

14 Monochromatic light is incident on the surface of a magnesium plate. Electrons are released with a range of kinetic energies.

- (a) Explain why the maximum kinetic energy of a released electron is less than the energy of each photon of light incident on the surface.

(3)

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- (b) The frequencies of three different sources of light, A, B and C, are shown in the table below.

Light source	Frequency / $10^{15}$ Hz
A	1.11
B	1.23
C	1.34

The light from one of these sources was incident on the magnesium plate, and electrons were released with a maximum speed of  $5.70 \times 10^5 \text{ m s}^{-1}$ .

Deduce which of the three sources of light was used.

work function of magnesium = 3.68 eV

(4)

(Total for Question 14 = 7 marks)