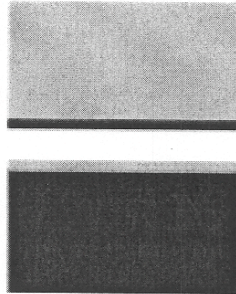


2. An electron energy diagram is drawn below. Black represents levels filled with electrons and grey represents empty energy levels.



a) This material is a _____.

When hooked to a battery, some electrons in the lower band will _____.

When hooked to a battery, some electrons in the upper band will _____.

- i. conductor, move, move
- ii. semi-conductor in the dark, not move, move.
- iii. semi-conductor in the light, move, move.
- iv. semi-conductor in the light, not move, move.
- v. insulator, not move, not move.

b) Explain your reasoning for your answer above. Include in your answer the fundamental idea behind why some electrons can move when a voltage is applied and why some cannot.