) Pin hole

6. In a ball peen hammer, which portion the weight of the hammer is stamped?

(A) Ball Portion (B) Head portion

(C) Cheek portion (D) Peen Portion

7. What is Point angle of a general purpose twist drill?

(A) 90° (B) 180° (C) 118° (D) 128°

8. What is the working principle of Lever type Dial test indicator?

(A) Lever and Scroll (B) Lever and road

(C) Lever and Gear (D) Lever and Ball

9. To specify a reamer, which of the following data is using?

(A) Type and size (B) Flute

(C) Shank end (D) All of the above

10. What is the least count of a standard metric micrometre?

(A) 0.01 microns (B) 10 microns (C) 0.001 microns (D) 100 microns

11. Which of the following is an example of an insulator ?

(A) Nichrome (B) Germanium

(C) Eureka (D) Porcelain

12. Four resistors of values 100 Ω, 55 Ω, 40 Ω & 220 Ω are connected in parallel across a 220 V supply. What is the current flowing through the 55 Ω resistor?

(A) 1.1 A (B) 2.2 A (C) 4 A (D) 5.5 A

13. Which defect in a lead - acid cell is defined as the bending of electrodes due to overcharging, overdischarging or improper temperature ?

(A) Hard Sulphation (B) Local action

(C) Polarization (D) Buckling

14. The amount of demagnetizing - force required to completely reduce residual magnetism of a magnetic material to zero is known as :

(A) Inductive reactance (B) Permeance

(C) Coercivity (D) Reluctivity

15. What is the form factor for a sinusoidal alternating current ?

(A) 0.637 (B) 0.707 (C) 1.11 (D) 1.414

16. According to Fleming's Right Hand Rule, which finger indicates the direction of the induced current (or induced EMF) ?

(A) Thumb (B) Fore finger

(C) Middle finger (D) Little finger

17. Which type of starter is commonly used for a DC series motor ?

(A) Two-point (B) Three-point

(C) Four-point (D) Star-delta

18. Which type of motor converts electrical command pulses directly into discrete mechanical angular movements ?

(A) Shaded - pole (B) Stepper

(C) Repulsion (D) Universal

19. Which protective device is connected between the transformer main tank & the conservator tank to detect internal incipient faults ?

(A) Silica gel breather (B) Explosion vent

(C) Buchholz relay (D) Tap changer

20. A transformer has a no-load secondary terminal voltage of 426 V and a full-load voltage of 410 V. What is its percentage voltage regulation ?

(A) 1.5 % (B) 2.6 % (C) 3.9 % (D) 4.2 %

21. The most efficient form of damping employed in electrical instruments is

(A) Air friction damping (B) Fluid friction damping
(C) Eddy currents damping (D) None of the above

22. The force required for moving the pointer in an indicating instruments is

(A) Controlling force (B) Deflecting force
(C) Eddy current damping force (D) Air friction damping force

23. Why the moving coil meter is having uniform scale?

(A) Deflecting force is directly proportional to the current
(B) Deflecting force is inversely proportional to the current
(C) Deflecting force is directly proportional to the square of the current
(D) Deflecting force is inversely proportional to the square of the current

24. Which one of the following statements is true about the internal resistance of an ammeter and a voltmeter?

(A) The internal resistance of an ammeter should be very high and that of a voltmeter should be very low
(B) The internal resistance of an ammeter should be very low and that of a voltmeter should be very high
(C) The internal resistance of an ammeter and a voltmeter should be very low
(D) The internal resistance of an ammeter and a voltmeter should be very high

25. A current measuring instrument can be modified to measure voltages by

(A) Using a high resistance shunt (B) Adding resistance in parallel
(C) Using thicker wire in the coil (D) Adding resistance in series

26. Which is the position to use the instrument provided with spring control?

(A) Horizontal position only (B) Vertical position only
(C) Inclined position only (D) Any position

27. The meter that is suitable only for direct current measurements is:

(A) Moving-iron type (B) Permanent-magnet moving coil type
(C) Electro dynamo meter type (D) Hot-wire type

28. Megger is used to measure

(A) Insulation resistance (B) Earth resistance
(C) Breakdown voltage of insulation (D) None of these

29. A high frequency AC signal is applied to a PMMC instrument. The RMS value of the AC signal is 3V, the reading of the instrument is

(A) 3 V (B) $3/\sqrt{2}$ V (C) $\sqrt{3}$ V (D) Zero

30. Consider the following statements and select the most appropriate option for them (if only one element in the circuit).

1. If an ammeter is connected across a circuit element, it will get damaged.
2. If a voltmeter is connected in series with a circuit element, it will get damaged.

(A) Both the statements are True (B) Both the statements are False.
(C) 2 is True, but 1 is False (D) 1 is True, but 2 is False

31. The colour bands on a fixed carbon resistor are : brown, black, green and gold (given sequentially) Its value is _____.

(A) 1 KΩ ± 10% (B) 1000 KΩ ±5%

(C) 10 KΩ ± 5% (D) 1 MΩ ± 10%

32. The battery capacity of the UPS is measured in _____.

(A) Ampere (B) Watt (C) Volt (D) Ampere-Hour

33. In a centre-tap full wave rectifier, Vm is the peak voltage between the centre- tap and one end of the secondary. The maximum voltage across the reverse biased diode is?

(A) Vm (B) 2 Vm

(C) 1/2 Vm (D) None of the above

34. The voltage gain of an amplifier is 100. On applying negative feed back with $\beta = 0.03$, its gain will reduce to _____.

(A) 25 (B) 70 (C) 3 (D) 99.97

35. The ideal value of common mode rejection ratio of op-amp is _____.

(A) 1 (B) 0

(C) ∞ (D) None of the above

36. For a transistor if $\alpha_{dc} = 0.98$ and emitter current I_E is 2 mA. The collector current will be _____.

(A) 0.44 mA (B) 0.88 mA (C) 1.96 mA (D) 3.32 mA

37. Which one of the following is used as the main switching element in a switched mode power supply operating in 20 KHZ to 100 KHZ range _____.

(A) Thyristor (B) MOSFET (C) TRIAC (D) UJT

38. A full adder can be made of _____.

(A) Two half adders (B) Two half adders and one OR gate

(C) Two half and a NOR gate (D) Two half adders and a AND gate

39. What is the purpose of flux in soldering electronic circuit components _____?

(A) Form the oxide layer

(B) Reduce the solder cooling time

(C) Increase the melting temperature of solder

(D) Dissolve the oxide layer on the metal surface

40. In a 100 % amplitude modulated signal, if the total transmitted power is P, then carrier power will be _____.

(A) 2/3P (B) 1/2 P (C) 1/3 P (D) 1/4 P

41. Which type of memory normally loses its stored data when the power supply is switched off?

(A) RAM
(B) ROM
(C) Hard disk
(D) DVD-ROM

42. Which printer produces characters by striking an inked ribbon against paper?

(A) Laser printer
(B) Inkjet printer
(C) Dot-matrix printer
(D) Thermal printer

43. Which Windows application is primarily used to browse and manage files and folders?

(A) Calculator
(B) File Explorer
(C) Paint
(D) Sound Recorder

44. Which device forwards IP packets between different networks?

(A) Hub
(B) Repeater
(C) Patch panel
(D) Router

45. Which of the following statements about HDDs and DVDs are correct?

(i) An HDD stores data magnetically on rotating platters.

(ii) A DVD is an optical storage medium.

(iii) Both an HDD and a DVD lose their stored data when power is switched off.

(A) Only (i) and (ii)
(B) Only (ii) and (iii)
(C) Only (i) and (iii)
(D) All three statements

46. A desktop computer needs a single digital connection to a compatible monitor that carries both video and audio. Which port is suitable?

(A) VGA
(B) PS/2
(C) HDMI
(D) Serial RS-232

47. In a star network with a central switch, the cable connecting one computer to the switch fails. Assuming all other equipment operates normally, what happens?

(A) Every computer loses network connectivity.

(B) The switch automatically becomes a router.

(C) Only the computer connected through the failed cable loses connectivity to the switch.

(D) All computers must be assigned new IP addresses.

48. Cell C2 in Excel contains the formula =$A2*B$1. The formula is copied to cell D3. What formula will appear in D3?

(A) =$B3*C$1 (B) =$A3*C$1

(C) =$A2*B$1 (D) =A$3*$C1

49. A laboratory has the following requirements:

(i) Connect computers using twisted-pair copper Ethernet cabling.

(ii) Use a cable that includes shielding against electromagnetic interference.

(iii) Use the conventional modular connector commonly called RJ-45.

Which combination satisfies these requirements?

(A) UTP cable with a BNC connector

(B) Coaxial cable with an RJ-45 connector

(C) STP cable with an RJ-45 connector

(D) Optical fibre cable with a BNC connector

50. Which of the following statements about PCs and servers are correct?

(i) A server can provide shared files or other services to multiple client computers.

(ii) A computer must have a special physical form factor to function as a server.

(iii) A desktop PC can act as a server when suitable software and configuration are provided.

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

(C) All three statements (D) Only (i) and (iii)

51. An error tolerance of +/- 0.5% is for a 4-20 mA instrument signal is _____

(A) +/-0.04 mA (B) +/-0.08 mA (C) +/-0.064 mA (D) +/-0.4 mA

52. A pressure transmitter has a calibrated measurement range of 200 to 300 PSIG, and an output range of 4-20 mA. What is the expected output if the input pressure is 236 PSIG?

(A) 15mA (B) 11.2 mA (C) 4.6mA (D) 9.6 mA

53. The ratio of output signal or response of the instrument" to a change in input or measured variable is called :

(A) Accuracy (B) Precision (C) Resolution (D) Sensitivity

54. Which component of an instrument responds directly to the measured variable and produces a corresponding motion?

(A) Sensing element (B) Indicator

(C) Transducer (D) Transmitter

55. The thrust on unit area is known as

(A) Volume (B) Force (C) Pressure (D) Mass

56. The standard pneumatic transmission signal most generally used in the industries is:

(A) 3 to 27 psi (B) 3 to 15 psi (C) 3 to 50 psi (D) 2 to 12 psi

57. Which parameter determines the sensitivity of a strain gauge pressure transducer?

(A) Gauge factor of the strain element

(B) Supply voltage level

(C) Ambient temperature

(D) Material of the housing

58. One Torr is approximately equal to _____

(A) One mm Hg (B) One inch Hg

(C) One atmosphere (D) One kilopascal

59. What principle does a dead weight tester use to create a known pressure?

(A) Thermal expansion of fluids

(B) Gravitational force on calibrated masses

(C) Magnetic flux variation

(D) Electrical resistance change

60. Set point of a pressure switch refers to :

(A) The maximum flow rate

(B) The electrical voltage

(C) The operating temperature

(D) The pressure at which the switch activates

61. Full form of IPTS is _____

(A) International practical temperature scale

(B) Informative Practical temperature scale

(C) International proffessional Temperature System

(D) Industrial Practical Temperature System

62. In temperature measuring scales which are known as absolute scales :

(A) Celcuis and kelvin (B) Rankine and Raumor

(C) Rankine and kelvin (D) Farenheit and kelvin

63. Equation used to convert from °C to °F :

(A) °F = °C + 32 (B) °F = (°C × 9/5) + 32

(C) °F = (°C × 5/9) + 32 (D) °F = °C × 9/5 – 32

64. In a T type thermocouple which is the +ve material used :

(A) Copper (B) Constantan (C) Aluminium (D) Chromel

65. "When an electric current flows through the junction of two dissimilar conductive materials, heat is either absorbed or released at the junction. The direction of heat absorption or release depends on the direction of current flow."

Which theory is this?

(A) Peltier effect (B) Seebeck effect

(C) Thomson effect (D) Newton's effect

66. Which type of instrument used to measure temperature of moving target?

(A) Radiation pyrometer (B) Optical pyrmeter

(C) Thermometer (D) Thermocouple

67. A pt100 RTD indicates 138.8 ohm at 100°C, this indicates

(A) It has no temperature co efficient of resistance

(B) Positive temperature co efficient of resistance

(C) Negative temperature co efficient of resistance

(D) Very low temperature co efficient of resistance

68. Which liquid is commonly used in thermometers for temperatures below the freezing point of mercury?

(A) Water (B) Alcohol (C) Glycerin (D) Kerosene

69. Which is commonly used as the sensing element in a solid expansion thermometer?

(A) Bimetallic strip (B) Thermocouple

(C) RTD (D) Mercury bulb

70. A temperature transmitter is calibrated for a range of 0–200 °C with a linear 4–20 mA output. What will be the output current when the measured temperature is 50°C?

(A) 6 mA (B) 8 mA (C) 10 mA (D) 12 mA

71. Which of the following is a property of a fluid?

(A) Hardness (B) Brittleness
(C) Viscosity (D) Magnetic polarity

72. Which instrument uses a float inside a tapered tube to measure flow?

(A) Bourdon tube (B) Rotameter
(C) Thermocouple (D) Tachometer

73. Reynold's number (Re) is defined fundamentally as the ratio of which two forces?

(A) Pressure force to Viscous force (B) Inertia force to Viscous force
(C) Gravitational force to Inertia force (D) Viscous force to Surface tension force

74. Which type of flowmeter contains a converging section and a throat?

(A) Rotameter (B) Venturi tube
(C) Pitot tube (D) Bourdon gauge

75. The volumetric flow rate through a pipe is calculated by which equation?

(A) $Q = A/V$ (B) $Q = AV$
(C) $Q = A + V$ (D) $Q = V/A$

76. The operating principle of a Pitot Tube is based primarily on measuring the difference between which two pressure points?

(A) Static pressure and Atmospheric pressure
(B) Upsteam pressure and downstream permanent loss pressure
(C) Impact (stagnation) pressure and static pressure
(D) Vapour pressure and Total line head pressure

77. When the flow rate increases, the rotor speed of a turbine flow meter generally:

(A) Decreases to zero (B) Increases
(C) Remains constant in all conditions (D) Becomes independent of flow

78. What is a major advantage of a Coriolis mass flow meter?

(A) Direct measurement of mass flow rate
(B) No electronic components are required
(C) It works only with non-conductive liquids
(D) It measures only static pressure

79. If Vortex-shedding frequency is directly proportional to fluid velocity, what happens when velocity doubles?

(A) Frequency halves (B) Frequency remains constant
(C) Frequency doubles (D) Frequency becomes four times

80. Why is an electromagnetic flow meter generally unsuitable for non-conductive liquids?

(A) They rotate the turbine too quickly
(B) They cannot produce the required measurable induced electrode voltage
(C) They always freeze inside the pipe
(D) They produce excessive tube twisting

81. The direct method of measurement of liquid level is

(A) Purge system method (B) Sight glass

(C) Ultrasonic level gauge (D) Capacitance probe

82. The liquid level gauge works on the principle of reflection of an acoustic wave from a liquid surface

(A) Diaphragm box method (B) Bouyant head method

(C) Electrical level gauge (D) Ultrasonic level gauge

83. A Vibrating fork switch is mainly used for

(A) Pressure measurement (B) Temperature measurement

(C) Point level detection (D) Flow measurement

84. A load cell based system can determine the amount of solid level by measuring

(A) Flow (B) Vibration (C) Weight (D) Pressure

85. Which principle is used in a float-type level indicator?

(A) Thermal expansion (B) Electromagnetic induction

(C) Capacitance (D) Buoyancy

86. Which condition is most likely to cause attenuation of an ultrasonic signal?

(A) Thermal stability (B) Heavy vapour or foam

(C) Stable viscosity (D) Transducer alignment

87. Which electromagnetic waves are commonly used in radar level measurement?

(A) Microwaves (B) Infrared waves

(C) Ultraviolet waves (D) X-rays

88. A solid silo has a high-level alarm using a capacitance probe. The alarm remains ON even after the powder level falls. The most common problem maybe:

(A) High tank pressure (B) High temperature

(C) Powder coated on probe (D) High density

89. The basic relationship for hydrostatic pressure is:

(A) $P = \rho gh$ (B) $P = \rho g/h$ (C) $P = \rho/gh$ (D) $P=\rho h/g$

90. A closed tank contains a liquid under pressure. If the pressure in the vapour space increases equally on both sides of a correctly connected DP transmitter, the indicated level should ideally

(A) Increase (B) Decrease

(C) Become zero (D) Remain unchanged

91. A HART communicator is used with a HART-enabled process instrument mainly for which calibration-related purpose ?

(A) Only to provide mechanical support

(B) To view process values, configure the transmitter and calibrate it

(C) Only to measure pipe diameter

(D) Only to operate a pneumatic compressor

92. A plant needs several HART instruments connected on the same pair of wires, with the analog loop current fixed at a minimum value and Communication carried out digitally. Which HART network mode is appropriate ?

(A) Point-to-point mode

(B) Multi-drop mode

(C) Star-only mode

(D) Ring-only mode

93. A mechanical switch is operated by the movement of a machine part or the presence of an object and may be used as a safety interlock, which device is described ?

(A) Limit switch

(B) HART communicator

(C) Valve positioner

(D) Universal calibrator

94. In a pneumatic piping system, the safety factor is defined as the ratio of which two quantities ?

(A) Operating pressure to pipe diameter

(B) Bursting pressure to operating pressure

(C) Flow rate to pipe length

(D) Temperature to pressure drop

95. Which type of actuator converts the energy of compressed air or gas into mechanical motion ?

(A) Hydraulic actuator

(B) Pneumatic actuator

(C) Electrical actuator

(D) Thermal actuator

96. What is the main purpose of a valve positioner in a control valve assembly ?

(A) To measure the process temperature

(B) To supply electrical power to the controller

(C) To detect valve travel and adjust actuator air pressure so the commanded position is maintained

(D) To replace the valve body and trim

97. A temperature-control process has large changes in pressure drop across the control valve. Which flow characteristic is generally the better choice?

(A) Quick opening (B) Equal percentage

(C) Linear (D) On-off only

98. In a boiler feedwater control example, a pneumatic feedwater valve receives a signal from the controller. Which device is required to convert the controller's current output so that it can operate the pneumatic valve?

(A) Current-to-pressure (I/P) converter

(B) Pressure-to-current (P/I) converter

(C) Thermocouple

(D) Rotameter

99. What is the main function of a paperless recorder?

(A) to record collected process data in internal storage and display it

(B) to convert 4-20 mA to 3-15 psi

(C) to generate pneumatic pressure

(D) to operate a proximity sensor

100. A direct-acting normally closed solenoid valve is closed when the coil is de-energized because the plunger is held against the valve seat by the :

(A) Pressure gauge (B) Plunger spring

(C) HART communicator (D) Valve positioner

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