

11 (a) (i) Explain what is meant by a *photon*.

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(ii) By reference to intensity of light, state one piece of evidence provided by the photoelectric effect for a particulate nature of light.

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(b) Some electron energy levels in a solid are illustrated in Fig. 11.1.

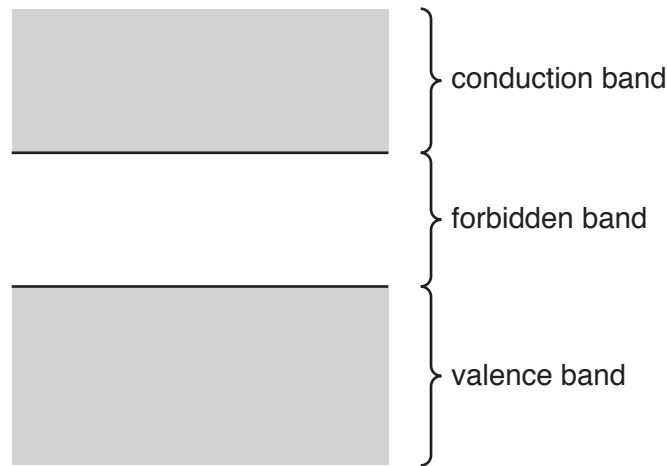


Fig. 11.1

A semiconductor material has a very high resistance in darkness.
Light incident on the semiconductor material causes its resistance to decrease.

Explain the resistance of the semiconductor material in different light conditions.

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[Total: 8]