8 Light of wavelength λ is incident on a metal surface having a work function energy Φ.

Photoelectrons of maximum kinetic energy E_{MAX} are emitted from the surface.

(a) State an equation relating Φ, E_{MAX} and λ. Explain any other symbols you use.

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..... [2]

(b) The variation with $1/\lambda$ of E_{MAX} is shown in Fig. 8.1.

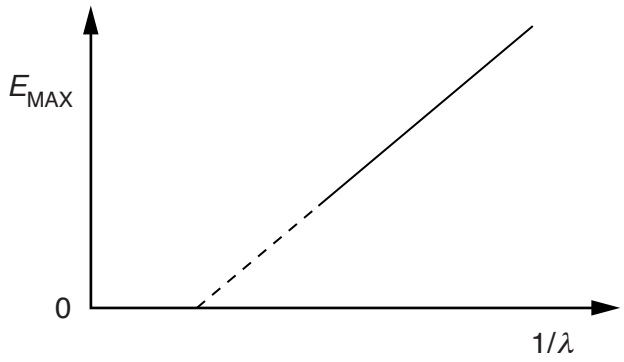

Fig. 8.1

(i) By reference to your answer in **(a)**, explain why the gradient of the line does not depend on the metal surface.

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..... [2]

(ii) The work function energy of sodium is 2.28 eV.

Determine the minimum wavelength λ_0 at which E_{MAX} is zero.

λ_0 = ... m [3]