

7 (a) State what is meant by a photon.

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(b) Electromagnetic radiation of a varying frequency f and constant intensity I is used to illuminate a metal surface. At certain frequencies, electrons are emitted from the surface of the metal. The variation with f of the maximum kinetic energy E_{MAX} of the emitted electrons is shown in Fig. 7.1.

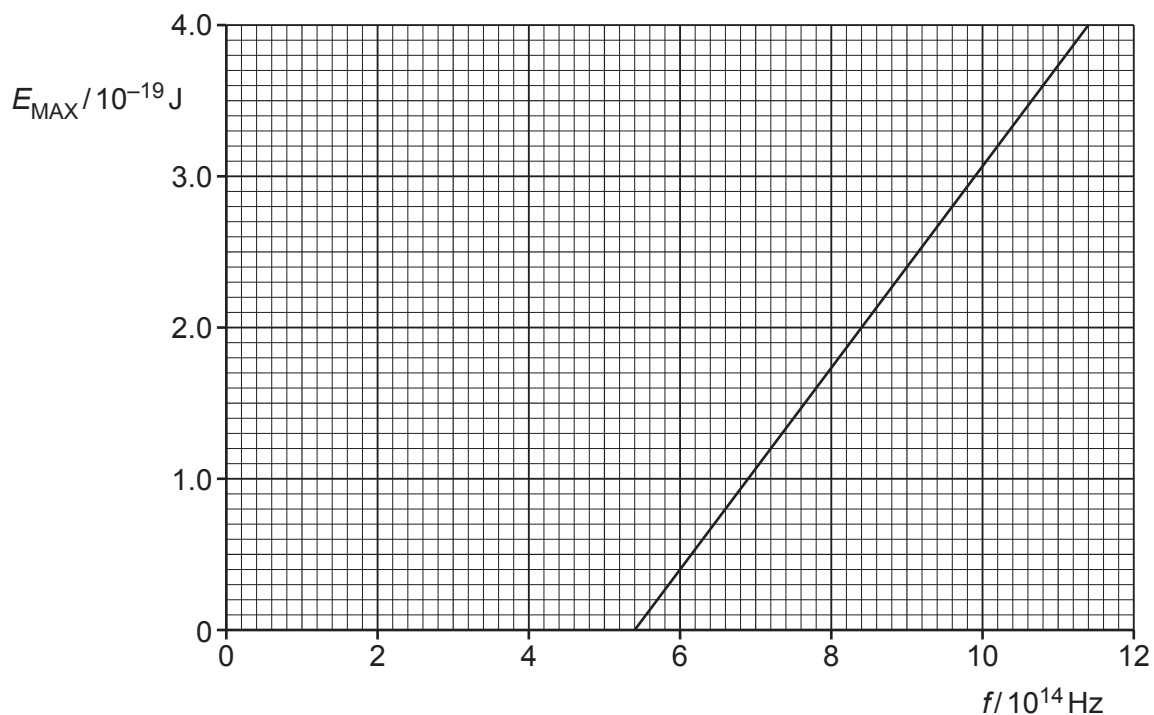


Fig. 7.1

(i) State the name of this phenomenon.

..... [1]

- (ii) Describe **three** conclusions that can be drawn from the graph in Fig. 7.1. The conclusions may be qualitative or quantitative.

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[3]

- (c) The experiment in (b) is repeated twice, each time making one change.

State, with a reason, how the graph obtained would compare with Fig. 7.1 when:

- (i) a different metal is used, but keeping the intensity I of the radiation the same

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- (ii) the same metal is used, but with electromagnetic radiation of intensity $2I$.

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