

- 10 (a) Explain what is meant by the *photoelectric effect*.

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

- (b) One wavelength of electromagnetic radiation emitted from a mercury vapour lamp is 436 nm.

Calculate the photon energy corresponding to this wavelength.

$$\text{energy} = \dots \text{J} \quad [2]$$

- (c) Light from the lamp in (b) is incident, separately, on the surfaces of caesium and tungsten metal.

Data for the work function energies of caesium and tungsten metal are given in Fig. 10.1.

metal	work function energy/eV
caesium	1.4
tungsten	4.5

Fig. 10.1

Calculate the threshold wavelength for photoelectric emission from

- (i) caesium,

$$\text{threshold wavelength} = \dots \text{nm} \quad [2]$$

(ii) tungsten.

threshold wavelength = ..... nm [1]

- (d) Use your answers in (c) to state and explain whether the radiation from the mercury lamp of wavelength 436 nm will give rise to photoelectric emission from each of the metals.

caesium: .....

.....

tungsten: .....

.....

[2]

[Total: 9]