6 **(a)** Define the *coulomb*.

.....

.....[1]

(b) An electric current is a flow of charge carriers.

In the following list, underline the possible charges for a charge carrier.

8.0×10^{-19} C 4.0×10^{-19} C 1.6×10^{-19} C 1.6×10^{-20} C [1]

(c) The diameter of a wire ST varies linearly with distance along the wire as shown in Fig. 6.1.

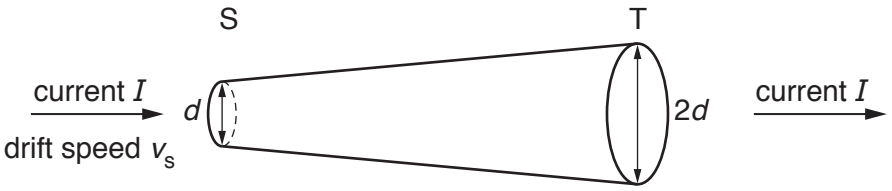

Fig. 6.1

There is a current I in the wire. At end S of the wire, the diameter is d and the average drift speed of the free electrons is v_s. At end T of the wire, the diameter is $2d$.

On Fig. 6.2, sketch a graph to show the variation of the average drift speed with position along the wire between S and T.

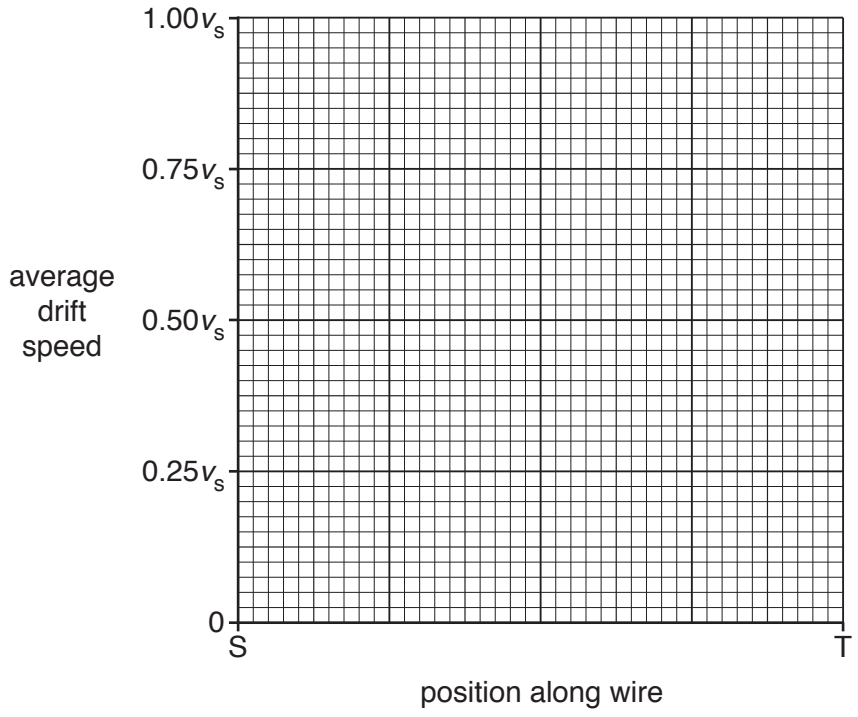

Fig. 6.2

[2]

[Total: 4]