2. A series RLC circuit resonates at 3 MHz and has 3-dB bandwidth of 10 kHz. The Q of the circuit at resonance

a) 30
b) $\frac{300}{\sqrt{2}}$
c) 300
d) $300\sqrt{2}$

Ans.

4. At 3-dB frequencies, current in the series RLC circuit equal current at resonance multiplied by

a) ½
b) $\frac{1}{\sqrt{2}}$
c) ¼
d) $\frac{1}{2\sqrt{2}}$

Ans.

5. A series RLC circuit resonates at 1000 kHz. At frequency of 995 kHz,the circuit impedance is

a) Resistive b) minimum c) Inductive d) capacitive

Ans.

6. If each stage had gain of 10dB and noise figure of 10dB, then the overall noise figure of two-stage cascade amplifier will be

a) 10 b) 1.09 c) 1.0 d) 10.9

Ans.

7. In Sigma delta ADC, high bit accuracy is achieved by

a) Over sampling and noise shaping
b) Over sampling
c) Under sampling
d) None of the above

Ans.

13. The transfer function, T(s) = $\frac{s}{s+a}$ is that of a

a) Low-pass filter
b) Notch filter
c) High-pass filter
d) Band-pass filter

Ans.

14. A particular current is made up of two components: a 1O A dc and a sinusoidal current of peak value of 1.414 A. The average value of the resultant current is

a) Zero
b) 24.14 A
c) 10 A
d) 14.14 A

Ans.

15. By doubling the sampling frequency

a) Quantisation noise decreases by 3dB
b) Quantisation noise density decreases by 3dB
c) Quantisation noise increases by 3dB
d) Quantisation noise density increases by 3dB

Ans.

17. Assuming that only the X and Y logic inputs are available and their complements X and Yare not available, what is the minimum number of two-input NAN⊕gates requires to implement X Y?

a) 2 b) 3 c) 4 d) 5

Ans.

19. A Pulse train with a frequency of 1MHz is counted using a modulo 1024 ripple-counter built with J-K flip-flops. For proper operation of the counter the maximum permissible propagation delay per flip-flop stage is

a) 100 n sec b) 50 n sec c) 20 n sec d) 10 n sec

Ans.

20 The AID converter used in a digital voltmeter could be (1) successive approximation type (2) Flash converter type (3) Dual slope converter type. The correct sequence in the increasing order of their conversion times is

a) 1,2,3 b) 2,1,3 c) 3,2,1 d) 3,1,2

Ans.

21. The resolution of a DIA Converter is approximately 0.4% of its full-scale range it is

a) An 8-bit converter b) A 10-bit converter
c) A 12 bit converter d) A 16 bit converter

Ans.

22. In a microprocessor, the resister which holds the address of the next Instruction to be fetched is

a) Accumulator b) Program Counter
c) Stack pointer d) instructor register

Ans.

23. In microcomputer, WAIT states are used to

a) Make the processor wait during a DMA operation
b) Make the processor wait during a power interrupt processing
c) Make the processor wait during a power Shutdown
d) Interface slow peripherals to the processor

Ans.

24. Which of the following statements are correct
1. A flip-flop is used to store 1 bit of information
2. Race-around Condition occurs in a J-K flip-flop when both the inputs are 1
3. Master- slave configuration is used in flip-flops to store 2 bits of information
4. A transparent latch consists of a D-type flip-flop

a) 1,2 and 3 b) 1,3 and 4 C) 1,2 and 4 d) 2,3 and 4

Ans.

25 How many 1's are present in the binary representation of 3 x 512 + 7 x 64 + 5 x 8 + 3 ?

a) 8 b) 9 c)10 d)11

Ans.

26. For emitter-coupled logic, the Switching speed is very high because

a) Negative logic, is used
b) The transistors are not saturated when Conducting
c) Emitter-coupled transistors are used
d) Multi- emitter transistors are used

Ans.

28. Gray code for number 7 is

a) 1100 b) 1001 C) 0110 d) 0100

Ans.

29. 10 bit A/D converters, the quantization error is given by (in Percent)

a) 1 b) 2 c) 0.1 d) 0.2

Ans.

32. If the memory chip size is 256*1 bits, then the number of chips required to make up 1K bytes of memory is

a) 32 b) 24 c)12 d) 8

Ans.

33. Given the decimal number — 19, an eight bit two's complement representation is given by

a)111O111O b)111O11O1 c)111O1100 d) None of these

Ans.

36. A 4-bit synchronous Counter Uses flip-flops with propagation delay time of 25 ns each. The maximum possible time required for change of state will be

a) 25 ns b) 50 ns C) 75 ns d) 100 ns

Ans.

37. An electromagnetic Wave incident on a perfect Conductor is:

a) Entirety reflected b) Fully transmitted
C) Partially transmitted d) None of these

Ans.

38. The characteristic impedance of a lossless transmission line is given by

a) Z= √ LC b) Z= √C/L C) Z= LC d) Z = √L/C

Ans.

39. A lossless line of 50 ohms is terminated in a load of 100 ohms resistive The VSWR is

a) 1:2 b) 2:1 c) 4:1 d) 1:4

Ans.

40. Which of the following does not exist in waveguides

a) TE waves b) TM waves
c) TE waves and TM waves d) TEM waves

Ans.

41. carriers of 2GHz and 4GHz respectively are frequency modulated by a signal of 10 KHz, such that bandwidth of the FM signal in the two cases are same. The peak deviation in the two cases are in the ratio of

a) 1:8 b) 1:2 c) 2:1 d) 1:1

Ans.

42. The bandwidth required for QPSK modulated channel is

a) Twice the BW of BPSK b) Equal to BPSK
C) Equal to FSK d) Half of the BW of BPSK

Ans.

43. Magic T is

a) Four part junction b) Two part junction
C) Three part junction d) It is not junction

Ans.

44. Diplexer is made of

a) Only receive filter b) Only transmit filter
c) Only circulator d) Both receive filter and transmit filter

Ans.

45. The gain G of an antenna of effective area A is given by

a) $G = \frac{4\pi\lambda}{A^2}$ b) $G = \frac{4\pi A}{\lambda}$ C) $G = \frac{4\pi A}{\lambda^2}$ d) None

Ans.

46. If the short circuit and open circuit impedance of a line are 5 and 20Ω respectively the characteristic impedance is given by

a) 100Ω b) 10Ω c) 15Ω d) 10000Ω

Ans.

47. The input impedance of short circuited line of length *l* where $\lambda/4<1<\lambda/2$, is

a) Capacitive b) Inductive c) Resistive d) None of these

Ans.

48. Maximum coding gain in

a) Block Codes b) Convolution Codes
c) Turbo Codes d) RS Codes

Ans.

49. Noise figure of an amplifier depends on

a) Bandwidth b) Output power C) Power input d) none of the above

Ans.

50. BCH code belongs to

a) Block Codes b) Convolution Codes
c) Turbo Codes d) None of the above

Ans.

51 When a carrier is phase modulated, with an integrated modulating signal, the resultant is

a) Phase modulated signal b) Frequency modulated signal
c) Amplitude modulated signal d) QPSK modulated signal

Ans.

52. A satellite orbiting in 600 km orbit transmits 5 GHz frequency. The Doppler shift observed at the ground station, when the satellite is over head of the station is

a) Zero b) Maximum c) Infinity d) None of the above

Ans.

53. A communication channel disturbed by additive white Gaussian noise has a bandwidth of 4 kHz and SNR of 15. The highest transmission rate that such a channel can support (in k-bits/sec) is

a) 16 b) 1.6 c) 3.2 d) 60

Ans.

54. A dual directional Coupler is connected in a microwave reflectometer measurement setup. The reading of the Power meter in the forward direction is 100 mw and in the reverse direction 4 mw. The VSWR is

a) 4 h) 0.4 c) 1.5 d) 10

Ans.

55. Linear amplifier with a gain of 30dB is fed with 1.0 µW power, the output Power of the amplifier

a) 1.0 W b) 0 dBm C) 3O dBm d) -3O dBm

Ans.

56. 10 Watt RF Power is transmitted with a circular polarized antenna

having gain of 10dB. A receiving antenna has vertical polarization. The path loss is 100dB. The receiving signal is

a) -83dBW h) -8OdBW C) -86dBW d) +8OdBW

Ans.

58. A rigid body is rotating with constant angular velocity ω about a fixed axis, if *v* IS the velocity of a point of the body, then curl *v* =

a) ω b) ω^2
c)2ω d) $2\omega^2$

Ans.

59. Laplace transform of $\sin^3 2t$ is

a) $\frac{24}{(s^2+4)(s^2+36)}$ b) $\frac{1}{(s^2+4)(s^2+64)}$
c) $\frac{48}{(s^2+4)(s^2+36)}$ d) $\frac{64}{(s^2+4)(s^2+36)}$

Ans.

60. The value of the determinant $\begin{vmatrix} \cos\theta & 0 & \sin\theta \\ 0 & 1 & 0 \\ -\sin\theta & 0 & \cos\theta \end{vmatrix}$ **is**

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

Ans.

62. The value of k for which the lines 2x + y - 1 = 0, 4x + 3y – 3 = 0 and 3x + ky – 2 = 0, are Concurrent is

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

Ans.

63. A box contains 5 black and 5 red balls. Two balls are randomly picked one after another from the box, without replacement. The probability for both balls being red is

a)1/90 b) 1/5 c) 19/90 d) 2/9

Ans.

64. $X^3 + x \sin x$ is

a) Constant function b) Odd function
c) Even function d) Periodic function

Ans.

66. Eigen values of $\begin{bmatrix} -5 & 2 \\ 2 & -2 \end{bmatrix}$ are

a) -6, -1 b) 6, -1 c) -6,1 d) 6,1

Ans.

68. An inductor supplied with 50 V ac with a frequency of 10 kHz passes a current of 7.96 mA. The value of inductor is

a) 1mH b) 10mH c) 100mH d) 1H

Ans.

69. In a capacitor, the electric charge is stored in
a) Dielectric b) Metal plates
c) Dielectric as well as metal plates d) Neither dielectric nor metal plates

Ans.

70. Oscillator requires

a) No feedback b) Negative feedback
c) Positive feedback d) Either positive or negative feedback

Ans.

71. Which loss in a transformer varies significantly with load?

a) Hysteresis loss b) Eddy current loss
c) Copper loss d) Core loss

Ans.

72. The resistance of a parallel circuit consisting of two resistors is 12 Ω. One of the resistance wires breaks and the effective resistance becomes 18 Ω. The resistance of the broken Wire is

a) 48 Ω b) 18 Ω C) 36 Ω d) 24 Ω

Ans.

73. Time constant of a series R-L circuit equals

a) L/R second b) LR̄ second c) L^2R d) LR^2

Ans.

79. When L is doubled and C is halved, the resonance frequency of series tuned circuit becomes

a) Doubled b) Halved c) One quarter d) Unchanged

Ans.

80. In a Series resonant circuit, with the increase in L

a) Resonant frequency will decrease
b) Bandwidth will decrease
c) Q will increase
d) All of these

Ans.