

- 7 A circuit used to investigate the photoelectric effect is shown in Fig. 7.1.

Electromagnetic radiation of wavelength 450 nm is incident on metal plate A and the stopping potential is 1.1 V.

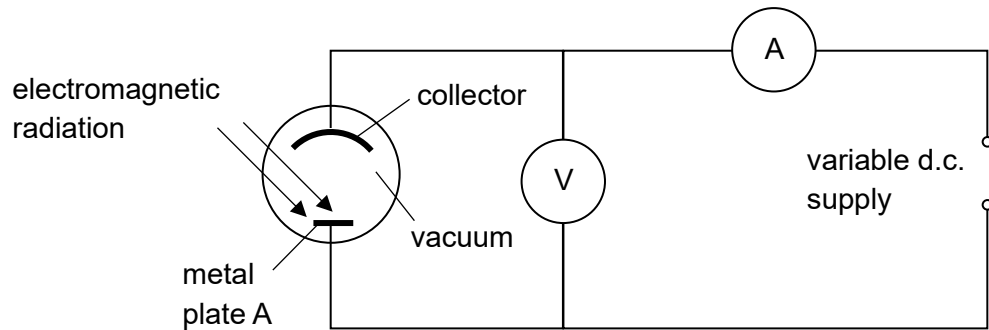


Fig. 7.1

- (a) Calculate the maximum kinetic energy of the photoelectrons emitted from metal plate A.

maximum kinetic energy = J [2]

- (b) Determine the threshold frequency of metal plate A.

threshold frequency = Hz [3]

- (c) Explain whether maximum kinetic energy of the photoelectrons emitted from metal plate A is affected by the intensity of the electromagnetic radiation incident on the surface at constant frequency.

..... [1]

- (d) The collector in Fig. 7.1 is replaced by metal plate B as shown in Fig. 7.2.

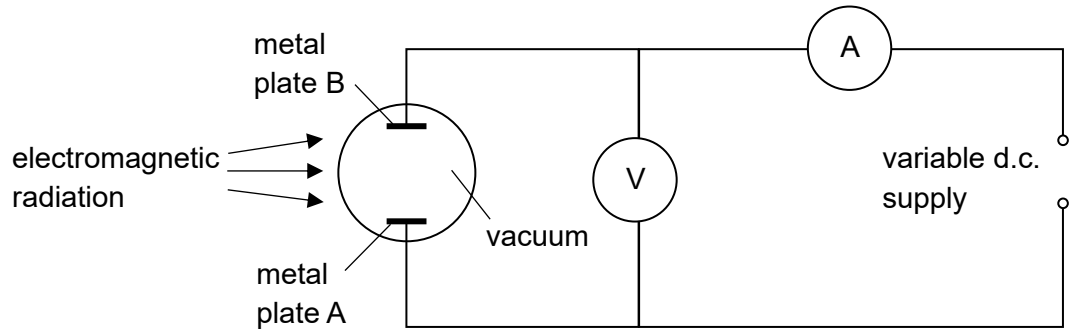


Fig. 7.2

Metal plate B has a higher threshold frequency than metal plate A.

The current-voltage ($I - V$) characteristic is obtained when both plates are illuminated with monochromatic electromagnetic radiation of frequency higher than the threshold frequencies of both plates.

On Fig. 7.3, sketch the $I - V$ characteristic.

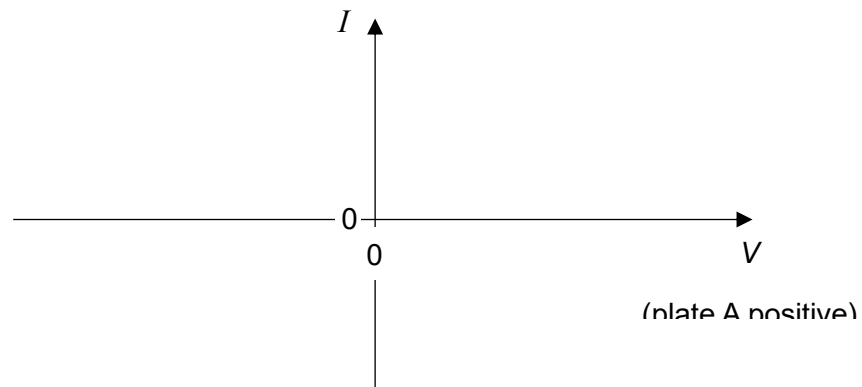


Fig. 7.3

[2]

Section B

Answer **one** question from this Section in the spaces provided.