7 A monochromatic light source has a power output P of 0.50 W and a wavelength λ of 350 nm. The light is incident on a metal surface that has a work function Φ of 3.8 eV .

(a) (i) Explain whether photoelectrons are emitted from the metal surface.

.....

.....

..... [2]

(ii) The power of the light is increased at the same wavelength.

Explain how this will affect your answer to **(a)(i)**.

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.....

.....

..... [2]

(b) Calculate the rate of emission of photons from the light source.

rate = …… s^{-1} [1]

(c) (i) The radiation is incident normally on an area A of 4.0×10^{-7} m^2 of the metal surface. All of the radiation is absorbed.

Determine the radiation pressure exerted on the metal surface.

Explain your working clearly.

radiation pressure = ... Pa [3]

(ii) Explain how your answer to **(c)(i)** will change if some of the incident radiation is reflected off the metal surface instead.

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.....

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..... [1]

[Total: 9]

Section B

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