SEMICONDUCTOR DEVICES

Test Paper-I

MAX MARKS: 30 **TIME: 90Mts**

Sl. No.	QUESTION	ANSWER PAGE	MARKS
1	Briefly explain how a vacuum tube works does and what the other name for it is.	Page:467	2
2	What are the limitations of vacuum tubes?	Page:467	2
3	Give any two differences between a vacuum tube and a semiconductor device.	Page:468	2
4	What are energy bands?	Page:469	2
5	What is a valence band, a conduction band?	Page:469	
6	Differentiate between a metallic conductor, semiconductor, and an insulator basing on the energy band theory of solids.	Page:471	3
7	What is an intrinsic semiconductor? Discuss its behaviour as the temperature increases.	Page:474	2
8	C, Si and Ge have same lattice structure. Why is C insulator while Si, and Ge intrinsic semiconductors?	Page:474	2
9	What is an extrinsic semiconductor? How is it different from an intrinsic semiconductor	Page:474	1
10	Name the different types of extrinsic semiconductors. Briefly explain how an n –type semiconductor is formed?	Page:475	3
11	Briefly explain how a p-type semiconductor is formed? Give any two differences between a p-type semiconductor and a n-type semiconductor.	Page:476 & 477	3
12	Give the relation between electron and hole concentration in a semiconductor in thermal equilibrium.	Page:477	1
13	Suppose a pure Si crystal has 5 X 10^{28}atoms m^{-3}. It is doped by 1 ppm concentration of pentavalent As. Calculate the number of electrons and holes. Given that n_i=1.5 X $10^{16}m^{-3}$.	Page:477	2
14	Explain how p-n junction diode is formed. What are the process involved in it?	Page:478	3
15	Can we take one slab of p-type semiconductor and physically join to another n-type semiconductor to get p-n junction?	Page:479	2