PES UNIVERSITY

Department of Electronics and Communication Engineering

UE25EC141A - Electronic Principles and Devices (4-0-0-4-4)

Unit 1: Semiconductor Diode Assignment

1. 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.

2. 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

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

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

5. Design a series 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.)

6. 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.