

Carbon, silicon and germanium have four valence electrons each. At room temperature which one of the following statements is most appropriate ? |2007|

- (a) The number of free electrons for conduction is significant only in Si and Ge but small in C.
- (b) The number of free conduction electrons is significant in C but small in Si and Ge.
- (c) The number of free conduction electrons is negligibly small in all the three.
- (d) The number of free electrons for conduction is significant in all the three.

(a) Si and Ge are semiconductors but C is an insulator. Also, the conductivity of Si and Ge is more than C because the valence electrons of Si, Ge and C lie in third, fourth and second orbit respectively.