BASIC ELECTRONICS (2nd CS/IT)

MCQ

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1. A semiconductor is formed by ..... bonds.
A. Covalent
B. Electrovalent
C. Co-ordinate
D. None of the above
ANS:- A

2. A semiconductor has ..... temperature coefficient of resistance.
A .Positive
B. Zero
C. Negative
D. None of the above
ANS:- C

3. The most commonly used semiconductor is ..... Germanium
A. Silicon
B. Carbon
C. Sulphur
ANS:- B

4. A semiconductor has generally ..... valence electrons.
A. 2
B. 3
C. 6
D. 4
ANS:- D

5. When a pure semiconductor is heated, its resistance.....
A. Goes up
B. Goes down

C. Remains the same
D. Can’t say
ANS:- B

6. The strength of a semiconductor crystal comes from.....
A. Forces between nuclei
B. Forces between protons
C. Electron-pair bonds
D. None of the above
ANS:- C

7. When a pentavalent impurity is added to a pure semiconductor, it becomes.....
A. An insulator
B. An intrinsic semiconductor
C. p-type semiconductor
D. n-type semiconductor

ANS:- D

8. Addition of pentavalent impurity to a semiconductor creates many.....
A. Free electrons
B. Holes
C. Valence electrons
D. Bound electrons

ANS: - A

9. A pentavalent impurity has..... Valence electrons
A. 3
B. 5
C. 4
D. 6
ANS: - B

10. An n-type semiconductor is .....
A. Positively charged
B. Negatively charged

C. Electrically neutral
D. None of the above
ANS: - C

11. A trivalent impurity has .....valence electrons
A. 4
B. 5
C. 6
D. 3
ANS:- D

12. Addition of trivalent impurity to a semiconductor creates many .....
A.Holes
B. Free electrons
C. Valence electrons
D. Bound electrons
ANS:- A

13. A hole in a semiconductor is defined as .....
A. A free electron
B. The incomplete part of an electron pair bond
C. A free proton
D. A free neutron
ANS:- B

14. The impurity level in an extrinsic semiconductor is about .....of pure semiconductor.
A. 10 atoms for 108 atoms
B. 1 atom for 108 atoms
C. 1 atom for 104 atoms
D. 1 atom for 100 atoms
ANS:- B

15. As the doping to a pure semiconductor increases, the bulk resistance of the semiconductor .....

A. Remains the same
B. Increases
C. Decreases
D. None of the above
ANS:- C

16. A hole and electron in close proximity would tend to .....
A. Repel each other
B. Attract each other
C. Have no effect on each other
D. None of the above
ANS:- B

17. In a semiconductor, current conduction is due to .....
A. Only holes
B. Only free electrons
C. Holes and free electrons
D. None of the above
ANS:- C

18. The random motion of holes and free electrons due to thermal agitation is called .....
A. Diffusion
B. Pressure
C. Ionisation
D. None of the above

ANS:- A

19. The barrier voltage at a pn junction for germanium is about .....
A. 5 V
B. 3 V
C. Zero
D. 3 V
ANS:- D

20. In the depletion region of a pn junction, there is a shortage of .....
A. Acceptor ions

B. Holes and electrons
C. Donor ions
D. None of the above
ANS:- B

21. A reverse bias pn junction has .....
A. Very narrow depletion layer
B. Almost no current
C. Very low resistance
D. Large current flow
ANS:- B

22. A pn junction acts as a .....
A. Controlled switch
B. Bidirectional switch
C. Unidirectional switch
D. None of the above
ANS:- C

23. The leakage current across a pn junction is due to .....
A. Minority carriers
B. Majority carriers
C. Junction capacitance
D. None of the above
ANS:- A

24. When the temperature of an extrinsic semiconductor is increased, the pronounced effect is on.....
A. Junction capacitance
B. Minority carriers
C. Majority carriers
D. None of the above
ANS:- B

25. With forward bias to a p-n junction, the width of depletion layer.....

A. Decreases
B. Increases
C. Remains the same
D. None of the above
ANS:- A

26. The leakage current in a p-n junction is of the order of
A. Aa
B. mA
C. kA
D. Ma

ANS:- D

27. A crystal diode has .....
A. onepn junction
B. twopn junctions
C. threepn junctions
D. none of the above
ANS: 1

28. A crystal diode has forward resistance of the order of .....
A. kΩ
B. Ω
C. MΩ
D. none of the above
ANS: B

29. If the arrow of crystal diode symbol is positive w.r.t. bar, then diode is .....biased.
A. forward
B. reverse
C. either forward or reverse
D. none of the above
ANS: A

30. The forward voltage drop across a silicon diode is about .....
A. 2.5 V
B. 3 V
C. 10 V
D. 0.7 V
ANS: D

31. A crystal diode is used as .....
A. an amplifier
B. a rectifier
C. an oscillator
D. a voltage regulator
ANS: B

32. An ideal crystal diode is one which behaves as a perfect .....when forward biased.
A. conductor
B. insulator
C. resistance material
D. none of the above
ANS: A

33. If the temperature of a crystal diode increases, then leakage current .....
A. remains the same
B. decreases
C. increases
D. becomes zero
ANS: C

34. The PIV rating of a crystal diode is .....that of equivalent vacuum diode
A. the same as
B. lower than
C. more than
D. none of the above

ANS: B

35. If the doping level of a crystal diode is increased, the breakdown voltage.....
A. remains the same
B. is increased
C. is decreased
D. none of the above
ANS: C

36. The knee voltage of a crystal diode is approximately equal to .....
A. applied voltage
B. breakdown voltage
C. forward voltage
D. barrier potential
ANS: D

37. When the graph between current through and voltage across a device is a straight line, the device is referred to as .....
A. linear
B. active
C. nonlinear
D. passive
ANS: A

38. When the crystal current diode current is large, the bias is .....
A. forward
B. inverse
C. poor
D. reverse
ANS: A

39. A crystal diode is a ..... device
A. non-linear
B. bilateral
C. linear
D. none of the above
ANS: A

ANS: 2

40. When a crystal diode is used as a rectifier, the most important consideration is .....
A. forward characteristic
B. doping level
C. reverse characteristic
D. PIC rating
ANS: D

41. If the doping level in a crystal diode is increased, the width of depletion layer.....
A. remains the same
B. is decreased
C. in increased
D. none of the above
ANS: C

42. A zener diode has .....
A. onepn junction
B. twopn junctions
C. threepn junctions
D. none of the above
ANS: A

43. A zener diode is used as .....
A. an amplifier
B. a voltage regulator
C. a rectifier
D. a multivibrator
ANS: B

44. The doping level in a zener diode is ..... that of a crystal diode
A. the same as
B. less than
C. more than
D. none of the above
ANS: C

45. A zener diode is always ..... connected.
A. reverse
B. forward
C. either reverse or forward
D. none of the above
ANS: A

46. A zener diode utilizes .....characteristics for its operation.
A. forward
B. reverse
C. both forward and reverse
D. none of the above
ANS: B

47. In the breakdown region, a zenerdidoe behaves like a .....
source.
A. constant voltage
B. constant current
C. constant resistance
D. none of the above
ANS: A

48. A zener diode is destroyed if it.....
A. is forward biased
B. is reverse biased
C. carrier more than rated current
D. none of the above
ANS: C

49. A series resistance is connected in the zener circuit to..... properly
A. reverse bias the zener
B. protect the zener
C. properly forward bias the zener
D. none of the above
ANS: B

50. A zener diode is ..... device
A. a non-linear

B. a linear
C. an amplifying
D. none of the above
ANS: A

51. The disadvantage of a half-wave rectifier is that the.....
A. components are expensive
B. diodes must have a higher power rating
C. output is difficult to filter
D. none of the above
ANS: C

52. If the a.c. input to a half-wave rectifier is an r.m.s value of 400/√2 volts, then diode PIV rating is .....
A. 400/√2 V
B. 400 V
C. 400 x √2 V
D. none of the above
ANS: B

53. The ripple factor of a half-wave rectifier is .....
A. 2
B. 1.21
C. 2.5
D. 0.48
ANS: D

54. There is a need of transformer for .....
A. half-wave rectifier
B. centre-tap full-wave rectifier
C. bridge full-wave rectifier
D. none of the above
ANS: B

55. The PIV rating of each diode in a bridge rectifier is ..... that of the equivalent centre-tap rectifier
A. one-half

B. the same as
C. twice
D. four times
ANS: A

56. A half-wave rectifier has an input voltage of 240 V r.m.s. If the step-down transformer has a turns ratio of 8:1, what is the peak load voltage? Ignore diode drop.
A. 27.5 V
B. 86.5 V
C. 30 V
D. 42.5 V
ANS: D
57. The maximum efficiency of a half-wave rectifier is .....
A. 40.6 %
B. 81.2 %
C. 50 %
D. 25 %
ANS: A
58. A transistor has .....
A. onepn junction
B. twopn junctions
C. threepn junctions
D. fourpn junctions
ANS : B
59. The number of depletion layers in a transistor is .....
A. four
B. three
C. one
D. two
ANS : D
60. The base of a transistor is .....doped
A. heavily
B. moderately
C. lightly

D. none of the above
ANS : C
61. The element that has the biggest size in a transistor is .....
A. collector
B. base
C. emitter
D. collector-base-junction
ANS : A
62. In a p-n-p transistor, the current carriers are .....
A. acceptor ions
B. donor ions
C. free electrons
D. holes
ANS : D
63. A transistor is a ..... operated device
A. current
B. voltage
C. both voltage and current
D. none of the above
ANS : A
64. The emitter of a transistor is ..... doped
A. lightly
B. heavily
C. moderately
D. none of the above
ANS : B
65. In a transistor, the base current is about..... of emitter current
A. 25%
B. 20%
C. 35 %
D. 5%
ANS: D
66. The input impedance of a transistor is .....
A. high

B. low
C. very high
D. almost zero
ANS : B

67. The current IB is .....
A. electron current
B. hole current
C. donor ion current
D. acceptor ion current
ANS : A
68. In a transistor .....
A. IC = IE + IB
B. IB = IC + IE
C. IE = IC – IB
D. IE = IC + IB
ANS : D
69. IC = aIE+ .....
A. IB
B. ICEO
C. ICBO
D. ßIB
ANS : C
70. The output impedance of a transistor is .....
A. high
B. zero
C. low
D. very low
ANS : A
71. In a tansistor, IC = 100 mA and IE = 100.2 mA. The value of ß
is .....
A. 100
B. 50
C. about 1
D. 200

ANS : D

72. The relation between ß and a is .....

A. ß = 1 / (1 – a)

B. ß = (1 – a) / a

C. ß = a / (1 – a)

D. ß = a / (1 + a)

ANS : C

73. The value of ß for a transistor isgenerally .....

A. 1

B. less than 1

C. between 20 and 500

D. above 500

ANS : C

74. The voltage gain of a transistor connected in common collector arrangement is .....

A. equal to 1

B. more than 10

C. more than 100

D. less than 1

ANS : D

75. ICEO = (.....) ICBO

A. ß

B. 1 + a

C. 1 + ß

D. none of the above

ANS : C

76. In a transistor, signal is transferred from a ..... circuit

A. high resistance to low resistance

B. low resistance to high resistance

C. high resistance to high resistance

D. low resistance to low resistance

ANS : B

77. A heat sink is generally used with a transistor to .....

A. increase the forward current

B. decrease the forward current

C. compensate for excessive doping
D. prevent excessive temperature rise
ANS : D

78. A non inverting closed loop op amp circuit generally has a gain factor
A. Less than one
B. Greater than one
C. Of zero
D. Equal to one
Answer :- B.

79. If ground is applied to the (+) terminal of an inverting op-amp, the (–) terminal will
A. Not need an input resistor
B. Be virtual ground
C. Have high reverse current
D. Not invert the signal
Answer:- B.

80. The closed-loop voltage gain of an inverting amplifier equal to
A. The ratio of the input resistance to feedback resistance
B. The open-loop voltage gain
C. The feedback resistance divided by the input resistance
D. The input resistance
Answer:- C

81. An ideal OP-AMP is an ideal
A. Current controlled Current source
B. Current controlled voltage source
C. Voltage controlled voltage source
D. voltage controlled current source
Answer:- C.
.
82. The ideal OP-AMP has the following characteristics.
A. Ri=∞, A=∞,R0=0
B. Ri=0,A=∞,R0=0
C. Ri=∞ ,A=∞ ,R0=∞

d. Ri=0 ,A=∞ ,R0=∞
Answer:- A.

83. How many op-amps are required to implement this
equation
A. 2
B. 3
C. 4
D. 1
Answer :-D.

84. How many op-amps are required to implement this equation Vo = V1
A. 4
B. 3
C. 2
D. 1
Answer :- D.

85. An ideal OP-AMP is an ideal
A. Current controlled Current source
B. Current controlled Voltage source
C. Voltage controlled Voltage source
D. Voltage controlled Current source
Answer :- C
86.A 741-Type OP-AMP has a gain-bandwith product of 1MHz. A non-inverting amplifier using this opamp& having a voltage gain of 20db will exhibit -3db bandwidth of
A. 50KHz
B. 100KHz
C. 1000/17KHz
D. 1000/7.07KHz
Answer :- A
87. The ideal OP-AMP has the following characteristics
A. Ri=∞,A=∞,R0=0

B. Ri=0,A=∞,R0=0
C. Ri=∞,A=∞,R0=∞
D. Ri=0,A=∞,R0=∞
Answer :- A

88) A differential amplifier has a differential gain of 20,000. CMMR=80dB. The common mode gain is given by
A. 2
B. 1
C. 1/2
D. 0
Answer :- A
89 In the differential voltage gain & the common mode voltage gain of a differential amplifier are 48db & 2db respectively, then its common mode rejection ratio is
A. 23dB
B. 25dB
C. 46dB
D. 50dB
Answer :- C
90. In which of the following base systems is 123 not a valid number?
A. Base 10
B. Base 16
C. Base8
D. Base 3
Ans:D
91. Storage of 1 KB means the following number of bytes
A. 1000
B. 964
C. 1024
D. 1064
Ans:C
92. What is the octal equivalent of the binary number:
10111101

A. 675
B. 275
C. 572
D. 573.
Ans:B

93.The binary code of (21.125)10 is
A.10101.001
B. 10100.001
C. 10101.010
D. 10100.111.
Ans: A
94.A NAND gate is called a universal logic element because
A. it is used by everybody
B. any logic function can be realized by NAND gates alone
C. all the minization techniques are applicable for optimum NAND gate realization
D.many digital computers use NAND gates.
Ans:B
95. The number 1000 would appear just immediately after
A. FFFF (hex)
B. 1111 (binary)
C. 7777 (octal)
D. All of the above.
Ans:D
96. (1(10101)2 is
A. (37)10
B.(69)10
C. (41)10
D.— (5)10
Ans:A
97. A hexadecimal odometer displays F 52 F. The next reading will be
A. F52E
B. G52F
C. F53F
D. F53O.

Ans:D

98. Positive logic in a logic circuit is one in which

A. logic 0 and 1 are represented by 0 and positive voltage respectively

B.logic 0 and, -1 are represented by negative and positive voltages respectively

C. logic 0 voltage level is higher than logic 1 voltage level

D. logic 0 voltage level is lower than logic 1 voltage level.

Ans: D

99. Which of the following gate is a two-level logic gate

(a) OR gate

(b) NAND gate

(c) EXCLUSIVE OR gate

(d) NOT gate.

Ans: C

100. An AND gate will function as OR if

A. all the inputs to the gates are “1”

B. all the inputs are ‘0’

C. either of the inputs is “1”

D. all the inputs and outputs are complemented.

Ans:D

101. NAND. gates are preferred over others because these

A. have lower fabrication area

B. can be used to make any gate

C. consume least electronic power

D. provide maximum density in a chip.

Ans:B

102. In case of OR gate, no matter what the number of inputs, a

A. 1 at any input causes the output to be at logic 1

B. 1 at any input causes the output to be at logic 0

C. 0 any input causes the output to be at logic 0

D. 0 at any input causes the output to be at logic 1.

Ans: A

103. Excess-3 code is known as

A. Weighted code

B. Cyclic redundancy code

C. Self-complementing code

D. Algebraic code.

Ans:C

104. Indicate which of the following three binary additions are correct?

1.1011 + 1010 = 10101

II. 1010 + 1101 = 10111

III. 1010 + 1101 = 11111

A. I and II

B. II and III

C. III only

D. II and III

Ans: D