7 **(a)** State what is a *photon*.

……

……..…… [1]

(b) Two metal electrodes A and B are sealed into an evacuated glass envelope and a potential difference *V*, measured using the voltmeter, is applied between them as shown in Fig. 7.1.

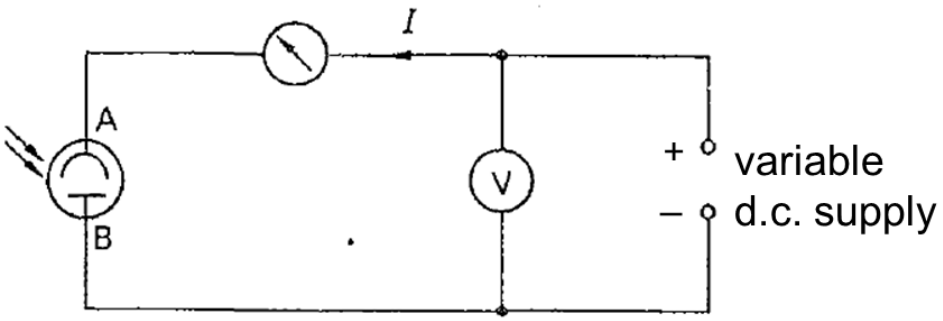

Fig. 7.1

B is then illuminated with monochromatic light of wavelength 365 nm and I, the photocurrent in the circuit, is measured for various values of *V*. The results are shown in Fig. 7.2.

(i) Using Fig. 7.2, determine the change in electric potential energy required to reduce the photocurrent to zero.

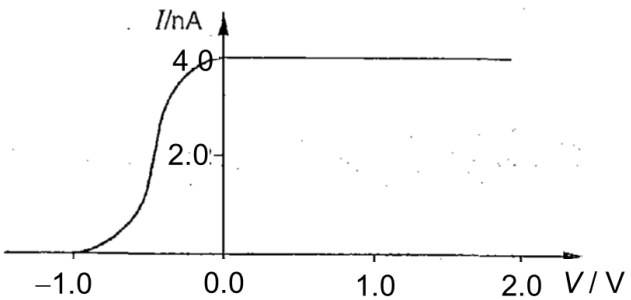

Fig. 7.2

change in electric potential energy = …….. J [1]

(ii) Calculate the maximum speed of the photoelectrons.

maximum speed = …….. km s^{-1} [2]

(iii) Hence determine the work function energy of B.

work function = …….. eV [2]