For Examiner's Use

7 **(a)** By reference to the photoelectric effect, explain

(i) what is meant by *work function energy*,

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.....[2]

(ii) why, even when the incident light is monochromatic, the emitted electrons have a range of kinetic energy up to a maximum value.

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.....[2]

(b) Electromagnetic radiation of frequency f is incident on a metal surface. The variation with frequency f of the maximum kinetic energy E_{MAX} of electrons emitted from the surface is shown in Fig. 7.1.

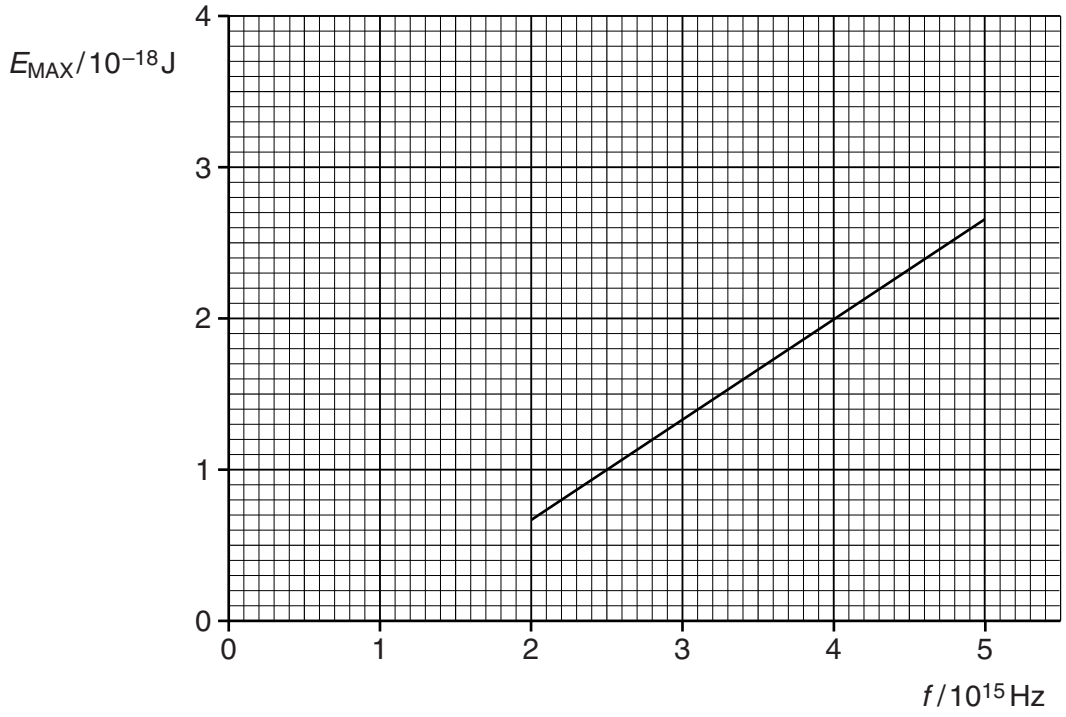

Fig. 7.1

(i) Use Fig. 7.1 to determine the work function energy of the metal surface.

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work function energy = ... J [3]

(ii) A second metal has a greater work function energy than that in **(i)**.
On Fig. 7.1, draw a line to show the variation with f of E_{MAX} for this metal. [2]

(iii) Explain why the graphs in **(i)** and **(ii)** do not depend on the intensity of the incident radiation.

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.....[2]

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