

9 (a) State what is meant by:

- (i) the *photoelectric effect*

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.....
..... [2]

- (ii) *work function energy*.

.....
..... [1]

(b) A polished calcium plate in a vacuum is investigated by illuminating the surface with light.

It is found that no photoelectric current is produced when the frequency of the light is less than 6.93×10^{14} Hz.

- (i) State the name of the frequency below which no photoelectric current is produced.

..... [1]

- (ii) Explain how the photon model of electromagnetic radiation accounts for this phenomenon.

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..... [3]

- (iii) Calculate the work function energy, in eV, of calcium.

work function energy = eV [2]