1. With a neat diagram explain the working of a PN-junction diode under forward bias. Draw the variation of forward current with respect to the forward voltage for both Si and Ge diodes.

2. Explain the V-I characteristics of the diode using Shockley's equation.

3. With a neat diagram explain the working of a PN-junction diode under No bias, Reverse bias and forward bias

4. Explain the difference between AC resistance and Dynamic AC resistance of a diode. From Shockley's equation, derive the expression for the AC resistance of the diode.

5. Explain the different types of breakdown that occur in diodes.

6. Explain the three models of a diode with the help of VI characteristics and equivalent circuits.

7. What is the difference between the characteristics of a simple switch and that of an practical diode?

8. Define Logical Operations and types of Basic Logical operations

9. Realize Logical OR Operations using Diodes

10. The reverse saturation current of a Germanium diode is 200µA at room temperature of 27˚C. Calculate the current in forward biased condition, if forward biased voltage is 0.2V at room temperature. If temperature is increased by 30˚C, calculate the reverse saturation current and the forward current for the same forward voltage at new temperature.

11. Determine the diode current at 20˚C for a silicon diode with Is =50 nA and an applied forward bias of 0.6 volts.

12. The reverse saturation current of a Si diode is 2pA at 27˚C. Determine the forward biased voltage across the diode at 57˚C, if the forward current through the diode at 57˚C is 50mA. Class 8

13. The knee voltage of Si diode is 0.7V & reverse saturation current is 20nA at 25˚C. Determine the knee voltage at 40˚C.

14. Reverse saturation current of Ge diode is 100µA at 27˚C. If the diode current is 450mA calculate biasing voltage.

15. Design a clipper circuit that clips the input waveform above 3.7 V using a silicon diode and a DC source. (Hint: Use a diode in series with DC source of 3V; add 0.7V drop for Si diode; clip above 3.7V.)

16. In a parallel clipper circuit, a 10 V peak sinusoidal input is applied. Design the circuit to clip the negative half-cycle below -4.7 V using ideal diode and biasing.