

- (a)** The electron diffraction experiment successfully demonstrated the wave nature of electrons passing through a thin graphite film. Describe the experiment with the aid of a labelled diagram.

[5]

[5]

- (b) The electrons are accelerated through a potential difference of 5.0 kV between the cathode and the anode. Calculate the momentum of an electron.

Momentum = kg m s⁻¹ [3]

- (c) Hence, calculate the de Broglie wavelength of these electrons.

de Broglie wavelength = m [2]

[Total: 10]

Section B

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