

Physics

Section I – Part B (continued)

Marks

Question 24 (8 marks)

In terms of band structures and relative electrical resistance, describe the differences between a conductor, an insulator and a semiconductor.

8

A conductor is the conduction band and ~~valence~~ ^{valence} band overlap, in an insulator they have a bigger ^{larger} gap between the conduction band and valence band. It is called a ~~forbidden band~~. In a semiconductor small gap between the two bands. As for the metal it is a conductor it has very small resistances. As temperature increases the resistance ~~increase~~ ^{decreases}. For the semiconductor the temperature increases, the resistance decreases. For the insulator, plastic can be used to be an insulator and it has large resistance compared to the semiconductor or the conductor.