Roll No. | | | | | | | | |

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Signature of Invigilator

Question Booklet Series **X**

PAPER–II **Question Booklet No.**

Subject Code : 21

ELECTRONIC SCIENCE

Time : 2 Hours *Maximum Marks: 200*

Instructions for the Candidates

1. Write your Roll Number in the space provided on the top of this page as well as on the OMR Sheet provided.
2. At the commencement of the examination, the Question Booklet will be given to you. In the first 5 minutes, you are requested to open the booklet and verify it:
   (i) To have access to the Question Booklet, tear off the paper seal on the edge of this cover page.
   (ii) Faulty booklet, if detected, should be got replaced immediately by a correct booklet from the invigilator within the period of 5 (five) minutes. Afterwards, neither the Question Booklet will be replaced nor any extra time will be given.
   (iii) Verify whether the Question Booklet Number is identical with OMR Sheet Number; if not, the full set is to be replaced.
   (iv) After this verification is over, the Question Booklet Series and Question Booklet Number should be entered on the OMR Sheet.
3. This paper consists of One Hundred (100) multiple-choice type questions. All the questions are compulsory. Each question carries *two* marks.
4. Each Question has four alternative responses marked: (A) (B) (C) (D) . You have to darken the circle as indicated below on the correct response against each question.

   Example: (A) (B) ● (D), where (C) is the correct response.
5. Your responses to the questions are to be indicated correctly in the OMR Sheet. If you mark your response at any place other than in the circle in the OMR Sheet, it will not be evaluated.
6. Rough work is to be done at the end of this booklet.
7. If you write your Name, Phone Number or put any mark on any part of the OMR Sheet, except in the space allotted for the relevant entries, which may disclose your identity, or use abusive language or employ any other unfair means, such as change of response by scratching or using white fluid, you will render yourself liable to disqualification.
8. Do not tamper or fold the OMR Sheet in any way. If you do so, your OMR Sheet will not be evaluated.
9. You have to return the Original OMR Sheet to the invigilator at the end of the examination compulsorily and must not carry it with you outside the Examination Hall. You are, however, allowed to carry question booklet and duplicate copy of OMR Sheet after completion of examination.
10. **Use only Black Ball point pen.**
11. **Use of any calculator, mobile phone, electronic devices/gadgets etc. is strictly prohibited.**
12. **There is no negative marks for incorrect answer.**

The Question Booklet is encrypted with QR code for security purpose.

1. In general, a forward biased *pn* junction diode has a resistance in the order of

(A) Ω

(B) KΩ

(C) MΩ

(D) GΩ

2. When a pentavalent impurity is added to silicon, it becomes

(A) an insulator

(B) an intrinsic semiconductor

(C) a p-type semiconductor

(D) an n-type semiconductor

3. Which of the following is an elemental semiconductor?

(A) Si

(B) Ge

(C) GaAs

(D) Both (A) and (B)

4. Consider an intrinsic semiconductor whose effective mass of electrons is slightly greater than the effective mass of holes. Then the intrinsic Fermi level of the semiconductor lies

(A) above the middle of the energy band gap of the semiconductor

(B) below the middle of the energy band gap of the semiconductor

(C) at the middle of the energy band gap of the semiconductor

(D) above the conduction band energy level of the semiconductor

5. At T = 300K, the electron concentration of silicon is 5×10^4 cm^{-3}. If the intrinsic carrier concentration of silicon at 300K is $1{\cdot}5 \times 10^{10}$ cm^{-3}, then the concentration of hole is

(A) $4{\cdot}5 \times 10^{15}$ cm^{-3}

(B) $3{\cdot}5 \times 10^{14}$ cm^{-3}

(C) $3{\cdot}2 \times 10^{9}$ cm^{-3}

(D) $4{\cdot}2 \times 10^{13}$ cm^{-3}

6. At T = 300K, a silicon sample is doped with arsenic at a concentration of 3×10^{15} cm^{-3} and with boron at a concentration of 2×10^{14} cm^{-3}. The material is

(A) a p-type semiconductor

(B) an intrinsic semiconductor

(C) a n-type semiconductor

(D) a degenerate semiconductor

7. Consider a metal with work function φ_m and a semiconductor with work function φ_s. A Schottky Junction between the metal and semiconductor will be formed

(A) if $\varphi_m > \varphi_s$ for *n*-type semiconductor.

(B) if $\varphi_m < \varphi_s$ for *n*-type semiconductor.

(C) if $\varphi_m < \varphi_s$ for *p*-type semiconductor.

(D) Both (A) and (C)

8. Consider an *n*-channel JFET with a channel thickness of 0·75μm and channel doping concentration of 10^{16} cm^{-3} at T = 300K. If the dielectric constant of the channel is 11·7, then the pinch-off voltage of the JFET is

(A) 4·35 V

(B) 3·52 V

(C) 5·30 V

(D) 2·50 V

9. Which of the following properties is not related to the characteristics of FET?

(A) FET is a low noise device

(B) Thermal runaway problem is not associated with FET

(C) Gain bandwidth is high for FET amplifier

(D) FET is simplier to fabricate

10. For an ideal *p-n* junction diode, the forward and reverse resistances are

(A) 0, 1

(B) 0, $\propto$

(C) 1, $\propto$

(D) 0, 0

11. Which type of etching process is preferred to make the photoresist immune to etchants?

(A) Wet etching

(B) Chemical etching

(C) Plasma etching

(D) Both (A) and (B)

12. One of the following methods is not suitable for the formation of an uniform *p-n* junction.

(A) Diffusion

(B) Vapor Phase Epitaxy

(C) Ion implantation

(D) Molecular Beam Epitaxy

13. Which of the following is added as an impurity to *p*-type material in diffusion process?

(A) P_2O_5

(B) $POCl_3$

(C) B_2O_3

(D) Any of the above

14. For commercial integrated circuits, the interconnections are made using which of the following metals?

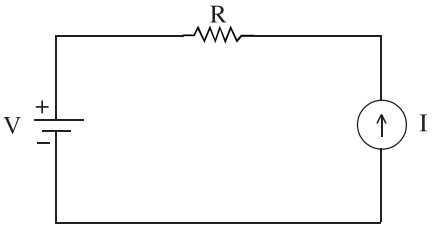
(A) Copper

(B) Gold

(C) Zinc

(D) Aluminium

15. For the network shown in the figure the voltage across the current source is



(A) V – IR

(B) V + IR

(C) 0

(D) IR – V

16. An impedance function has following poles and zeros:

poles : – 1 and – 3

zeros : – 2 and – 4

It has its value $z(o) = 8$. Then $z(s)$ is given by

(A) $\dfrac{s^2+4s+3}{s^2+6s+8}$

(B) $\dfrac{s^2+6s+8}{s^2+4s+3}$

(C) $\dfrac{3s^2+18s+24}{s^2+4s+3}$

(D) $\dfrac{3s^2+12s+9}{s^2+6s+8}$

17. If a two-port network with usual notation is reciprocal then the relation that holds good is

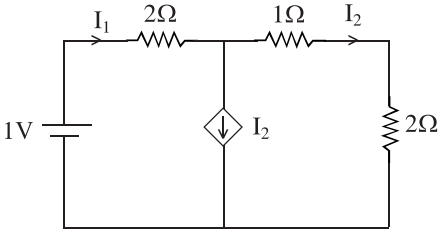
(A) $h_{12} = h_{21}$

(B) $h_{12} = -h_{21}$

(C) $h_{11} = h_{22}$

(D) $\Delta h = 1$

18. In the given circuit, the current supplied by the battery in ampere is given as



(A) 0A

(B) 1A

(C) $\frac{1}{5}$ A

(D) $\frac{2}{5}$ A

19. The maximum frequency in a band limited signal $x(t)$ is 5 kHz. Then the maximum frequency in $x(t)\cos(2000\pi t)$ in kHz is

(A) 10 kHz

(B) 6 kHz

(C) 5 kHz

(D) 2 kHz

20. If $Y(s)$ be the Laplace Transform of the function $y(t)$, then the final value of the function is

(A) $\lim_{s\to 0} Y(s)$

(B) $\lim_{s\to \infty} sY(s)$

(C) $Lim_{s\to 0}\, sY(s)$

(D) $Lim_{s\to \infty}\, sY(s)$

21. Give $X(z) = \frac{z}{(z-a)^2}$ with $|z| > a$, then residue of $X(z)\, z^{n-1}$ at $z = a$ for $n \geq 0$ will be

(A) na^{n-1}

(B) na^{n}

(C) a^{n-1}

(D) a^{n}

22. The slope of asymptotic Bode Magnitude Plot is integer multiple of

(A) $\pm$ 3 dB/decade

(B) $\pm$ 40 dB/decade

(C) $\pm$ 6 dB/octave

(D) $\pm$ 12 dB/octave

23. For a periodic signal $v(t) = 30\sin(100\pi t) + 10\cos(300\pi t) + 6\sin\left(500\pi t + \frac{\pi}{4}\right)$, the fundamental frequency in Hz is

(A) 50

(B) 100

(C) 300

(D) 500

24. How many complex multiplications are needed to be performed for each N-point FFT?

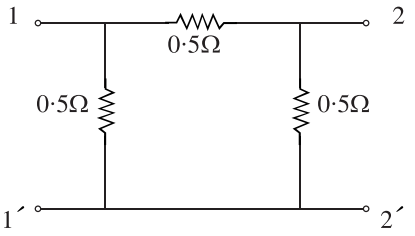
(A) $\frac{N}{2}\log N$

(B) $N\log_2 N$

(C) $\frac{N}{2}\log_2 N$

(D) None of the above

25. For the two-port network shown below, the short circuit admittance parameter matrix is



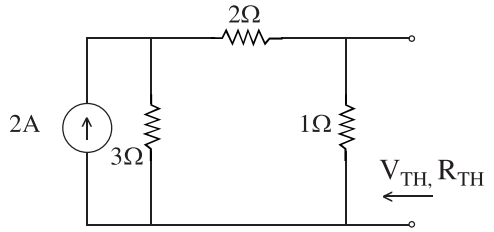
(A) $\begin{bmatrix} 1 & -0{\cdot}5 \\ -0{\cdot}5 & 1 \end{bmatrix} s$

(B) $\begin{bmatrix} 1 & 0{\cdot}5 \\ 0{\cdot}5 & 1 \end{bmatrix} s$

(C) $\begin{bmatrix} 4 & 2 \\ 2 & 4 \end{bmatrix} s$

(D) $\begin{bmatrix} 4 & -2 \\ -2 & 4 \end{bmatrix} s$

26. The Thevenin voltage V_{TH} and resistance R_{TH} for the following circuit is



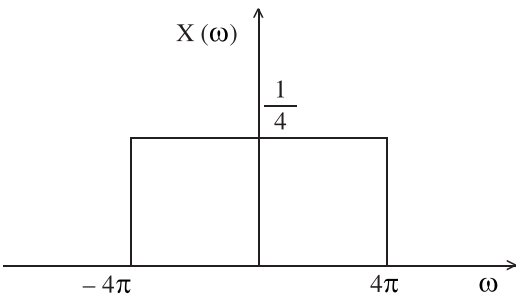
(A) $-2\text{V}, \frac{6}{5}\ \Omega$

(B) $1\text{V}, \frac{5}{6}\ \Omega$

(C) $2\text{V}, \frac{5}{6}\ \Omega$

(D) $-1\text{V}, \frac{6}{5}\ \Omega$

27. The figure shows the spectrum of a signal X (ω). The signal in time domain can be expressed as



(A) $x(t) = \dfrac{\sin(2\pi t)}{2\pi t}$

(B) $x(t) = \dfrac{\sin(4t)}{4t}$

(C) $x(t) = \dfrac{\sin(4\pi t)}{4\pi t}$

(D) $x(t) = \dfrac{4\sin(2\pi t)}{\pi t}$

28. Which of the following statements is FALSE for Fourier series expansion of the given signals?

(A) An odd signal contains only sine terms.

(B) A signal with even symmetry does not have a dc term.

(C) The signal $x(t) = \sin^2 t$ has a dc term.

(D) A periodic signal can have both sine and cosine terms.

29. The dc base bias voltage of a *npn* silicon transistor is 10V and input base resistor is 100 KΩ. The approximate value of the base current is

(A) 9·3 μA

(B) 0·93 μA

(C) 930 μA

(D) 93 μA

30. The maximum efficiency of a half-wave rectifier is

(A) 33·3%

(B) 40·6%

(C) 66·6%

(D) 72·9%

31. What is IC 723?

(A) A voltage regulator

(B) An astable multivibrator

(C) A bistable multivibrator

(D) Class A amplifier

32. Which of the following is an example for fixed negative voltage regulator?

(A) IC 7805

(B) IC 7905

(C) IC 7906

(D) IC 565

33. The base-width modulation due to applied collector voltage in a transistor is known as

(A) Hall effect

(B) Early effect

(C) Miller effect

(D) Zener effect

34. For a fixed bias circuit of a FET, the drain current is fixed at 1 mA. The value of the source current is

(A) 0·1 mA

(B) 1 mA

(C) 2 mA

(D) 0 A

35. A_v, A_i and A_p represent the voltage gain, current gain and power gain of an amplifier. Which of the following is *not* the correct expression for the corresponding values in decibel?

(A) Current gain : $20 \log_{10} A_i(dB)$

(B) Voltage gain : $20 \log_{10} A_v(dB)$

(C) Power gain : $20 \log_{10} A_p(dB)$

(D) Power gain : $10 \log_{10} A_p(dB)$

36. Negative feedback is employed in

(A) Oscillators

(B) Rectifiers

(C) Amplifiers

(D) Both (A) and (B)

37. Which of the following oscillator circuits use a split capacitor in its tank circuit?

(A) RC phase shift oscillator

(B) Colpitt's oscillator

(C) Hartley oscillator

(D) Wien bridge oscillator

38. An ideal OP-AMP is supposed to have

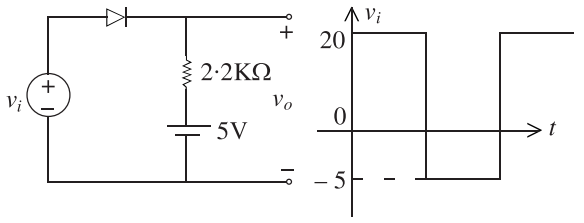
(A) infinite input impedance.

(B) zero output impedance.

(C) infinite bandwidth.

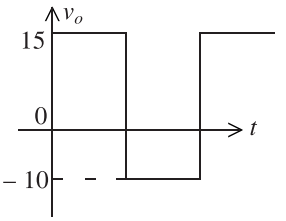
(D) All of the above

39. Consider the diode circuit and input voltage waveform v_i shown in the figure:

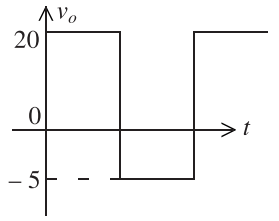


If the diode is an ideal diode, which of the following waveforms represent v_o corresponding to v_i?

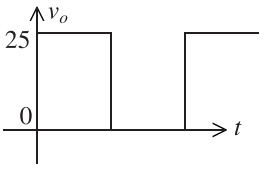
(A)



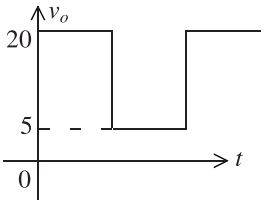
(B)



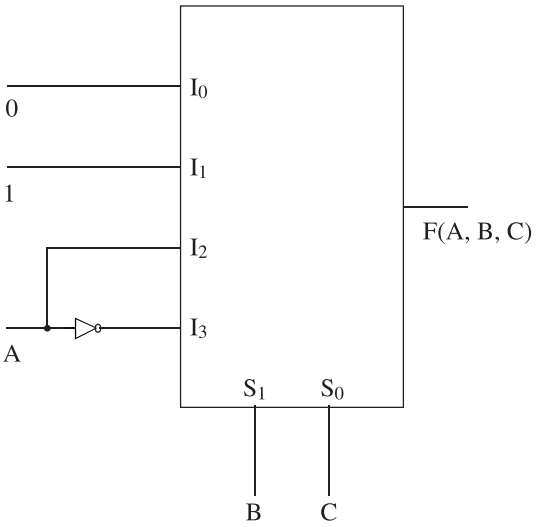
(C)



(D)



40. A 4 × 1 MUX is used to implement a 3-input Boolean function as shown below:



The implemented Boolean function, F(A, B, C), in the above figure is

(A) $F(A, B, C) = \Sigma (0, 2, 4, 7)$

(B) $F(A, B, C) = \prod (0, 2, 4, 7)$

(C) $F(A, B, C) = \Sigma (1, 3, 5, 7)$

(D) $F(A, B, C) = \prod (1, 3, 5, 7)$

41. The minimum number of 2 to 1 multiplexers required to realize a 4 to 1 multiplexer is

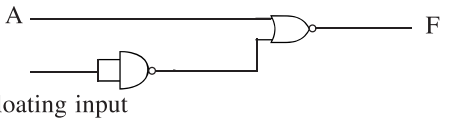
(A) 1

(B) 2

(C) 3

(D) 4

42. Two TTL gates are connected as shown in the following figure:



For the given inputs, the output F is

(A) 0

(B) 1

(C) A

(D) $\overline{A}$

43. The Boolean expression, $x + \overline{y}\,z$, is a simplified version of the expression, $x\,\overline{y} + x\,\overline{y}\,z + xyz$, only if there were a don't care entry, which is none other than

(A) $\overline{x}\ \overline{y}\ \overline{z}$

(B) $\overline{x}\ \overline{y}\ z$

(C) $\overline{x}\ y\ \overline{z}$

(D) $\overline{y}\ z$

44. The Boolean expression

$$(AB + CD)\,(\overline{A} + \overline{B})\,(\overline{C} + \overline{D})$$

simplifies to

(A) $AB + CD$

(B) $\overline{AB + CD}$

(C) 0

(D) 1

45. The number of distinct Boolean expressions of three variables is

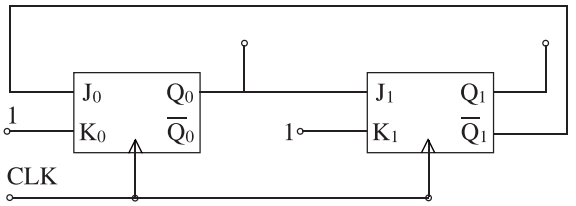
(A) 256

(B) 128

(C) 64

(D) 32

46. The figure shows a mod-K counter. The value of K in this case is



(A) 1

(B) 2

(C) 3

(D) 4

47. 16 KB (= 16,384 Bits) memory array is designed as a square with an aspect ratio of one (no. of rows is equal to number of columns). The minimum number of address lines needed for the row decoder is

(A) 10

(B) 8

(C) 7

(D) 4

48. A 0 to 5 counter consists of three flip-flops and a combinational circuit of two-input gate(s). The combinational circuit consists of

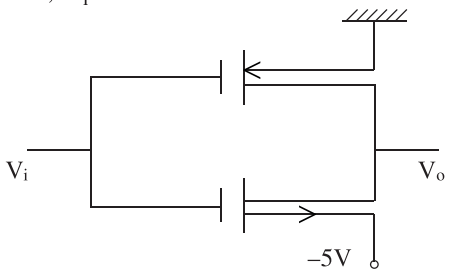
(A) one AND gate

(B) one OR gate

(C) one AND gate and one OR gate

(D) two AND gates

49. The threshold voltage for each transistor in Figure below is 2V. For this circuit to work as an inverter, V_i must take the values



(A) – 5V and 0V

(B) – 5V and 5V

(C) 0V and 5V

(D) – 3V and 3V

50. Which of the following has the highest priority in 8085 microprocessor?

(A) RST 6·5

(B) TRAP

(C) RST 7·5

(D) RST 5·5

51. In 8086 microprocessor, the address bus is

(A) 12 bit wide

(B) 10 bit wide

(C) 20 bit wide

(D) 16 bit wide

52. Status register is also called as

(A) Accumulator

(B) Stack

(C) Counter

(D) Flags

53. The index register of a microprocessor is used to hold

(A) Offset address

(B) Segment memory

(C) Memory register

(D) Offset memory

54. The 16 bit flag of 8086 microprocessor is responsible to indicate

(A) the condition of memory

(B) the result of addition

(C) the result of subtraction

(D) the condition of result of ALU operation

55. In 8086 microprocessor, the stack segment may have a memory block of a maximum of

(A) 64 K bytes

(B) 32 K bytes

(C) 16 K bytes

(D) 8 K bytes

56. Consider a vector field $\vec{A}(\vec{r})$. The closed loop line integral $\int \vec{A} \cdot \overrightarrow{dl}$ can be expressed as

(A) $\iint \left(\nabla \times \vec{A}\right) \cdot \overrightarrow{ds}$ over the closed surface bounded by the loop.

(B) $\iiint \left(\nabla \cdot \vec{A}\right) \overrightarrow{dv}$ over the closed volume bounded by the loop.

(C) $\iiint \left(\nabla \cdot \vec{A}\right) \overrightarrow{dv}$ over open volume bounded by the loop.

(D) $\iint \left(\nabla \times \vec{A}\right) \cdot \overrightarrow{ds}$ over open surface bounded by the loop.

57. A vector $\vec{p}$ is given by $\vec{p} = x^3 y\, \vec{a}_x - x^2 y^2\, \vec{a}_y - x^2 yz\, \vec{a}_z$. Which one of the following statements is true?

(A) $\vec{p}$ is solenoidal but not irrotational

(B) $\vec{p}$ is irrotational, but not solenoidal

(C) $\vec{p}$ is neither solenoidal nor irrotational

(D) $\vec{p}$ is both solenoidal and irrotational

58. In a source free region in vacuum, if the electrostatic potential $\phi = 2x^2 + y^2 + cz^2$, the value of constant c must be

(A) -2

(B) -3

(C) -4

(D) -5

59. Given the vector $A = \cos x \sin y\, \hat{a}_x + \sin x \cos y\, \hat{a}_y$, where $\hat{a}_x$, $\hat{a}_y$ denote unit vectors along x, y directions, respectively. The magnitude of curl of A is

(A) 0

(B) 1

(C) 2

(D) $\sin x$

60. Poynting theorem represents

(A) conservation of charges

(B) conservation of momentum

(C) conservation of energy

(D) conservation of voltage

61. A thin dipole antenna is $\frac{\lambda}{15}$ long. If its loss resistance is 1·2Ω, the efficiency is

(A) 41·1%

(B) 59%

(C) 74·5%

(D) 25·5%

62. A PIN diode is

(A) a metal semiconductor point contact diode

(B) a microwave mixer diode

(C) often used as a microwave oscillator

(D) suitable to use as a microwave switch

63. The frequency of oscillation of a Klystron depends on

(A) cavity dimension

(B) d.c. voltage

(C) distance between the two cavities

(D) repeller voltage

64. The major advantage of a TWT over a Klystron lies in the

(A) higher bandwidth

(B) higher gain

(C) higher frequency

(D) higher output

65. The length of the active region is 5μm for an IMPATT diode. If the carrier drift velocity is 10^5m/s, calculate its resonant frequency.

(A) 1 GHz

(B) 10 GHz

(C) 100 GHz

(D) 0·1 GHz

66. Radiation loss in transmission line can be reduced by

(A) increasing diameter of the conductors

(B) increasing resistance of the conductors

(C) reducing the spacing between the conductors

(D) increasing spacing between the conductors

67. Keeping other parameter constant when the range of radar is made double then the receivable power becomes

(A) $\frac{1}{2}$ of previous

(B) $\frac{1}{4}$ th of previous

(C) $\frac{1}{8}$ th of previous

(D) $\frac{1}{16}$ th of previous

68. The cut-off wavelength of the dominant mode propagating down a rectangular waveguide of dimension $a \times b$ will be

(A) $2a$

(B) a

(C) $2b$

(D) b

69. A network has a Noise Figure of 100. If an input signal of 50 dB higher than the noise level is fed at the input of the network, then the Signal to Noise Ratio (SNR) at the output of the network is

(A) 50 dB

(B) 48 dB

(C) 52 dB

(D) 54 dB

70. The heterodyning effect in a Super Heterodyne receiver is achieved by

(A) a combination of mixer and local oscillator

(B) a cascaded stage of tunable Radio Frequency (RF) amplifiers

(C) a stage of Intermediate Frequency (IF) amplifier driven at a pre-specified frequency

(D) a stage of Frequency Multiplier with proper multiplication factor

71. For a Double Side Band Suppressed Carrier (DSBSC) Amplitude Modulated (AM) signal, $y(t) = \cos 1000\pi t \cos 10,000\pi t$, the Upper Side Band (USB) and Lower Side Band (LSB) of the spectrum are located at

(A) USB at 5·5 kHz and LSB at 4·5 kHz.

(B) USB at 5 kHz and LSB at 4 kHz.

(C) USB at 11 kHz and LSB at 9 kHz.

(D) USB at 10 kHz and LSB at 8 kHz.

72. An FM signal is applied to a frequency multiplier system with multiplier factor of 2. Which of the following is correct about the output signal?

(A) The frequency deviation is doubled, while the modulating signal bandwidth remains same

(B) The frequency deviation and the modulating signal bandwidth both are doubled

(C) The frequency deviation and the modulating signal bandwidth both remain same

(D) The frequency deviation remains same while the modulating signal bandwidth is doubled

73. In an optical fiber, the refractive index of the cladding material should be

(A) nearly one

(B) very low

(C) less than that of core

(D) more than that of core

74. Which of the wireless technologies used in IoT consumes least amount of power?

(A) Zigbee

(B) Wi-Fi

(C) CDMA

(D) Bluetooth

75. A GSM system uses 25 MHz for the forward link which is broken into radio channels of 200 kHz. If 8 speech channels are supported on a single radio channel and no guard band is assumed, find the number of simultaneous users that can be accommodated in GSM.

(A) 500

(B) 2000

(C) 1000

(D) 1500

76. In case of satellite communication

(A) Uplink frequency > Downlink frequency

(B) Downlink frequency > Uplink frequency

(C) Downlink frequency = Uplink frequency

(D) It can be either (A) or (B) depending on the modulation

77. Each user uses the same frequency spectrum all the time without interference. This is the principle of

(A) TDMA

(B) FDMA

(C) CDMA

(D) SDMA

78. The maximum instantaneous phase transition in Quadrature Phase Shift Keying (QPSK) modulated signal is

(A) $\pm 90^{o}$

(B) $\pm 180^{o}$

(C) $\pm 135^{o}$

(D) $\pm 45^{o}$

79. For a Discrete Memory less Source (DMS), calculate the information content of symbol 'x_i', if the probability of occurrence of the symbol 'x_i' is $\frac{1}{4}$.

(A) 2 bits

(B) 1 bit

(C) 4 bits

(D) 3 bits

80. Quantization noise in PCM depends on

(A) amplitude of the analog signal

(B) number of quantization levels

(C) number of samples produced per second

(D) frequency of the analog signal

81. The frequency range of a standard telephone channel is

(A) 88 MHz to 108 MHz

(B) 300 Hz to 3400 Hz

(C) 4 kHz to 40 kHz

(D) 20 Hz to 20 kHz

82. A Double Balanced Modulator related to Amplitude Modulation (AM) will suppress

(A) only message signal

(B) only carrier signal

(C) both side bands

(D) both message signal and carrier signal

83. The line code(s) that has/have zero dc component for pulse transmission of random binary data is

(A) NRZ

(B) RZ

(C) AMI

(D) Both (B) and (C)

84. Which of the following statements is/are correct about the matched filter in a communication receiver?

(i) The peak value of the output is the energy of the input

(ii) The output has a duration that is twice the duration of the input (T)

(iii) The impulse response for input $x(t)$ is $h(t) = x(T - t)$

(iv) It maximizes the ratio of output peak power to the input signal power.

(A) (i), (ii), (iii) and (iv)

(B) Only (ii) and (iii)

(C) Only (iii)

(D) (i), (ii) and (iii)

85. Usually the forward voltage triggering method is not used to turn on the thyristor because

(A) it increases losses.

(B) it may damage the junction and destroy the device.

(C) it causes noise production.

(D) it is relatively an inefficient method.

86. With the anode positive with respect to the cathode and the gate circuit open, the thyristor is said to be in the

(A) reverse blocking state

(B) reverse conducting mode

(C) forward conduction mode

(D) forward blocking mode

87. The value of anode current required to maintain the conduction of an SCR even though the gate signal is removed is called as the

(A) Holding current

(B) Switching current

(C) Latching current

(D) Peak anode current

88. The number of roots of $s^3 + 5s^2 + 7s + 3 = 0$ in the left half of the s-plane is

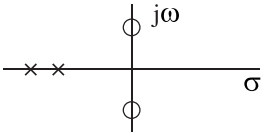
(A) zero

(B) one

(C) two

(D) three

89. The pole-zero below correspond to a



(A) Band pass filter

(B) Low pass filter

(C) High pass filter

(D) Notch filter

90. If the closed loop transfer function of a control system is given as $T(s) = \dfrac{s-5}{(s+2)(s+3)}$, then it is

(A) unstable system

(B) a non-minimum phase system

(C) an uncontrollable system

(D) a minimum phase system

91. The difference between the indicated value and the true value of a quantity is known as

(A) Gross error

(B) Absolute error

(C) Dynamic error

(D) Relative error

92. Normal EEG frequency range is

(A) 50 — 500 Hz

(B) 0·5 — 50 Hz

(C) 0·05 — 5 Hz

(D) 1 — 200 Hz

93. The material used in limb surface electrode for ECG is

(A) German silver
(B) Copper
(C) Gold
(D) Platinum

94. Which of the following is used to capture data from physical world in IoT device?

(A) Sensors
(B) Actuators
(C) Microprocessors
(D) Microcontrollers

95. The trace on an oscilloscope continuously moves to the right of the screen when

(A) the sweep signal is triggered
(B) the sweep period is larger than the signal period
(C) the sweep period is smaller than the signal period
(D) there is no sweep

96. Which one of the following is an active transducer?

(A) Photo-voltaic cell
(B) Strain gauge
(C) Photo-emissive cell
(D) Synchro

97. Semiconductor strain gauge is preferred than metal strain gauge because

(A) higher gauge factor
(B) lower cost
(C) smaller in size
(D) higher sensitivity

98. The ohm meter section of a multimeter can not measure resistance more than 20 MΩ, because

(A) low voltage of internal battery
(B) dial reading limits
(C) probes are not so sensitive
(D) meter will get damage

99. An ideal current meter should have

(A) zero resistance
(B) finite resistance
(C) infinite resistance
(D) very large resistance

100. Temperature coefficient of resistance for a thermistor is

(A) low and negative
(B) low and positive
(C) high and negative
(D) high and positive

Space for Rough Work

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