

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

1. ....

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2. ....

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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  $E_{\text{MAX}}$  of the emitted electrons is shown in Fig. 6.1.

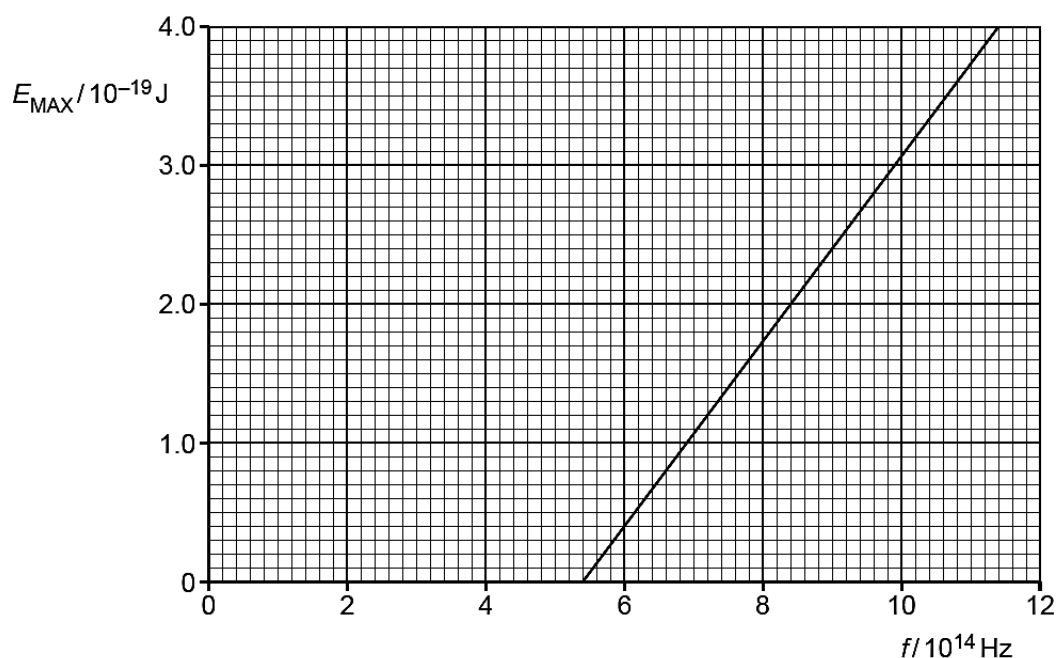


Fig. 6.1

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  $E_{\text{MAX}}$  of the emitted electrons. [2]