

- 11 (a) With reference to the photoelectric effect, state what is meant by the *threshold frequency*.

.....

.....

.....[2]

- (b) Electromagnetic radiation of wavelength λ is incident on a metal surface. Electrons of maximum kinetic energy E_{MAX} are emitted.

- (i) On Fig. 11.1, sketch the variation with $1/\lambda$ of E_{MAX} .

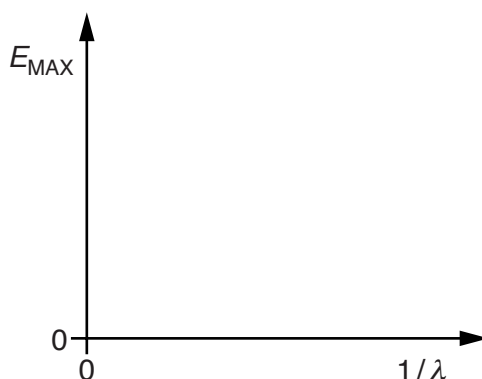


Fig. 11.1

[2]

- (ii) State an equation relating the gradient of the graph drawn on Fig. 11.1 to the Planck constant h .
Explain any symbols you use.

.....

.....[1]

- (iii) Explain why, for any particular wavelength of electromagnetic radiation, most of the electrons are emitted with kinetic energies less than the maximum value E_{MAX} .

.....

.....

.....

.....[2]

- (iv) Light of a particular wavelength is incident on a metal surface and gives rise to a photoelectric current.

The wavelength is reduced. The intensity of the light is kept constant.

State and explain the effect, if any, on the photoelectric current.

.....

.....

.....

.....

.....[3]