

1. With fixed value capacitor C and variable voltage V across it, the energy stored in the capacitor is

- a) CV^2 b) $0.5 CV^2$ c) $2 CV^2$ d) CV

Ans.

2. A dc voltage V is applied to a series RL circuit. The steady state current is

- a) V/R b) V/L c) $\frac{V}{R^2+L^2}$ d) Zero

Ans.

5. If the unit step response of a system is a unit impulse function, then the transfer function of such a system will be

- a) 1 b) $\frac{1}{s}$ c) s d) $\frac{1}{s^2}$

Ans.

10. Of the following transfer function of second order linear time-invariant systems, the underdamped system is represented by

- a) $H(S) = \frac{1}{S^2+4S+4}$ b) $H(S) = \frac{1}{S^2+5S+4}$
 c) $H(S) = \frac{1}{S^2+4.5S+4}$ d) $H(S) = \frac{1}{S^2+3S+4}$

Ans.

11. A differential amplifier has a differential gain of 20,000. CMRR = 80 dB. The common mode gain is given by

- a) 2 b) 1 c) 1/2 d) 0

Ans.

12. Two bulbs marked 200 watt — 250 volts and 100 watt-250 volts are joined in series to 250 volt supply. Power consumed in circuits is

- a) 33 watt b) 67 watt c) 100 watt d) 300 watt

Ans.

17. A half — adder can be constructed using two 2- input logic gates. One of them is an AND- gate, the other is

- a) OR b) NAND c) NOR d) EX-OR™

Ans.

18. For one of the following conditions, clocked J-K flip-flop can be used as DIVIDE BY 2 circuit where the pulse train to be divided is applied at clock input.

- a) J = 1, k = 1 and the flip- flop should have active HIGH inputs
b) J = 1, k = 1 and the flip- flop should have active LOW inputs
c) J = 0, k = 0 and the flip- flop should have active HIGH inputs
d) J = 1, k = 1 and the flip- flop should be a negative edge triggered one

Ans.

19 Number of comparators needed to build a 6-bit simultaneous A/D converter is

- a) 63 b) 64 c) 7 d) 6

Ans.

28. If a counter having 10 FFs is initially at 0, what count will it hold after 2060 Pulses

- a) 000 000 1100 b) 000 001 1100
c) 000 001 1000 d) 000 000 1110

Ans.

33. Memory chips, which have 12 address lines and 4 data lines each. The number of such chips required to design the memory system is

- a) 2 b) 4 c) 8 d) 16TM

Ans.



34. In time division multiplexing

- a) Time is doubled between bits of a byte
b) Time slicing at CPU level takes place
c) Total time available in the channel is divided between several users and each user is allotted a time slice.
d) None of the above

Ans.

35. When a program is being executed in an 8085 microprocessor, its Program Counter contains

- a) The number of instructions in the current program that have already been executed

- b) The total number of instructions in the program being executed
- c) The memory address of the instruction that is being currently executed
- d) The memory address of the instruction that is to be executed next

Ans.

36. The sum S of A and B in a half Adder can be implemented by using K NAND gates. The value of K is

- a) 3
- b) 4
- c) 5
- d) None of these

Ans.

37. VSWR of a transmission line is always

- a) Less than unity
- b) Greater than unity
- c) Zero
- d) infinity

Ans.

38. Wave guide acts like a

- a) High pass filter
- b) Low pass filter
- c) All pass filter
- d) Band reject filter

Ans.

39. The wave length of a 100 MHz electromagnetic wave propagating through a perfect non magnetic dielectric with relative permittivity $\epsilon_r = 9$ is

- a) 3 mtrs
- b) 3 cms
- c) 100 cms
- d) 10 cms

Ans.

40. TEM mode exists in

- a) A circular wave guide b) A rectangular wave guide
c) A co-axial cable d) None of the transmission lines

Ans.

41. The signal received from a circularly polarized signal by an antenna with linear polarization compared to the signal received by same circularly polarized antenna will be

- a) Maximum b) Zero c) 3 dB less d) 3 dB more

Ans.

42. When the antenna diameter is doubled, the gain of the antenna

- a) Reduces by half b) Increases by 3 dB
c) Reduces by 3 dB d) Increases by 6 dB

Ans.

43. Intrinsic impedance of free space is given as

- a) 75Ω b) 73Ω c) 377Ω d) 300Ω

Ans.

44. Mark the incorrect relation

- a) $D = \epsilon E$ b) $B = \mu H$ c) $J = \sigma E$ d) $B = \mu D$

Ans.

45. If the PRF is 1200 and the pulse width is $1.5 \mu\text{s}$, the duty cycle will be

- a) 12.5 percent b) 8 percent c) 0.18 percent d) 0.12 percent

Ans.

46. When VSWR is 3, reflection coefficient is:

- a) $\frac{1}{2}$ b) 1 c) 0 d) $\frac{1}{4}$

Ans.

47. Which transmission line is ideal for handling high power?

- a) Coaxial line b) Microstrip
C) Strip line d) Rectangular waveguide

Ans.

49. Capture effect is a characteristic of

- a) AM system b) FM system c) PCM system d) TDM system

Ans.

50. In a band limited channel higher bit rate can be transmitted with

- a) BPSK b) QPSK c) FM d) FSK

Ans.

51. In a transmission line terminated with a load equal to the characteristic impedance, the reflection coefficient is

- a) Zero b) +1 c) -1 d) Infinity

Ans.

52. Poynting vector $\mathbf{P} = \mathbf{E} \times \mathbf{H}$ has the unit

- a) Watts/metre² b) Watts/metre
c) Watts-metre d) Watts-metre²

Ans.

53. If 1 watt of RF power is fed to a directional coupler having 30dB coupling, the power available at the coupled port is

- a) $\frac{1}{30}$ w b) $\frac{1}{10}$ w c) $\frac{1}{100}$ w d) $\frac{1}{1000}$ w

Ans.

54. The following demodulator scheme requires least $\frac{E_b}{N_0}$

- a) BPSK b) FSK c) ASK d) QAM

Ans.

55. The channel capacity under the Gaussian noise environment for a discrete memoryless channel with a bandwidth of 4 MHz and SNR of 31 is

- a) 20 Mbps b) 4 Mbps c) 8 Kbps d) 4 kbps

Ans.

56. Satellite channel can be attributed

- a) Only bandwidth limited b) Only power limited
c) Both bandwidth & power limited d) None of the above

Ans.

58. The region of the z plane for which $\left|\frac{z-a}{z+a}\right|=1$ (Re a \neq 0) is

- a) x- axis b) y- axis
c) The straight line $z = |a|$ d) None of the above

Ans.

60. The value of the determinant $\begin{vmatrix} 1 & a & b+c \\ 1 & b & c+a \\ 1 & c & a+b \end{vmatrix}$ is

- a) 0 b) 1 c) (a + b + c) d) 3

Ans.

64. Equation of a straight line passing through the point (-1, 2) and making equal intercepts on the axes is

- a) $x-y = 1$ b) $x-2y = 1$ c) $x + y = 1$ d) $x-y = 2$

Ans.

66. The Algebraic multiplicity of the matrix $A = \begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ 1 & -3 & 3 \end{bmatrix}$ is

- a) 1 b) 2 c) 3 d) 4

Ans.

67. The impedance of an inductive reactance varies

- a) Linearly with frequency
b) Parabolically with frequency
c) Exponentially with frequency
d) Linearly with frequency in an increasing manner

Ans.

68. Two resistance R_1 and R_2 give combined resistance of 4.5 ohms when in series and 1 ohm when in parallel. The resistances are

- a) 3 ohms and 6 ohms b) 3 ohms and 9 ohms
c) 1.5 ohms and 3 ohms d) 1.5 ohms and 0.5 ohms

Ans.

69. Which of the following bulbs will have the least resistance?

- a) 220V, 60W b) 220V, 100W
c) 115V, 60W d) 115 V, 100W

Ans.

70. A resistance of 5 ohms is further drawn so that its length becomes double. Its resistance will now be -

- a) 5 ohms b) 7.5 ohms c) 10 ohms d) 20 ohms

Ans.

71. The power rating of a 470 ohm resistor carrying a current of 40mA should be

- a) $\frac{1}{4}$ W b) $\frac{1}{2}$ W c) 2 W d) 1W

Ans.

73. The open-circuit emf of a storage cell is 2.2 volts. The terminal voltage measured when the current is 12A is found to be 1.98 volts. The internal resistance of the cell is

- a) 0.00183 ohm b) 0.0183 ohm c) 0.183 ohm d) 1.83 ohm

Ans.

74. A capacitor passes a current of 12.6 mA when supplied with 20 V ac with a frequency of 1 kHz. The capacitance of the capacitor is

- a) 0.1μ F b) 0.1 pF c) 1μ F d) 1F

Ans.

75. The system response can be tested better with

- a) Sinusoidal input signal
- b) Unit impulse input signal
- c) Ramp input signal
- d) Exponentially decaying signal

Ans.

76. In an ideal op-amp the output impedance is

- a) 50 ohm
- b) 100 ohm
- c) Infinite
- d) Zero

Ans.

77. What will be dB gain for an increase of power level from 13 to 26W

- a) 1
- b) 2
- c) 8
- d) 3

Ans.



78. The oscillator with the best frequency stability and accuracy is

- a) Hartley oscillator
- b) Colpitts Oscillator
- c) Tickler feedback oscillator
- d) Crystal controlled oscillator

Ans.

79. The desirable properties of transformer core material are

- a) Low permeability and low hysteresis loss
- b) High permeability and high hysteresis loss
- c) High permeability and low hysteresis loss
- d) Low permeability and high hysteresis loss

Ans.

80. The quality factor of series R-L-C circuit will increase if

- a) R decreases.
- b) R increases.
- C) Voltage increases.
- d) Voltage decreases.

Ans.



