UNIT 3 – DIODES AND TRANSISTOR

1. Intrinsic semiconductors are those
A. Which are made of semiconductor material in its purest form
B. Which has zero energy gap
C. Which has more electrons than holes
D. Which are available locally

2. A pure semiconductor behaves like an insulator at 0^0 K because
A. There is no recombination of electrons with holes
B. Drift velocity of free electrons is very small
C. Free electrons are not available for current conduction
D. None of these

3. Intrinsic semiconductor at room temperature will have, ... available for conduction
A. Electrons
B. Holes
C. Both electrons and holes
D. None of the above

4. To obtain n-type semiconductor , the impurity added to a pure semiconductor is
A. Trivalent
B. Tetravalent
C. Pentavalent
D. None of the above

5. To obtain p-type semiconductor , the impurity added to a pure semiconductor is
A. Trivalent
B. Tetravalent
C. Pentavalent
D. None of the above

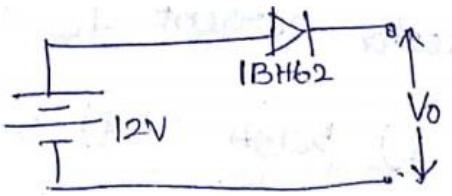
6. For a germanium PN junction the maximum value of barrier potential is
A. 0.3 V
B. 0.1 V
C. 1.3 V
D. 1.7 V

7. Which of the below mentioned statements is false regarding a p-n junction diode?
A. Diode are uncontrolled devices
B. Diodes are rectifying devices
C. Diodes are unidirectional devices
D. Diodes have three terminals

8. During reverse bias, a small current develops known as
A. Forward current
B. Reverse current
C. Reverse saturation current
D. Active current

9. If the voltage of the potential barrier is V_0. Applied input voltage is V, then, at what moment will the barrier disappear?
A. $V< V_0$
B. $V= V_0$
C. $V> V_0$
D. $V<< V_0$

10. What will be the output of the following circuit? (Assume 0.7V drop across the diode)



A. 12V
B. 12.7V
C. 11.3V Ans = 12V − 0.7V = 11.3V = V_o
D. 0V

11.Zener diodes are also known as
A. Voltage regulators
B. Forward bias diode
C. Breakdown diode
D. None of the mentioned

12. Zener diode is designed to specifically work in which region without getting damaged?
A. Active region
B. Breakdown region
C. Forward bias
D. Reverse bias

13. What is the level of doping in Zener Diode?
A. Lightly Doped
B. Heavily Doped
C. Moderately Doped
D. No doping

14. **Amplifiers and oscillators using BJT**, **operate in** _____ region.
A. Inverted mode
B. Active mode
C. Cut off mode
D. Saturation mode

15. When transistors are used in digital circuits, they usually operate in the
A. Active region
B. Breakdown region
C. Saturation and cut off regions
D. Linear region

16. A transistor has a β_{DC} of 250 and a base current, I_B, of 20 μA. The collector current, I_C, equals
A. 500 mA
B. 5mA
C. 50mA
D. 5A

Ans: $\beta = \frac{I_c}{I_B} \Rightarrow 250 = \frac{I_c}{20\times10^{-6}}$

$I_C = 5mA$

$= 5000 \times 10^{-6}$

$I_c = 5mA$

17. A current ratio of I_C/I_E is usually less than one and is called:
A. Beta
B. Theta
C. Alpha
D. Omega

18. A JFET is also called _____ transistor
A. unipolar
B. bipolar
C. uni-junction
D. none of the above

19. A JFET is a _____ driven device
A. current
B. voltage
C. both current and voltage
D. none of the above

20.The gate of a JFET is _____ biased
A. reverse
B. forward
C. reverse as well as forward
D. none of the above

21. The input impedance of a JFET is _____ that of an ordinary transistor
A. equal to
B. less than
C. more than
D. none of the above

22. In a JFET, I_{DSS} is known as _____
A. drain to source current
B. drain to source current with gate shorted
C. drain to source current with gate open
D. none of the above

23. A MOSFET uses the electric field of a _____ to control the channel current
A. capacitor
B. battery
C. generator
D. none of the above

24. A n-channel D-MOSFET with a positive V_{GS} is operating in _____
A. the depletion-mode
B. the enhancement-mode
C. cut off
D. saturation