

077/23

Question Booklet Alpha Code

A

A

Question Booklet Sl. No.

Total Number of Questions : 100

Time : 90 Minutes

Maximum Marks : 100

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/her 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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A

1. The voltage of a circuit is measured by a voltmeter having an input impedance comparable with the output impedance of the circuit thereby causing error in voltage measurement. This error is called
 - A) Gross error
 - B) Random error
 - C) Error caused by loading effect
 - D) Error caused by system
2. The quantity whose magnitude has a definite repeating time cycle is
 - A) Steady state periodic
 - B) Transient
 - C) Static
 - D) Transient state periodic
3. The _____ is the retardation in the response of a measurement system to changes in the measured quantity.
 - A) Speed of response
 - B) Measuring lag
 - C) Fidelity
 - D) Dynamic error
4. The units whose sizes cannot be chosen independently are called
 - A) Derived units
 - B) Fundamental units
 - C) Absolute units
 - D) Auxiliary units
5. What will be the value of shunt resistance required for 1 mA meter to extend the range to measure 10 mA (Meter resistance is $18\ \Omega$) ?
 - A) $1\ \Omega$
 - B) $2\ \Omega$
 - C) $20\ \Omega$
 - D) $10\ \Omega$
6. In mechanics three fundamental units are
 - A) Length, meter, time
 - B) Length, mass, time
 - C) Length, mass, torque
 - D) None of these
7. The dimension of power is
 - A) MLT^{-3}
 - B) M^2LT^{-2}
 - C) $ML^{-1}T^{-1}$
 - D) ML^2T^{-3}
8. Electrostatic type instruments are primarily used as
 - A) Ammeter
 - B) Wattmeter
 - C) Voltmeter
 - D) Ohmmeter
9. In _____ instruments a small weight is attached to the moving system to produce a controlling torque.
 - A) Gravity controlled
 - B) Eddy current controlled
 - C) Spring controlled
 - D) Mass controlled
10. The _____ torque is necessary to avoid oscillations of the moving system about its final deflected position.
 - A) Controlling torque
 - B) Dynamic torque
 - C) Reaction torque
 - D) Damping torque

11. To extend the range of voltmeter which arrangement is used ?
- A) High value of resistor in series with the meter
 - B) Low value of resistor in parallel with the meter
 - C) High value of resistor in parallel with the meter
 - D) Low value of resistor in series with the meter
12. Momentum =
- A) Mass $\times$ Speed
 - B) Mass $\times$ Velocity
 - C) Mass $\times$ Acceleration
 - D) Mass $\times$ Time
13. The physical quantity under measurement is called
- A) Data transmission element
 - B) Variable conversion element
 - C) Measurand
 - D) Data presentation element
14. Error of an instrument is expressed as
- A) $\frac{(\text{Measured value} - \text{True value})}{\text{True value}} \times 100$
 - B) $\frac{(\text{Measured value} + \text{True value})}{\text{True value}} \times 100$
 - C) $\frac{(\text{Measured value} + \text{True value})}{\text{Measured value}} \times 100$
 - D) $\frac{(\text{Measured value} - \text{True value})}{\text{Measured value}} \times 100$
15. Dead band is usually expressed in percentage of
- A) Repeatability
 - B) Deviation
 - C) Linearity
 - D) Span
16. An undesired change in the output input relationship over a period of time is
- A) Drift
 - B) Deviation
 - C) Hysteresis
 - D) Correction
17. Which of the following is not a method for measuring low value resistance ?
- A) Ammeter – voltmeter method
 - B) Kelvin double bridge method
 - C) Potentiometer method
 - D) Direct deflection method

18. Screen of the CRT is coated with
- A) Phosphor material
 - B) Crystalline material
 - C) Thermionic material
 - D) Sulphur material
19. The least interval between two adjacent discrete details which can be distinguished one from the other is called
- A) Precision
 - B) Sensitivity
 - C) Resolution
 - D) Fidelity
20. An ammeter reads 15.34 Amps. The absolute error in the measurement is – 0.11 Amps. Determine the true value of current.
- A) 15.23 Amps
 - B) 15.45 Amps
 - C) 13.94 Amps
 - D) 15.32 Amps
21. PMMC stands for
- A) Permanent Measuring Moving Coil meter
 - B) Permanent Magnet Moving Coil meter
 - C) Phase Measuring Moving Coil meter
 - D) Phase Magnet Moving Coil meter
22. Induction wattmeter is used to measure
- A) AC power
 - B) DC power
 - C) Both AC and DC power
 - D) None of these
23. The deflection in moving coil galvanometer is
- A) Inversely proportional to the area of the coil
 - B) Directly proportional to the number of turns of the coil
 - C) Inversely proportional to the current flow
 - D) Directly proportional to the torsional constant
24. In a CRO, which circuit is provided for synchronising two type of deflections so that horizontal deflection starts at the same point of the input vertical signal each time it sweeps.
- A) Focusing circuit
 - B) Control circuit
 - C) Delay circuit
 - D) Trigger circuit

25. For making P type semiconductor, which material should not be added in extrinsic semiconductor material ?
- | | |
|------------|-----------|
| A) Gallium | B) Boron |
| C) Arsenic | D) Indium |
26. The difference of voltage across two points in a circuit is called
- A) Electro motive force
B) Electric current
C) Potential difference
D) None of these
27. The ratio of flux created in that material to the flux created in air is
- A) Magnetic field strength
B) Permeability
C) Flux density
D) Conductivity
28. Electrical property of an electrical circuit or device to oppose any change in magnitude of current flow in a circuit is called
- | | |
|----------------|---------------|
| A) Resistance | B) Inductance |
| C) Capacitance | D) Impedance |
29. An inductor stores an energy in the magnetic field created by the current. The energy is expressed as
- | | |
|-------------------|-------------------|
| A) $W = 1/2 LI^2$ | B) $W = 1/3 LI^2$ |
| C) $W = 1/4 LI^2$ | D) $W = LI^2$ |
30. Which of the following statement is/are correct about resistance offered by a conductor depends ?
- Resistance varies directly with its length
 - Resistance varies by its crosssectional area
 - Resistance of the conductor not depends on the material with which it is made of
- A) Only i and ii
B) Only ii and iii
C) Only i and iii
D) None of the above

31. Which of the following statement is/are correct in case of parallel circuits ?
- i. The applied voltage same across each branch
 - ii. The reciprocal of total resistance equals the sum of the reciprocal of the resistance
 - iii. The resultant resistance is less than the smallest resistance of the parallel combination
- A) Only i and ii
B) Only ii and iii
C) Only i and iii
D) All of the above
32. What is the capacitance of a capacitor that requires 0.9 C to charge it to 30 V ?
- A) 0.09 F
B) 0.9 F
C) 0.3 F
D) 0.03 F
33. The capacitance of a capacitor is not determined by
- A) Area of the plates
B) Material of the plates
C) Distance between plates
D) Types of dielectric material
34. Which law states that magnitude of the induced emf is equal to the rate of change of flux linkage ?
- A) Fleming's law
B) Ohm's law
C) Faraday's law
D) None of these

35. When forward bias is applied to a PN junction diode, its
- A) Potential barrier is reduced
 - B) Potential barrier is increased
 - C) No change in potential barrier
 - D) Junction offers very high resistance
36. The charge on N type semiconductor is
- A) Positive
 - B) Negative
 - C) Positive or negative
 - D) Electrically neutral
37. If one diode in the centre-tapped full wave rectifier opens, then rectifier output will be
- A) No output
 - B) No change in output
 - C) Resembles output from a half wave rectifier
 - D) Resembles output from a bridge full wave rectifier
38. When transistor is used as a switch, it operates in
- A) The region between cut off region and saturation region
 - B) Cut off region and saturation region
 - C) Active region
 - D) Active region, cut off region and saturation region
39. In common base amplifier which of the following is wrong ?
- A) Input impedance low
 - B) Voltage gain about 150
 - C) Used for audio frequency application
 - D) Current gain is less than one
40. In a transistor most of power is dissipated in collector-base junction. It is because
- A) Collector current is more
 - B) Collector base voltage is much greater than emitter-base voltage
 - C) Emitter is moderately doped region
 - D) Current through collector-base junction is more
41. Removal of emitter bypass capacitor from the common emitter amplifier results
- A) Reduced voltage gain
 - B) Increased voltage gain
 - C) No change in voltage gain
 - D) Infinity voltage gain

42. In the following which is not the characteristics of emitter follower circuit ?
 A) No voltage gain
 B) High current gain and power gain
 C) Low input impedance and high output impedance
 D) Input and output ac voltages are in phase
43. How many active devices are there in a single stage transistor amplifier ?
 A) 1 B) 2 C) 4 D) 7
44. The term not related to FET is
 A) Amplification factor B) AC drain resistance
 C) Intrinsic stand-off ratio D) Transconductance
45. UJT cannot be used
 A) As an oscillator B) In trigger circuits
 C) As an amplifier D) In pulse and voltage sensing circuits
46. In the following components which can be used as controlled bidirectional switch ?
 A) Silicon controlled rectifier B) Diac
 C) DPDT D) Triac
47. 2's complement of the binary number 00010110
 A) 11101001 B) 11101010 C) 00010111 D) 00010110
48. In the following logic gates, which cannot be used as an inverter ?
 A) NOT GATE B) AND GATE
 C) NAND GATE D) NOR GATE
49. According to distributive law
 A) $A = A + A$ B) $A + (B + C) = (A + B) + C$
 C) $A + B = B + A$ D) $A(B + C) = A.B + A.C$
50. For a full adder, determine the output for the input $A = 1$, $B = 0$, and carry in = 1
 A) Sum = 0 with carry of 0 B) Sum = 0 with carry of 1
 C) Sum = 1 with carry of 0 D) Sum = 1 with carry of 1

51. On chip program memory of 8051 Microcontroller is
 - A) 128 bytes
 - B) 4 KB
 - C) 32 KB
 - D) 64 KB
52. Name the register which points to the address of the next instruction to be executed.
 - A) Program counter
 - B) Accumulator
 - C) B register
 - D) Data pointer
53. From the following, which section comes first in SMPS with ac input ?
 - A) Transformer
 - B) Rectifier
 - C) Inverter Chopper
 - D) Chopper Controller
54. In boost converter circuit, input source is connected to output. At that time
 - A) Switching transistor is ON and is connected in parallel with load
 - B) Switching transistor is OFF and is connected in series with load
 - C) Switching transistor is ON and is connected in series with load
 - D) Switching transistor is OFF and is connected in parallel with load
55. Inverter performs opposite function of
 - A) Rectifier
 - B) Filter
 - C) Regulator
 - D) Amplifier
56. One of the following UPS has no transition time delay. It is
 - A) OFF line UPS
 - B) Line interactive UPS
 - C) Online UPS
 - D) Standby UPS
57. In the following, cell using photo voltaic effect is
 - A) Solar Cell
 - B) Dry Cell
 - C) Lead Acid Cell
 - D) Secondary Cell

58. Which of the following is a type of volatile memory ?
 A) ROM B) EEPROM C) Flash memory D) RAM
59. Which of the following is not a component of a computer network ?
 A) Router B) Hub C) Keyboard D) Switch
60. Which of the following technology was used by intel to design its first 8-bit microprocessor ?
 A) NMOS B) HMOS C) PMOS D) TTL
61. Which of the following is a network topology ?
 A) HTTP B) TCP/IP C) Bus D) USB
62. Which of the following is NOT a memory type ?
 A) USB B) RAM C) ROM D) Cache
63. Which of the following is NOT an operating system ?
 A) Windows B) MacOS C) Android D) Excel
64. Which of the following is the most commonly used architecture for personal computers ?
 A) RISC B) CISC C) ARM D) MIPS
65. EEPROM is basically a _____ memory.
 A) Volatile B) Random C) Non-volatile D) Sequential
66. The Unix shell is both _____ and _____ language.
 A) Interpreter, scripting B) High level, low level
 C) Interactive, responsive D) Interpreter, executing
67. Which is the largest network in the world ?
 A) Peer-to-peer B) Intranet
 C) Extranet D) Internet
68. The gauges that uses electrical devices for measuring pressure is
 A) Thermocouple gauge B) Pirani gauge
 C) Both A) and B) D) None of these

69. Rotational displacement can be measured using
- A) Strain gauge
 - B) LVDT
 - C) Anemometer
 - D) Shaft encoder
70. In LVDT, output voltage
- A) Are in phase quadrature
 - B) Are independent of the core position
 - C) Vary unequally depending on the core position
 - D) Vary equally depending on the core position
71. An open tank contains varying density liquid, the level of the tank is to be measured accurately, the most suitable measuring system is
- A) Head type with differential pressure transmitter
 - B) Float and cable
 - C) Bubbler tube
 - D) Diaphragm box
72. In Coriolis densitometer, for measuring densities of fluid in the pipe _____ parameter is measured.
- A) Mass
 - B) Flow rate
 - C) Volume
 - D) Frequency of vibration
73. In an industrial pressure thermometer the sensing element is usually made of
- A) Steel
 - B) Brass
 - C) Platinum
 - D) Nickel
74. The induced voltage generated in a electromagnetic flow meter is proportional to
- A) Flow rate
 - B) Square root of flow rate
 - C) Square of flow rate
 - D) Logarithm of flow rate
75. Load cell make use of which type of arrangements ?
- A) Tensile strain gauge
 - B) Compressive strain gauge
 - C) Both tensile and compressive strain gauge
 - D) None of the above

76. Load cell converts
- | | |
|---------------------|--|
| A) Force to strain | B) Force to displacement |
| C) Force to voltage | D) Force to strain and force to displacement |
77. As the temperature increases, the thermal conductivity of a gas
- Increases
 - Decreases
 - Remains constant
 - Increases to a certain temperature then decreases
78. Stroboscope measures
- | | |
|---------------------------------|----------------------------------|
| A) Frequency of light | B) Frequency of vibrating object |
| C) Depression of freezing point | D) Liquid level |
79. In a resistance potentiometer high value of resistance of POT leads to
- | | |
|-------------------------------|-----------------------------|
| A) High value of sensitivity | B) Low value of sensitivity |
| C) Low value of non-linearity | D) Low error |
80. The changes in resistance on application of strain in a semiconductor strain gauge
- Is much higher than in metal strain gauge and is due to change in dimension
 - Is much higher than in metal strain gauge and is due to change in resistivity
 - Is much lower than in metal strain gauge
 - None
81. In an RTD
- Resistance increases with temperature rise
 - Resistance decreases with temperature rise
 - Voltage increase with temperature rise
 - None of the above
82. This acts as a quenching gas in Geiger Muller Counter
- | | | | |
|------------|--------------|------------|-------------|
| A) Alcohol | B) Argon gas | C) Krypton | D) Hydrogen |
|------------|--------------|------------|-------------|
83. This law makes it possible to use extension wires of a metal different from the metals used for thermocouple
- | | |
|------------------------------------|-------------------------------|
| A) Law of intermediate temperature | B) Law of intermediate metals |
| C) Law of homogeneous metals | D) Law of proportionality |

84. Flame ionisation detector in the gas chromatography is used for the detection of
A) Nitrogen B) Helium C) Sulphur D) Hydrocarbons
85. If the reading of pH meter changes from 7 to 9, the hydrogen ion concentration of the solution is
A) Will get halved B) Will get doubled
C) Increases 100 times D) Decreases 100 times
86. Bolometer measures
A) Air pressure B) Intensity of electromagnetic radiation
C) Fluid velocity D) Specific gravity of liquids
87. The purpose of the reference electrode in a pH meter is to deliver
A) A constant current B) A constant voltage
C) Temperature compensation D) Both B) and C)
88. Telemetry system which normally uses self balancing potentiometer at the receiving end
A) Voltage telemetry system B) Current telemetry system
C) Frequency telemetry system D) Impulse telemetry system
89. In time division multiplexing
A) Entire bandwidth of the channel is dedicated to one speed channel for a short period of time
B) Divides a higher bandwidth channel into many individual smaller bandwidth channel
C) Groups many individual channels to form channel with much higher bandwidth
D) None of these
90. Recorder which records the relationship between two variables
A) Graphic recorder B) Strip chart recorder
C) Multipoint recorder D) X-Y recorder
91. The signal selected by a multiplexer is converted into a constant voltage by
A) Voltage doubler B) Filter
C) Sample and hold circuit D) Voltage regulator

92. A non-dispersive shifted fibre is
 A) Standard single mode fibre
 B) Standard multi mode fibre
 C) Coaxial cables
 D) Non zero dispersive shifted fibres
93. Process of changing resting potential to action potential is known as
 A) Polarization
 B) Repolarization
 C) Depolarization
 D) Unpolarising
94. Sensitivity of an ECG is typically of
 A) 1 cm/V
 B) 0.1 cm/V
 C) 10 mm/mV
 D) 100 mm/mV
95. Input to the controller is
 A) Reference signal
 B) Measured value of the signal
 C) Error
 D) Servo signal
96. The capacitance in force-current analogy is analogous to
 A) Momentum
 B) Displacement
 C) Velocity
 D) Mass
97. It refers to the time for the process control loop to make necessary adjustments to the final control element
 A) Dead zone
 B) Dead time
 C) Process lag
 D) Control lag
98. _____ lets the computer adjust process-loop setpoints for optimum process performance using standard analog control loops for control.
 A) Supervisory control
 B) Computer based control
 C) Smart transmitters
 D) None of the above
99. The master terminal unit in the SCADA system can be a
 A) Web server
 B) Real time decision maker
 C) Analyzes data, data logging
 D) All of the above
100. PLC scan time is the time taken to
 A) Scanning all the input signals
 B) Read all input signals
 C) Updating the output signals
 D) Reading all the input signals, run the program and updating outputs
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Space for Rough Work

