

102/2022

Maximum : 100 marks

Time : 1 hour and 30 minutes

1. The resistance between the opposite faces of a metre cube of that material is known as :
(A) Conductance (B) Resistance
(C) Conductivity (D) Resistivity
2. The ratio of the true power delivered to an AC circuit to the apparent power that the source must supply is called :
(A) Inductive reactance (B) Power factor
(C) Power of the circuit (D) Power ratio
3. The power consumed in a pure capacitive circuit is :
(A) Zero (B) Infinity
(C) Maximum (D) Minimum
4. The commercial unit of electrical energy is :
(A) KW (B) KWH
(C) WH (D) KVA
5. The direction of induced current is obtained by :
(A) Fleming's right hand rule
(B) Fleming's left hand rule
(C) Maxwell's cork screw rule
(D) Faraday's laws of electromagnetic induction
6. The resistance of a heater rated 2.2 KW and 220 v is :
(A) 220 Ω (B) 440 Ω
(C) 2.2 Ω (D) 22 Ω
7. The total resistance of a parallel circuit compared to the low value of resistance connected in the circuit is :
(A) Less (or) Equal (B) Equal
(C) Greater (D) Less

8. From the following which is equal to 1 Watt?
 (A) 1 Farad (B) 1 Ohm / Volt
 (C) 1 Joule / Second (D) 1 Volt / Ampere
9. The SI unit of electric conductance is :
 (A) Ohm (B) Siemens
 (C) Coulomb (D) Candela
10. A sine wave has a maximum value of 40 mv. The rms value of the sine wave is :
 (A) 22.48 (B) 25.48
 (C) 28.28 (D) 24.24
11. An Oscilloscope shows 20 cycles of sine wave occurring in 2 milli seconds. The time period of the sine wave is :
 (A) 0.01 milli seconds (B) 0.001 milli seconds
 (C) 0.1 milli seconds (D) 0.0001 milli seconds
12. In a pure parallel resonance circuit, with pure inductor and pure capacitor, at resonance the impedance will be :
 (A) Infinity (B) Zero
 (C) Maximum (D) Minimum
13. The instrument used for measuring high voltage and high current is :
 (A) Digital Multimeter (B) Ammeter
 (C) Instrument Transformer (D) Megger
14. The effect on Current Transformer (CT) if it's secondary is kept open is :
 (A) CT primary burns out (B) Volt-Ampere capacity reduces
 (C) Volt-Ampere capacity increases (D) CT secondary winding burns out
15. The colour coding of a resistor is Blue, Red, Yellow, Gold, Gold. It's value is :
 (A) $624\Omega \pm 5\%$ (B) $6.24K\Omega \pm 5\%$
 (C) $62.4\Omega \pm 5\%$ (D) $62.4K\Omega \pm 5\%$
16. In an AC supply system, to improve power factor :
 (A) By connecting inductive load in series
 (B) By connecting capacitors in series with the load
 (C) By connecting inductive loads in parallel
 (D) By connecting capacitor in parallel with load

17. The following has its working based on electromagnetic induction :
- (A) Voltmeter (B) Transformer
(C) Ammeter (D) Galvanometer
18. A static device which increases or decreases AC voltage without changing the frequency of the supply is :
- (A) Alternator (B) Inverter
(C) DC generator (D) Transformer
19. When an alternating voltage is applied to a pure inductor, the resultant alternating current through the inductor is :
- (A) Leading by 90° (B) Lagging by 90°
(C) Leading by 180° (D) Lagging by 180°
20. If one thousand watts lamp is used for one hour, it consumes an energy of :
- (A) 1 kwh (B) 10 wh
(C) 0.1 kwh (D) 0.01 wh
21. The working principle of single phase induction motor is :
- (A) Joule's law
(B) Faraday's Laws of electromagnetic induction
(C) Lenz's law
(D) Faraday's laws of electrolysis
22. The magnetic field produces by a single phase induction motor is :
- (A) Rotating magnetic field (B) Stationary magnetic field
(C) Steady magnetic field (D) Pulsuating magnetic field
23. In an induction motor a measure of the difference between the machine's synchronous speed and its shaft speed is :
- (A) Slip (B) Synchronous speed
(C) Rotor speed (D) Stator speed
24. The important property of Fuse wire is :
- (A) Low specific resistance and high melting point
(B) High specific resistance and high melting point
(C) High specific resistance and low melting point
(D) Low specific resistance and low melting point

25. The fuse rating is expressed in terms of :
- (A) Voltage (B) Power
(C) Resistance (D) Current
26. The Maximum reverse Voltage that can be applied to the Diode without destruction is :
- (A) Peak Inverse Voltage (B) Maximum Forward Voltage
(C) Forward Voltage (D) Maximum Average Voltage
27. The PIV of Full Wave Bridge Rectifier is :
- (A) $2 V_m$ (B) $3 V_m$
(C) V_m (D) $4 V_m$
28. What is the Ripple factor of Half wave Rectifier?
- (A) 0.482 (B) 1.21
(C) 0.472 (D) 1.22
29. Both NPN and PNP Transistors are equally useful in electronics Circuits, However NPN Transistors are :
- (A) NPN Has High Doping Level (B) Big Size
(C) Higher Switching Speed (D) Easily Operated
30. The Forward Voltage Across the Base-Emitter PN Junction of Transistor is referred to as :
- (A) V_{EB} (B) V_{CB}
(C) V_{CC} (D) V_{CE}
31. The Maximum Permissible Collector Current I_C (max) of Transistor BC 548 is :
- (A) 20 mA (B) 50 mA
(C) 200 mA (D) 30 mA
32. The Phase Relationship between Input and Output Wave forms in Common Emitter Configuration is :
- (A) 0° Phase shift (B) 180° Phase shift
(C) 270° Phase shift (D) 90° Phase shift
33. What is the meaning of first letter indicated in the Transistor Code Number BC 107?
- (A) Silicon Material is Used (B) Germanium Material is Used
(C) Antimony Material is Used (D) Bismuth Material is Used

34. The Most Widely used type of biasing in Linear Transistor Circuit is :
- (A) Base Bias (B) Emitter Bias
(C) Voltage divider Bias (D) Emitter feedback Bias
35. All radios, tape recorders and Televisions invariably use Negative feedback in circuits for a function :
- (A) Automatic frequency Control (B) Automatic gain Control
(C) Automatic Line Control (D) Automatic Level Control
36. How the Maximum Permissible Collector-Base Voltage that can be Applied across Collector-Base is?
- (A) VCB(max) (B) VCE(max)
(C) VEB(max) (D) VCC(max)
37. Which Type of Package is used to Transistors Utilized for medium and Power amplifications?
- (A) Plastic Package (B) Metal Package
(C) Ceramic Package (D) Plastic Package with Heat Sinks
38. Which Coding System for Transistor type numbering system is followed by European Standard?
- (A) JIS Standard (B) Home code
(C) JEDEC Standard (D) Pro-Electron Standard
39. The type – Code Printed on a Zener is BZC9V1, the Letter ‘C’ indicates is :
- (A) Silicon (B) Zener
(C) 5% Tolerance (D) Voltage regulator
40. JFET is Commonly Used as input amplifiers in Voltmeters, Oscilloscopes and other Measuring Devices, due to :
- (A) High Maximum Drain Source Voltage VGS
(B) Maximum Forward gate Current IG
(C) High Input Impedance
(D) Low Input Impedance
41. What is the Package type for JFET BFW10?
- (A) TO-72 (B) TO-92
(C) TO-82 (D) TO-102

42. What is the term Stands for TRIAC?
- (A) TRIode alternate Control (B) TRIode DC
(C) TRIode AC Semiconductor (D) TRIode Access Console
43. When a TRIAC is ON the Current flowing between MT1 and MT2 is known as?
- (A) Holding Current (B) Safe Current
(C) Principal Current (D) Leakage Current
44. The resistance between Anode and Cathode of SCR in Quick Test Method is :
- (A) Very low resistance (B) Infinite Resistance
(C) Low Resistance (D) High Resistance
45. How many Semiconductor Layers are used in UJT Fabrication?
- (A) 3 (B) 2
(C) 4 (D) 1
46. What is the advantage of MOSFET?
- (A) Slow Switching Speed
(B) Fast Switching Speed
(C) Higher Power gate Signal
(D) Low thermal Ionisation of Electron-holes
47. BJT is a Current driven device, whereas IGBT is driven by :
- (A) Gate Current (B) Collector current
(C) Gate Voltage (D) Collector Voltage
48. In Common Collector Amplifier Circuit the Output is taken from :
- (A) Emitter (B) Collector
(C) Base (D) Both Base and Collector
49. In a Cascaded Amplifier, the gain of 1st Stage A1 is 100, Second Stage A2 is 20, third stage A3 is 10. The overall gain of :
- (A) 100 (B) 130
(C) 20 (D) 20,000
50. The Theoretical Efficiency of Class B Power Amplifier is :
- (A) 50% (B) 78.5%
(C) 70% (D) 80%

51. What is the First Stage of OP-Amp in Block diagram?
 (A) Driver (B) Push Pull Amplifier
 (C) Emitter Follower (D) Differential Amplifier
52. The Ratio of differential Voltage gain A_d to the Common Voltage gain A_{cm} in OP-Amp is :
 (A) Slew rate (B) Voltage gain
 (C) CMRR (D) SVRR
53. In OP-Amp, Slew rate is Expressed in :
 (A) Seconds (B) Volts
 (C) Microseconds (D) Volts / Microseconds
54. In IC 555, The Pin no.2 is :
 (A) Ground (B) Trigger
 (C) Output (D) Reset
55. The Voltage gain of OP-Amp, as Inverting Amplifier is :
 (A) $1+R_F/R_1$ (B) $-R_F \times R_1$
 (C) $-R_F/R_1$ (D) R_F+R_1
56. _____ are universal logic gates.
 (A) OR Gate and AND Gate (B) OR Gate and Ex-OR Gate
 (C) NAND Gate and NOR Gate (D) NOT Gate and OR Gate
57. Which of the following is a Quad 2 input AND Gate?
 (A) 7400 (B) 7408
 (C) 7432 (D) 7486
58. The logic gate that will have HIGH or 1 at its output when any one of its input is HIGH is a/an _____ gate.
 (A) OR (B) AND
 (C) NOT (D) NAND
59. _____ will make an AND Gate to produce a HIGH output.
 (A) At least one input high (B) At least one input low
 (C) All inputs high (D) All inputs low

60. What is the use of Flip flop?
- (A) To store current (B) To store Binary information
(C) To store voltage (D) To store analog signals
61. The ability of a circuit to tolerate noise without causing unwanted changes in the output voltage is known as :
- (A) noise immunity (B) noise margin
(C) fan-in (D) fan-out
62. A full adder circuit has :
- (A) 2 inputs and 2 outputs (B) 3 inputs and 2 outputs
(C) 2 inputs and 3 outputs (D) None
63. Which gates are ideal for checking the parity of a binary number because they produce an output 1 when the input has an odd no. of 1s?
- (A) OR Gate (B) AND Gate
(C) EX-OR Gate (D) EX-NOR Gate
64. Which circuit has 2^n data inputs, one data output and n control inputs?
- (A) Multiplexer (B) Demultiplexer
(C) Encoder (D) Decoder
65. Which of the following statement is/are correct about counters?
- (i) In a synchronous counter every flip flop is triggered by the clock parallel.
(ii) In an asynchronous counter the clock is applied serially.
(iii) Synchronous counters are also called as ripple counters.
- (A) (i) and (ii) only (B) (i) and (iii) only
(C) (ii) and (iii) only (D) (i), (ii) and (iii) only
66. How many inputs are available in the 7447 BCD to seven segment decoder used to drive the LED display?
- (A) Eight (B) Seven
(C) Four (D) Two
67. The logic circuits whose output at any instant of time depends not only on the present input but also on the past outputs are called :
- (A) Multiplexer (B) Demultiplexer
(C) Combinational logic circuit (D) Sequential logic circuit

68. In RS flip flop, if $Q = 0$ then the output is said to be :
- (A) current state (B) previous state
(C) set (D) reset
69. A shift register is defined as :
- (A) The register capable of shifting information to the left only
(B) The register capable of shifting information to the right only
(C) The register capable of shifting information either to the left or to the right
(D) The register capable of shifting information to another register
70. A decade counter has ———— states.
- (A) 2 (B) 8
(C) 10 (D) 16
71. Which circuit is used to process the demodulation of Amplitude modulated signal?
- (A) Ratio Detector (B) Envelope Detector
(C) Slope Detector (D) Quadrature Detector
72. In which modulation the signal is superimposed over the carrier waves?
- (A) Amplitude modulation (B) Frequency modulation
(C) Phase modulation (D) Pulse modulation
73. Which type of antenna is used for point-to-point communication of radio waves?
- (A) Yagi antenna (B) Omni directional antenna
(C) Dipole antenna (D) Parabolic antenna
74. Television broadcasting is done with :
- (A) AM for video and audio signals
(B) FM for video and audio signals
(C) AM for video and FM for audio signals
(D) FM for video and AM for audio signals
75. Original signal can be obtained from sampled version using :
- (A) high pass filter (B) band pass filter
(C) low pass filter (D) none of the above

76. To satisfy the sampling theorem, a 200 Hz sine wave should be sampled at :
- (A) 100 Hz (B) 200 Hz
(C) 400 Hz (D) 20 Hz
77. In Frequency modulation :
- (A) amplitude of the carrier remains same
(B) frequency of the carrier varies in accordance with the modulating signal
(C) the no. of side bands are infinite
(D) all of the above
78. Optical fibers are highly immune to EMI. Which one of the following statement justifies it?
- (i) They transmit signals as light rather than electric current.
(ii) They are shielded by outer conductors in cable.
(iii) Magnetic fields cannot penetrate through the glass of the fiber.
- (A) (i) only (B) (i) and (ii) only
(C) All of the above (D) None
79. What type of joining technique is used for fiber optic cables?
- (A) Soldering technique (B) Fusion technique
(C) Welding technique (D) Epoxy technique
80. Which light source is used for long distance and high data rate applications in fiber optic communication?
- (A) PIN Diode (B) Photo Diode
(C) Light Emitting Diode (D) Laser Diode
81. Which device is used to convert a physical quantity into its corresponding electrical signal?
- (A) Amplifier (B) Transducer
(C) Modulator (D) Oscillator
82. Which sensor detect the presence of objects without any physical contact?
- (A) Strain gauge (B) LVDT
(C) Load cell (D) Proximity sensor
83. Which device is used to convert force into electrical signal?
- (A) Load cell (B) Thermocouple
(C) Thermister (D) LVDT

84. The smallest change which a sensor can detect is known as :
- (A) Scale (B) Precision
(C) Accuracy (D) Resolution
85. RTD stands for :
- (A) Resistive Thermal Detector (B) Resistance Temperature Detector
(C) Resistance Temperature Device (D) Resistive Thermal Device
86. Which static device converts fixed DC input voltage into variable DC output?
- (A) Buck converter (B) Boost converter
(C) DC chopper (D) AC link chopper
87. Which power electronic device is used for switching purpose in computer SMPS?
- (A) SCR (B) IGBT
(C) MOSFET (D) Transistor
88. What is the advantage of on-line UPS over offline UPS?
- (A) It gives constant output frequency
(B) It works on single phase or three phase supply
(C) It gives constant power output
(D) It is free from change over and transition problems
89. What is the function of an Inverter?
- (A) Converts AC voltage into DC voltage
(B) Converts AC voltage into lower AC voltage
(C) Converts DC voltage into AC voltage
(D) Converts AC voltage into higher AC voltage
90. Which type of solar photovoltaic electric system is designed to operate in parallel and interconnected with the electric utility grid?
- (A) Grid tied system (B) Off-grid system
(C) Specific load system (D) Higher capacity utility system
91. How Many 16-Bit Registers are in 8051?
- (A) 2 (B) 7
(C) 3 (D) 5

92. What is bit size of 8051?
(A) 2 (B) 7
(C) 3 (D) 5
93. How many Pin are there in 8051?
(A) 20 (B) 8
(C) 40 (D) 4
94. How many bytes of bit addressable memory is present in 8051?
(A) 8 (B) 16
(C) 32 (D) 64
95. Which is the reset pin in 8051?
(A) 8 (B) 20
(C) 4 (D) 9
96. Which of the following is input devices?
(A) Monitor (B) Printer
(C) Keyboard (D) Speaker
97. What is BIOS?
(A) hardware (B) software
(C) middleware (D) firmware
98. Which short cut is used to Align Selected text to center?
(A) Ctrl + E (B) Ctrl + C
(C) Ctrl + A (D) Ctrl + L
99. How Many Layers in OSI Refences Model?
(A) 4 (B) 7
(C) 3 (D) 5
100. What is the Full Form of FTP?
(A) File Telnet Protocol (B) File Transfer Principal
(C) Follow Transfer Protocol (D) File Transfer Protocol

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