

- 6 (a) State and explain two observations of the photoelectric effect that provide evidence for the particulate nature of electromagnetic radiation.

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[4]

- (b) Electromagnetic radiation of a varying frequency f and constant intensity I is used to illuminate a metal surface. The variation with f of the maximum kinetic energy E_{MAX} of the emitted electrons is shown in Fig. 6.1.

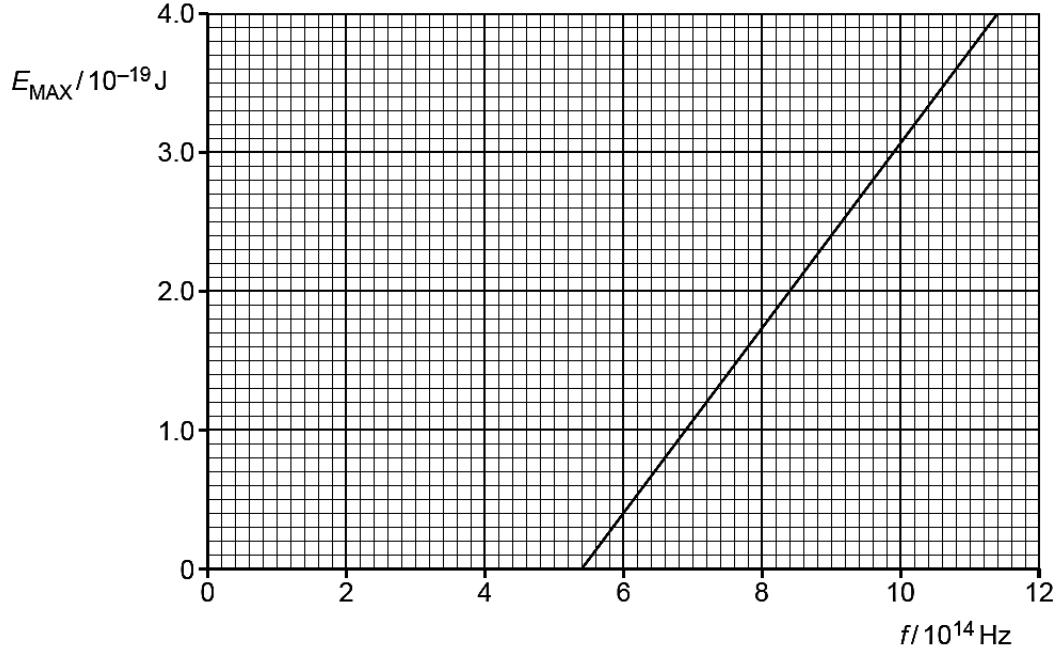


Fig. 6.1

Using Fig. 6.1, determine

- (i) the Planck constant, and

Planck constant = J s [2]

- (ii) the work function of the metal surface in eV.

work function = eV [2]

- (c) A different metal with a lower work function is used, with the same intensity I of radiation.

On Fig. 6.1, sketch the variation with f of the maximum kinetic energy E_{MAX} of the emitted electrons. [2]