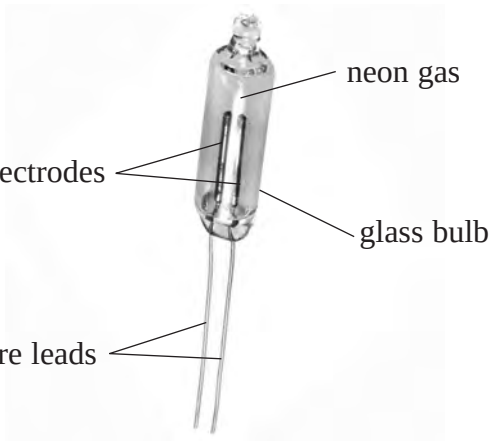
7 The neon lamp shown is a glass bulb filled with neon gas at low pressure.



(Source: https://media.digikey.com/Photos/Visual%20Communications%20Company%20VCC/A1A.JPG)

*(a) When in use, the neon gas between the electrodes emits electromagnetic radiation.

Explain why this happens when there is an electric current between the electrodes.

(6)

(b) When light from the neon lamp is incident upon a metal surface, electrons with a maximum speed of $2.68 \times 10^{5}\,\text{m}\,\text{s}^{-1}$ are emitted from the surface.

The table shows the work functions of some metals.

Metal	Caesium	Potassium	Sodium
Work function / 10^{-19} J	3.36	3.68	3.84

Deduce which metal the light is incident upon.

frequency of light from the neon lamp = $5.56 \times 10^{14}\,\text{Hz}$

(4)

(Total for Question 7 = 10 marks)