

UNIT I

Introduction to Electronics

1. The process by which impurities are added to a pure semiconductor is

- a. Diffusing
- b. Drift
- c. Doping
- d. Mixing

Ans: c

2. When an atom gains or losses an ion it is said to be

- a. Ionised
- b. Bonded
- c. Excited
- d. stabilized

Ans: a

3. Barrier potential for silicon diode

- a. 0.3
- b. 0.4
- c. 0.7
- d. 0.1

Ans: c

4. The manufacturer of diode provides the detail information about diode, in the form of

- a. excel sheet
- b. Data Sheet
- c. Log sheet
- d. None of above

Ans: b

5. In a semiconductor, the energy gap between valence band and conduction band is about.....

- a. 5 eV
- b. 10 eV
- c. 15 eV
- d. 1 eV

Ans: d

6. A semiconductor diode has forward resistance of the order of

- a. Ω
- b. $K\Omega$
- c. $M\Omega$
- d. none of the above

Ans: a

7. The reverse current in a diode is of the order of

- a. μA
- b. mA
- c. A
- d. KA

Ans: a

8. A reverse-biased diode acts like

- a. open switch
- b. closed switch
- c. small resistance
- d. none of the above

Ans: a

9. The potential barrier at a PN-junction is due to the charges on either side of the junction. These charges are.....

- a. minority carriers
- b. majority carriers
- c. both majority and minority carriers

d. fixed donor and acceptor ions

Ans: d

10. When we apply reverse bias to a junction diode, it

- a. lowers the potential barrier
- b. raises the potential barrier
- c. greatly increases the minority-carrier current
- d. greatly increases the majority-carrier current

Ans: b

11. The turn-on voltage of a Ge junction diode is nearly..... volts.

- a. 0.7
- b. 0.3
- c. 1
- d. 0.1

Ans: b

12. If a pure silicon crystal has one million free electrons inside it, how many holes does it have?

- a. One million
- b. two million
- c. zero
- d. ten million

Ans: a

13. A strong electric field across a P-N junction that causes covalent bond to break apart is called

- a. avalanche breakdown
- b. reverse breakdown
- c. Zener Breakdown
- d. Low voltage break down

Ans: c

14. Resistivity of semiconductor depends on...

- a. shape of the semiconductor
- b. atomic nature of semiconductor
- c. width of semiconductor
- d. length of semiconductor

Ans : b

15. At room temperature, the current in the intrinsic semiconductor is due to....

- a. Holes
- b. electrons
- c. ions
- d. holes and electrons

Ans : d

16. If the temperature of an extrinsic semiconductor is increased so that the intrinsic carrier concentration is doubled, then

- a. The majority carrier density doubles
- b. the minority carrier density is doubled
- c. the minority carrier density becomes 4 times the original value
- d. both majority and minority carrier densities double

Ans : c

17. When holes leave the p-material to fill electrons in the n-material the process is called

- a. Mixing
- b. Depletion
- c. Diffusion
- d. Depletion

Ans : c

18. Diffusion current in the diode is caused by

- a. Chemical energy
- b. heat energy
- c. voltage

d. crystal formation

Ans : a

19. Depletion region in a pn diode is due to

- a. reverse biasing
- b. forward biasing
- c. an area created by crystal doping
- d. an area void of current carriers

Ans: a

20. When a diode is forward biased

- a. Barrier potential increases
- b. Barrier potential decreases
- c. Majority current reduces
- d. Minority current reduces

Ans: b

21. The p-n junction forms device called

- a. Triac
- b. Diode
- c. multiplexer .
- d. Semiconductor

Ans: b

22. The normal forward biased operation of diode is

- a. Below the knee point
- b. at the origin
- c. above knee point
- d. all the above

Ans: c

23. In diode reverse current is due to

- a. Mobile donor ions
- b. Mobile acceptor ions
- c. minority carriers
- d. majority carriers

Ans: c

24. Reverse characteristic of diode is plotted in

- a. 1st Quadrant
- b. 2nd Quadrant
- c. 3rd Quadrant
- d. 4th Quadrant

Ans: c

25. In an unbiased PN-junction, the junction current at equilibrium is

- a. due to diffusion of minority carriers only
- b. due to diffusion of majority carriers only
- c. zero, because equal but opposite carriers are crossing the junction
- d. zero, because no charges are crossing the junction

Ans: c

26. In a PN-junction diode, holes diffuse from the P region to the N region because

- a. the free electrons in the N region attract them
- b. they are swept across the junction by the potential difference
- c. there is greater concentration of holes in the P region as compared to N region
- d. none of the above

Ans: c

27. The number of minority carriers crossing the junction of a diode depends primarily on the

- a. concentration of doping impurities
- b. magnitude of the potential barrier
- c. magnitude of the forward-bias voltage
- d. rate of thermal generation of electron –hole pairs

Ans: d

28. The forward bias applied to a PN- junction diode is increased from zero to higher values. Rapid increase in the current flow for a relatively small increase in voltage occurs

- a. immediately
- b. only after the forward bias exceeds the potential barrier
- c. when the flow of minority carriers is sufficient to cause an avalanche breakdown
- d. when the depletion area becomes larger than the space-charge area

Ans: b

29. If the arrow of a semiconductor diode symbol is positive w.r.t. bar, then diode is.....biased.

- a. reverse
- b. forward
- c. none of the two
- d. forward or reverse

Ans: b

30. The leakage current in a semiconductor diode is due to.....

- a. minority carriers
- b. majority carriers
- c. junction capacitance
- d. none of the above

Ans: a

31. The ideal value of reverse resistance of diode is

- a. high
- b. infinite
- c. zero
- d. very low

Ans: b

32. The ideal value of forward resistance of diode is

- a. high
- b. infinite
- c. zero
- d. very low

Ans: c

33. Rectifier converts

- a. a.c. voltage to d.c.voltage
- b. a.c voltage to pulsating d.c.voltage
- c. d.c voltage to a.c. voltage
- d. a.c voltage to a.c voltage

Ans: b

34. Efficiency of half wave rectifier is

- a. 81.20%
- b. 40.60%
- c. 45.6 %
- d. 82.10%

Ans: b

35. No. of diodes used in full wave rectifier is

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

Ans: b

36. In a full-wave rectifier, the current in each of the diodes flows for

- a. the complete cycle of the input signal
- b. half cycle of the input signal
- c. less than half cycle of the input signal
- d. zero time

Ans: b

37. The peak value of the input to a half wave rectifier is 10V. the approximate peak value of the output is

- a. 10 V
- b. 3.18V
- c. 10.7V
- d. 9.3V

Ans: d

38. The total secondary voltage in a centre tapped full wave rectifier is 125 V rms. Neglecting the diode drop, the rms output voltage is

- a. 125V
- b. 177V
- c. 100V
- d. 62.5V

Ans: d

39. a half-wave rectifier, the peak value of the ac voltage across the secondary of the transformer is 20V $\sqrt{2}$ V. If no filter circuit is used, the maximum dc voltage across the load will be

- a. 28.28 V
- b. 14.14 V
- c. 20 V
- d. 9 V

Ans: d

40. What is the frequency of the capacitor ripple voltage in a full-wave rectifier circuit if the frequency of the transformer secondary voltage is 60 Hz?

- a. 60Hz
- b. 50Hz
- c. 120Hz
- d. this is impossible to determine

Ans: c

41. What is the dc output voltage of an unfiltered half-wave rectifier whose peak output voltage is 9.8 V?

- a. 6.23 V
- b. 19.6 V
- c. 9.8 V
- d. 3.1 V

Ans: d

42. If V_m is the peak voltage across the secondary of the transformer in a half-wave rectifier (without any filter circuit), then the maximum voltage on the reverse biased diode is

- a. V_m
- b. $\frac{1}{2} V_m$
- c. $2 V_m$
- d. none of the above

Ans: a

43. If you are checking a 60 Hz full wave bridge rectifier and observe that the output has 60Hz ripple

- a. the circuit is working properly
- b. there is an open diode
- c. the transformer secondary is shorted
- d. the filter capacitor is leaky

Ans: b

42. Efficiency of half wave rectifier is

- a. 81.20%
- b. 40.60%
- c. 45.60%
- d. 82.1 %

Ans: b

43. Ripple factor of full wave rectifier is

- a. 0.122

- b. 0.4
- c. 0.48
- d. 0.05

Ans: c

44. Efficiency of bridge rectifier is

- a. 81.2 %
- b. 40.6 %
- c. 45.60%
- d. 82.1 %

Ans: a

45. In an unbiased PN-junction, the junction current at equilibrium is

- a. due to diffusion of minority carriers only
- b. due to diffusion of majority carriers only
- c. zero, because equal but opposite carriers are crossing the junction
- d. zero, because no charges are crossing the junction

Ans: c

46. If V_m is the peak voltage across the secondary of the transformer in a full-wave rectifier with a shunt capacitor filter circuit, then the maximum voltage on the reverse biased diode is

- a. V_m
- b. $\frac{1}{2} V_m$
- c. $2 V_m$
- d. both A and B

Ans: c

47. What is the dc output voltage of an unfiltered half-wave rectifier whose peak output voltage is 9.8 V?

- a. 6.23 V
- b. 19.6 V

- c. 9.8 V
- d. 3.1 V

Ans: d

48. What is the frequency of the capacitor ripple voltage in a full-wave rectifier circuit if the frequency of the transformer secondary voltage is 60 Hz?

- a. 60Hz
- b. 50 Hz
- c. 120 Hz
- d. this is impossible to determine

Ans: c

49. The output from an unfiltered half-wave or full wave rectifier is --

- a. a pulsating dc
- b. steady dc voltage
- c. smooth dc voltage
- d. none of the above

Ans: a

50. What is the approximate dc output voltage from a filtered bridge rectifier whose peak output voltage is 30V?

- a. 19.1 V
- b. 9.5 V
- c. 30 V
- d. none of the above

Ans: c

51. A half wave rectified sinusoidal waveform has a peak voltage of 12V. Its average value and rms value of the fundamental components are; respectively given by

- a. $15/\pi$ V, 7.5 V
- b. $20/\pi$ V, $10/\sqrt{2}$ V
- c. $12/\pi$ V, 6 V

d. none of these

Ans: c

52. In a bridge rectifier circuit we use

- a. no centre-tapping and diode having peak inverse voltage V_m
- b. no centre tapping and diode having inverse voltage $2V_m$
- c. centre tapping and diode having reverse voltage V_m
- d. centre- tapping and diode having reverse voltage $2V_m$

Ans: a

53. A device converting a.c. to d.c. is called

- a. comparator
- b. inverter
- c. rectifier
- d. regulator

Ans: c

53. PIV rating of diode in a bridge rectifier is

- a. V_m
- b. $2V_m$
- c. $V_m/2$
- d. none of these

Ans: a

54. In HWR the peak value of ac voltage across secondary of transformer is $20\sqrt{2}$ V if no filter circuit is used, the maximum d.c. voltage across the load will be

- a. 28.28 V
- b. 14.14 V
- c. 20 V
- d. 9 V

Ans: d

55. If V_m is the peak voltage across secondary of transformer in HWR (without any filter circuit. , then the maximum voltage on reverse biased diode is

- a. V_m
- b. $1/2V_m$
- c. $2V_m$
- d. none of the above

Ans: a

56. If V_m is the peak voltage across secondary of transformer in HWR ,if we use shunt capacitor filter, the maximum voltage that occurs on reverse biased diode is

- a. V_m
- b. $1/2V_m$
- c. $2V_m$
- d. none of the above

Ans: a

57. In Center tap FWR V_m is the peak voltage between center tap and one end of secondary, the maximum voltage that occurs on reverse biased diode is

- a. V_m
- b. $1/2V_m$
- c. $2V_m$
- d. none of the above

Ans: c

58. In HWR the load current flows for

- a. the complete cycle of input signal.
- b. only for positive half cycle of input signal.
- c. less than half cycle of input signal.
- d. more than half cycle but less than complete cycle of input signal.

Ans: b

59. What is the dc output voltage of an unfiltered half-wave rectifier whose peak output voltage is 9.8 V?

- a. 6.23 V
- b. 19.6 V
- c. 9.8 V
- d. 3.1 V

Ans : d

60. What is the frequency of the capacitor ripple voltage in a full-wave rectifier circuit if the frequency of the transformer secondary voltage is 60 Hz?

- a. 60Hz
- b. 50 Hz
- c. 20 Hz
- d. this is impossible to determine

Ans: c

61. In a full-wave rectifier, the dc load current equals 1A. How much dc current is carried by each diode?

- a. $\frac{1}{2}$ A
- b. 1 A
- c. 2 A
- d. 0 A

Ans: a

62. A half wave rectified sinusoidal waveform has a peak voltage of 12V. Its average value and rms value of the fundamental components are; respectively given by

- a. $\frac{15}{\pi}$ V, 7.5 V
- b. $\frac{20}{\pi}$ V, $\frac{10}{\sqrt{2}}$ V
- c. $\frac{12}{\pi}$ V, 6 V
- d. none of these

Ans: c

63. In a bridge rectifier circuit we use

- a. no centre-tapping and diode having peak inverse voltage V_m
- b. no centre tapping and diode having inverse voltage $2V_m$
- c. centre tapping and diode having reverse voltage V_m
- d. centre- tapping and diode having reverse voltage $2V_m$

Ans : a

64. In a full wave rectifier with R-C filter, the conduction angle θ of the diode is

- a. 0
- b. less than 180
- c. Equal to 180
- d. More than 0

Ans: b

65. The average value of a half wave rectified voltage with a peak value of 200V is

- a. 63.7V
- b. 127.3 V
- c. 141V
- d. 0V

Ans : a

66. When a 60 Hz sinusoidal voltage is applied to the input of a half wave rectifier, the output frequency is

- a. 120 Hz
- b. 30 Hz
- c. 60 Hz
- d. 0 Hz

Ans : c

67. The peak value of the input to a half wave rectifier is 10V. the approximate peak value of the output is

- a. 10 V
- b. 3.18 V
- c. 10.7 V
- d. 9.3 V

Ans :d

68. The average value of full wave rectified voltage with a peak value of 75V is

- a. 53 V
- b. 47.8 V
- c. 37.5 V
- d. 23.9 V

Ans :b

9. When a 60Hz sinusoidal voltage is applied to the input of a full wave rectifier, the output frequency is

- a. 120 Hz
- b. 60 Hz
- c. 240 Hz
- d. 0 V

Ans : a

70. The total secondary voltage in a centre tapped full wave rectifier is 125 V rms. Neglecting the diode drop, the rms output voltage is

- a. 125V
- b. 177 V
- c. 100 V
- d. 62.5 V

Ans : d

71. When the peak output voltage is 100V, the PIV for each diode in a centre- tapped full wave rectifier is(neglecting the diode drop.

- a. 100 V
- b. 200 V
- c. 141 V
- d. 50V

Ans : b

72. When the rms output voltage of a bridge full-wave rectifier is 20V, the peak –inverse voltage across the diodes is (neglecting the diode drop.

- a. 20 V
- b. 40 V
- c. 28.3 V
- d. 56.6 V

Ans : c

73. A 60 V peak full wave rectified voltage is applied to a capacitor input filter. If $f=120$ Hz, $R_L=10K\Omega$ and $C=10\mu F$, the ripple voltage is

- a. 0.6 V
- b. 6 mV
- c. 5 V
- d. 2.88 V

Ans : d

74. If one of the diodes in a bridge full wave rectifier opens, the output is

- a. 0V
- b. one-fourth the amplitude of the input voltage
- c. a half wave rectified voltage
- d. a 120Hz voltage

Ans : c

75. If you are checking a 60 Hz full wave bridge rectifier and observe that the output has 60Hz ripple

- a. the circuit is working properly
- b. there is an open diode
- c. the transformer secondary is shorted
- d. the filter capacitor is leaky

Ans : b

76. With a half wave rectified voltage across the load resistor, load current flows for what part of a cycle?

- a. 0 degree
- b. 90 degree
- c. 180 degree
- d. 360 degree

Ans : c

77. Suppose line voltage may be as low as 105 V rms or as high as 125 V rms in a half wave rectifier. With a 5 : 1 step down transformer, the minimum peak load voltage is closest to

- a. 21 V
- b. 25 V
- c. 29.7 V
- d. 35.4 V

Ans : c

78. The voltage out of a bridge rectifier is a

- a. half wave signal
- b. full wave signal
- c. bridge rectified signal
- d. sine wave

Ans : b

79. What is the peak load voltage in a full wave rectifier if the secondary voltage is 20 V rms?

- a. 0 V
- b. 0.7 V

- c. 14.1 V
- d. 28.3 V

Ans : c

80. We want a peak load voltage of 40 V out of a bridge rectifier. What is the approximate rms value of secondary voltage?

- a. 0 V
- b. 14.4 V
- c. 28.3 V
- d. 56.6 V

Ans : c

81. With a full wave rectified voltage across a load resistor, load current flows for what part of a cycle?

- a. 0 degree
- b. 90 degree
- c. 180 degree
- d. 360 degree

Ans : d

82. With the same secondary voltage and filter, which of the following has the most ripple?

- a. half wave rectifier
- b. full wave rectifier
- c. bridge rectifier
- d. impossible to say

Ans : a

83. With the same secondary voltage and filter which of the following produces the least load voltage?

- a. half wave rectifier
- b. full wave rectifier
- c. bridge rectifier
- d. impossible to say

Ans : a

84. If the filtered load current is 10 mA, which of the following has a diode current of 10 mA?

- a. half wave rectifier
- b. full wave rectifier
- c. bridge rectifier
- d. All above

Ans : d

85. The diodes in a bridge rectifier each have a maximum dc current rating of 2 A. this means the dc load current can have maximum value of

- a. 1 A
- b. 2 A
- c. 4 A
- d. 8 A

Ans : b

86. Efficiency of half wave rectifier is

- a. 81.2 %
- b. 40.6 %
- c. 45.6 %
- d. 82.1 %

Ans : b

87. Ripple factor of half wave rectifier is

- a. 2.122
- b. 1.112
- c. 1.211
- d. 2.11

Ans : c

88. Efficiency of full wave rectifier is

- a. 81.2 %
- b. 40.6 %
- c. 45.6 %
- d. 82.1 %

Ans : a

89. Ripple factor of full wave rectifier is

- a. 0.122
- b. 0.4
- c. 0.48
- d. 0.05

Ans : c

90. Efficiency of bridge rectifier is

- a. 81.2 %
- b. 40.6 %
- c. 45.6 %
- d. 82.1 %

Ans : a

91. Ripple factor of bridge rectifier is

- a. 0.122
- b. 0.4
- c. 0.48
- d. 0.05

Ans : c

92. In a full-wave rectifier, the current in each of the diodes flows for

- a. the complete cycle of the input signal
- b. half cycle of the input signal
- c. less than half cycle of the input signal
- d. zero time

Ans : b

93. To minimize the ripple content in the circuit

- a. Diode circuit is used
- b. filter circuit is used
- c. bridge circuit is used
- d. none of the above

Ans: b

94. What is the frequency of the capacitor ripple voltage in a full-wave rectifier circuit if the frequency of the transformer secondary voltage is 60 Hz?

- a. 60Hz
- b. 50Hz
- c. 120Hz
- d. this is impossible to determine

Ans: c

95. The ideal dc output voltage of a capacitor input filter is equal to

- a. the peak value of the rectified voltage
- b. the average value of the rectified voltage
- c. the rms value of the rectified voltage
- d. none of the above

Ans: a

96. A certain power supply filter produces an output with a ripple of 100 mV peak-to-peak and dc value of 20V. the ripple factor is

- a. 0.05
- b. 0.005
- c. 0.0005
- d. 0.02

Ans: b

97. Line regulation is determined by

- a. load current
- b. zener current and load current
- c. changes in load resistance and output voltage
- d. changes in output voltage and input voltage

Ans: d

98. Load regulation is determined by

- a. changes in load current and input voltage
- b. changes in load current and output voltage

- c. changes in load resistance and input voltage
- d. changes in zener current and load current

Ans: d

99. If you are checking a 60 Hz full wave bridge rectifier and observe that the output has 60Hz ripple

- a. the circuit is working properly
- b. there is an open diode
- c. the transformer secondary is shorted
- d. the filter capacitor is leaky

Ans: b

100. Types of filter are

- a. Capacitor input filter
- b. choke input filter
- c. resistor input filter
- d. both A and B

Ans: d

101. Due to large , capacitor holds its entire charge.

- a. charging current
- b. time constant
- c. discharging current
- d. none of these

Ans: b

102. Due to thetime constant the capacitor holds its entire charge.

- a. zero
- b. negative
- c. very large
- d. unity

Ans: c

103. For a HWR using $R_L=1500\Omega$, a capacitor filter is used with $C=100\mu\text{F}$ then its ripple factor at 50HZ is.....

- a. 0.115
- b. 0.577
- c. 0.0288
- d. 0.0385

Ans: d

104. For a FWR using $R_L=1000\Omega$, a capacitor filter is used with $C=100\mu\text{F}$ then its ripple factor at 50HZ is.....

- a. 0.115
- b. 0.577
- c. 0.0288
- d. 0.0385

Ans: c

105. In a HWR using capacitor filter of $50\mu\text{F}$, $E_{sm}=42\text{V}$ and $I_{dc}=2\text{ mA}$ then its output d.c. voltage is V.

- a. 41.6
- b. 42
- c. 41.8
- d. 55

Ans: a

106. In a FWR using capacitor filter of $50\mu\text{F}$, $E_{sm}=42\text{V}$ and $I_{dc}=2\text{ mA}$ then its output d.c. voltage is V.

- a. 41.6
- b. 42
- c. 41.8
- d. 55

Ans: c

107. As load resistance increases, the ripple factor of capacitor filter.....

- a. decreases
- b. increases
- c. remains constant
- d. none of these

Ans: a

108. As the value of filter capacitor decreases, the ripple factor of capacitor filter.....

- a. decreases
- b. increases
- c. both a and b
- d. None of the above

Ans: b

109. As the value of filter capacitor increases, the ripple factor of capacitor filter.....

- a. decreases
- b. increases
- c. both a and b
- d. None of the above

Ans: a

110. As load resistance decreases, the ripple factor of capacitor filter.....

- a. decreases
- b. increases
- c. remains constant
- d. none of these

Ans: b

111. As the value of filter capacitor increases.....

- a. ripple factor increases
- b. initial surge current increases
- c. regulation increases
- d. all of these

Ans: b

111. A capacitor of $470\mu\text{F}$ is used as filter for a FWR using maximum input voltage of 30V at 50 HZ. Then its output d.c. voltage is.....V if $R_L=100\Omega$.

- a. 35.55
- b. 25.94
- c. 27.96
- d. 39.54

Ans: c

112. A capacitor of $470\mu\text{F}$ is used as filter for a HWR using maximum input voltage of 30V at 50 HZ. Then its output d.c. voltage is.....V if $R_L=100\Omega$.

- a. 35.55
- b. 25.94
- c. 27.96
- d. 39.54

Ans: b

113. A capacitor of $100\mu\text{F}$ is used as a filter for HWR supplying a load of $R_L=1000\Omega$ then ripple factor is.....

- a. 0.002
- b. 0.048
- c. 0.0355
- d. 0.0577

Ans: d

114. A capacitor of $470\mu\text{F}$ is used as a filter for bridge rectifier supplying a load of $R_L=1000\Omega$ then ripple factor is.....

- a. 0.0288
- b. 0.00614
- c. 0.00355
- d. 0.00577

Ans: b

115. The output d.c. voltage of a rectifier using a capacitor filter is 20V while its ripple factor is 2.88% then the r.m.s. value of ripple voltage is ..

- a. 0.288
- b. 0.576
- c. 0.347
- d. 0.144

Ans: b

116. If the rms value of ripple voltage is 0.2886V then peak to peak value of the ripple voltage is.....V assuming triangular nature of the ripple voltage.

- a. 0.204
- b. 0.408
- c. 0.5
- d. 1

Ans: b

117. In a filter circuit.....is always connected in series with the load.

- a. resistor
- b. inductor
- c. capacitor
- d. none of these

Ans: b

118. Ripple factoras the value of filter capacitor increases.

- a. remains same
- b. decreases
- c. increases
- d. none of these

Ans: b

119. The ripple factor for the capacitor filter isfor FWR.

- a. $1/4\sqrt{3}fCRL$
- b. $1/2fCRL$
- c. $1/2\pi fCRL$
- d. $1/\pi fCRL$

Ans: a

120. The ripple factor for the capacitor filter isfor HWR.

- a. $1/4\sqrt{3}fCRL$
- b. $1/2fCRL$
- c. $1/2\pi fCRL$
- d. $1/2\sqrt{3}fCRL$

Ans: d

121. The ripple factor for the capacitor filter isfor Bridge FWR rectifier.

- a. $1/4\sqrt{3}fCRL$
- b. $1/2fCRL$
- c. $1/2\pi fCRL$
- d. $1/2\sqrt{3}fCRL$

Ans: a

122. If looking from the rectifier side, the first element in the filter is a capacitor then it is called filter.

- a. Choke input
- b. capacitor
- c. π
- d. RC

Ans: b

123. In a filter circuit is always connected in parallel with the load.

- a. resistor
- b. inductor
- c. capacitor

d. none of these

Ans: c

124. For FWR with capacitor filter, diode conducts for half cycle.

- a. less than
- b. more than
- c. equal to
- d. none of these

Ans: a

125. The circuits used to remove unwanted portion of waveform without disturbing the remaining part are called.....

- a. clampers
- b. clippers
- c. chopper
- d. integrator

Ans: b

126. The clipper circuits are also called as

- a. filters
- b. rectifiers
- c. limiters
- d. integrators

Ans: c

127. In a clamper, is necessary in addition to a diode.

- a. transistor
- b. inductor
- c. capacitor
- d. none of these

Ans: c

128. One of the application of zener diode is

- a. Clipper

- b. Clamper
- c. Voltage regulator
- d. all above

Ans: c

129. Clipper circuit are used for
- a. rectification
 - b. Removing part of wave form
 - c. Shifting of DC level
 - d. All

Ans: b

130. Clamper circuit are used for
- a. rectification
 - b. Removing part of wave form
 - c. Shifting of DC level
 - d. All

Ans: c

131. Positive clampers adds. DC voltage to the AC input
- a. Positive
 - b. negative
 - c. zero
 - d. both

Ans: a

132. The basic circuit of half wave doubler is
- a. Clamper
 - b. Rectifier
 - c. Clipper
 - d. Regulator

Ans: a

133. The basic circuit of full wave doubler is
- a. Clamper
 - b. Rectifier

- c. Clipper
- d. Regulator

Ans: b

134. Series Negative clipper will clip off
- a. positive half cycle of i/p
 - b. both half cycle of i/p
 - c. negative half cycle of i/p
 - d. none

Ans: c

135. Negative clampers add a DC voltage to the AC input
- a. Positive
 - b. negative
 - c. zero
 - d. both

Ans: b

136. Series Positive clipper will clip off
- a. positive half cycle of i/p
 - b. both half cycle of i/p
 - c. negative half cycle of i/p
 - d. none

Ans: a

137. In a series clipper, is connected in series with load.
- a. Diode
 - b. inductor
 - c. transistor
 - d. capacitor

Ans: a

138. In a Clipper, a diode is connected in parallel with the load.
- a. series

- b. combinational
- c. parallel
- d. two way

Ans: c

139. A negative clipper clips off.....portion of the input waveform.

- a. positive
- b. negative
- c. peak
- d. none of these

Ans: b

140. A positive clipper clips off..... portion of the input waveform.

- a. positive
- b. negative
- c. peak
- d. none of these

Ans: a

141. In a series clipper, for a clipping region, the diode must be incondition.

- a. forward biased
- b. reverse biased
- c. none of these
- d. a and b

Ans: b

142. In a series clipper, for a transmitting region, the diode must be in condition.

- a. forward biased
- b. reverse biased
- c. none of these
- d. a and b

Ans: a

143. In a series clipper, the slope of the transfer characteristics in transmitting region is.....

- a. zero
- b. unity
- c. infinite
- d. negative

Ans: b

144. In a series clipper, the slope of the transfer characteristics in clipping region is.....

- a. zero
- b. unity
- c. infinite
- d. negative

Ans: a

145. In a parallel clipper, $V_o = V_{in}$ can be obtained in transmitting region by making.....

- a. $R_1 \gg R_L$
- b. $R_1 = R_L$
- c. $R_1 \ll R_L$
- d. none of these

Ans: c

146. In a combinational clipper, when both the diodes are off, it produces action.

- a. clipping
- b. transmitting
- c. exponential
- d. none of these

Ans: b

147. In aclamper, the capacitor gets charged during first quarter of the negative cycle of the input.

- a. positive
- b. negative

- c. combinational
- d. two way

Ans: c

Ans: a

148. In aclamper, the capacitor gets charged during first quarter of the positive cycle of the input.

- a. positive
- b. negative
- c. combinational
- d. two way

152 is action used in multiplier.

- a. clipping
- b. Clamping
- c. rectifying
- d. slicing

Ans: b

Ans: b

149. Once charged to peak value, a capacitor acts as..... in a clamper.

- a. filter
- b. multiplier
- c. battery
- d. rectifier

153. In a half wave voltage doubler, the capacitor charges in -----

- a. alternate half cycle
- b. each half cycle
- c. first positive half cycle
- d. none of these

Ans: a

Ans: c

150. In a clamper, the analysis must start considering that part of the input which

- a. reverse biases the diode
- b. forward biases the diode
- c. discharges the capacitor
- d. none of these

154. The voltage regulation of multipliers is

- a. very good
- b. poor
- c. zero
- d. none of these

Ans: b

Ans: b

151 is assumed in the clamper.

- a. capacitor charges exponentially and discharges instantly.
- b. capacitor charges instantly and discharges instantly.
- c. capacitor charges instantly and does not discharge at all.
- d. capacitor charges exponentially and discharges exponentially.

155. ----- is not required in Voltage multipliers

- a. Center tap transformer
- b. Diode
- c. Capacitor
- d. None of these

Ans: a

156. PIV of diode in Full wave doubler is

- a. V_m
- b. $2V_m$
- c. $3V_m$
- d. none

Ans: b

157. The basic circuit of half wave doubler is

- a. Clamper
- b. Rectifier
- c. Clipper
- d. Regulator

Ans: a

158. The zener diode is generally operated in

- a. Forward breakdown region
- b. reverse breakdown region
- c. middle breakdown region
- d. all above

Ans: b

159. One of the application of zener diode is

- a. Clipper
- b. Clamper
- c. Voltage regulator
- d. all above

Ans: c

160. A zener diode.....

- a. has a high forward-voltage rating
- b. has a sharp breakdown at low reverse voltage
- c. is useful as an amplifier
- d. has a negative resistance

Ans: b

161. The doping level in a zener diode is that of a semiconductor diode.

- a. more than
- b. less than
- c. the same as
- d. none of the above

Ans: a

162. A 12 V zener diode has a 1W power rating.

What is the maximum rated zener current?

- a. 120 mA
- b. 83.3 mA
- c. 46.1 mA
- d. 1A

Ans: b

163. A general purpose diode is more likely to suffer avalanche breakdown rather than zener breakdown because

- a. its leakage current is small
- b. it has weak covalent bonds
- c. it is lightly doped
- d. it has low reverse resistance

Ans: c

164. Once a zener diode goes into breakdown, its doesn't change much

- a. voltage
- b. current
- c. dynamic impedance
- d. capacitance

Ans: a

165. Load regulation is determined by

- a. changes in load current and input voltage
- b. changes in load current and output voltage
- c. changes in load resistance and input voltage
- d. changes in zener current and load current

Ans: b

166. For a certain 12 V zener diode, a 10 mA change in zener current produces a 0.1 V change in zener voltage. The Zener impedance for this current range is

- a. 1 W
- b. 100 W
- c. 10 W
- d. 0.1 W

Ans: c

167. If the load resistance increases in a zener regulator, the zener current

- a. decreases
- b. stays the same
- c. increases
- d. equals the source voltage divided by the series resistance

Ans: c

168. Practically zener diodes are operated in

- a. Forward breakdown region
- b. reverse breakdown region
- c. middle breakdown
- d. all above

Ans: b

169. A zener diode has.....

- a. one pn-junction
- b. two pn-junctions
- c. three pn-junctions
- d. none of the above

Ans: a

170. A zener diode is operated in the following mode as a voltage stabilizer

- a. reverse bias
- b. forward bias
- c. beyond the breakdown region
- d. reverse bias around the knee of breakdown region

Ans: d

171. For a certain 12 V zener diode, a 10 mA change in zener current produces a 0.1 V change in zener voltage. The Zener impedance for this current range is

- a. 1 ohm
- b. 100 ohm
- c. 10 ohm
- d. 0.1 ohm

Ans: b

172. An optical diode which emits light when forward biased is

- a. LED
- b. LCD
- c. TFT
- d. None of above

Ans: a

173. The color of emitted light decided by

- a. Semiconductor material
- b. Wavelength
- c. type
- d. all above

Ans: a

174. The approximate voltage drop across a forward-biased LED is

- a. 0.3 V
- b. 0.7 V
- c. 5.6 V
- d. 2.0 V

Ans: d

175. LEDs have replaced incandescent lamps in many applications because they have.....

- a. a lower operating voltage
- b. a longer life
- c. . faster on-off switching

d. all the advantages as a, b, c, d

Ans: d

176. A display using seven LEDs is called

- a. bar graph display
- b. seven segment display
- c. matrix display
- d. none of these

Ans: b

177. Which of the following group of letters can be displayed on seven segment display?

- a. A, C
- b. b, d
- c. F, C
- d. all of these

Ans: d

178. The internal resistance of a photodiode

- a. increases with light intensity when reverse biased
- b. decreases with light intensity when reverse biased
- c. increases with light intensity when forward biased
- d. decreases with light intensity when forward biased

Ans: b

179. To display the digit 0 in a seven segment indicator

- a. C must be off
- b. G must be off
- c. F must be on
- d. all segments must be lighted

Ans: b

180. As compared to a silicon rectifier diode, an LED has a

- a. lower forward voltage and lower breakdown voltage
- b. lower forward voltage and higher breakdown voltage
- c. higher forward voltage and lower breakdown voltage
- d. higher forward voltage and higher breakdown voltage

Ans: c

181. Types of seven segment display are

- a. Common anode type
- b. common gate type
- c. common cathode type
- d. both A and B

Ans: d

182. An infrared LED is optically coupled to a photodiode. When the LED is turned off, the reading on an ammeter in series with the reverse biased photodiode will

- a. not change
- b. decrease
- c. increase
- d. fluctuate

Ans: b

183. The semiconductor material used for LED is

- a. Gallium Arsenide
- b. gallium bromide
- c. Silicon
- d. Germanium

Ans: a

184. The graph of _____ is called spectral response of LED.

- a. Forward Voltage Vs wavelength
- b. Current Vs forward voltage
- c. current Vs forward voltage
- d. light output Vs wavelength

Ans: d

185. The LED emits light when _____ biased.

- a. reverse
- b. unbiased
- c. forward
- d. none of these

Ans: d

186. The LED works on the principle of

- a. fluroscence
- b. hall effect
- c. electroluminescene
- d. none of these

Ans: c

187. GaAsP LEDs are used to produce _____ color light.

- a. red
- b. green
- c. orange
- d. white

Ans: a

188. The _____ controls the brightness of LED.

- a. Forward voltage
- b. Forward current
- c. Material used
- d. none of these

Ans: b

189. A photodiode operates in ___ condition.

- a. reverse biased

- b. forward biased
- c. parallel with load
- d. none of these

Ans: a

190. _____ is always operated in reverse biased condition.

- a. LED
- b. Photodiode
- c. Transistor
- d. Rectifier

Ans: b

191. The current in photodiode increases as the light intensity.

- a. remains same
- b. decreases
- c. increases
- d. none of these

Ans: c

192. The dark current in photodiode is due to _____ charge carriers.

- a. majority
- b. minority
- c. both the
- d. none of these

Ans: b

193. The photodiode is _____ device.

- a. photoemitter
- b. photorejector
- c. photodetector
- d. none of these

Ans: d

194. The luminous efficiency of LEDs is _____.

- a. high

- b. low
- c. zero
- d. none of these

Ans: b

195. The luminous efficiency of LEDs is measured in_____.

- a. lumens/watt
- b. watts/lumen
- c. lumens/degree C
- d. lumens/ampere

Ans: a

196. _____is used in optocouplers.

- a. Zener
- b. LED
- c. SCR
- d. Transformer

Ans: b

197. The photodiode current under no light is called_____current.

- a. forward
- b. maximum
- c. dark
- d. none of these

Ans: c

198. The dark current of photodiode is always

- a. large
- b. very small
- c. zero
- d. infinite

Ans: b

199. Photo current is directly proportional to ____

- a. forward current

- b. reverse current
- c. intensity of light
- d. none of these

Ans: c

200. The intensity of light is measured in _____.

- a. Lm/A
- b. Lm/W
- c. Lm/w2
- d. Lm/m2

Ans: d

201. The photodiode characteristics lies in _____quadrant.

- a. first
- b. second
- c. third
- d. fourth

Ans: c

202. The current is photodiode is due to _____ carriers.

- a. majority
- b. minority
- c. both
- d. none of these

Ans: b

203. The LED is_____device.

- a. photoemitter
- b. photorejector
- c. photodetector
- d. none of these

Ans: a

204. A photodiode converts_____.

- a. light energy into chemical energy

- b. chemical energy into electrical energy
- c. light energy into electrical energy
- d. electrical energy into light energy

Ans: c

205. A LED converts_____.

- a. light energy into chemical energy
- b. chemical energy into electrical energy
- c. light energy into electrical energy
- d. electrical energy into light energy

Ans: d