Model Question Paper

Semiconductor devices and their applications - part I

12th Standard

Physics

Reg.No. :

I.Answer all questions.

II.use blue pen only.

Time : 01:00:00 Hrs

Total Marks : 70

Part-A

5 x 1 = 5

1) The electrons in the atom of an element which determine its chemical and electrical properties are called

   (a) valeance electrons (b) revolving electrons (c) excess electrons (d) active electrons

2) In an N-type semiconductor, there are

   (a) immobile negative ions (b) no minority carriers (c) immobile positive ions (d) holes as majority carriers

3) The reverse saturation current in a PN juction diode is only due to

   (a) majority carriers (b) minority carriers (c) acceptor ions (d) donor ions

4) In the forward bias characteristic curve, a diode appears as

   (a) a high resistance (b) a capacitor (c) an OFF switch (d) an ON switch

5) Avalanche breakdown is primarily dependent on the phenomenon of

   (a) collision (b) ionisation (c) doping (d) recombination

Part-B

5 x 3 = 15

6) What do you understand by intrinsic and extrinsic semiconductor?

7) What is rectification?

8) What is zener breakdown?

9) Describe the construction of Zener diode.

10) Why is a transistor called as current amplification device?

Part-C

6 x 5 = 30

11) Describe the valence band, conduction band and forbidden energy gap with the help of energy level diagram.

12) Explain the working of a half wave diode rectifier.

13) Describe the working of PNP and NPN transistor.

14) State and prove DeMorgan's theorems.

15) a) Deduce the relation between α and β of a transistor.

(OR)

b) Describe the action of an operational amplifier as difference amplifier.

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