

- 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.

$$8.0 \times 10^{-19} \text{ C}$$

$$4.0 \times 10^{-19} \text{ C}$$

$$1.6 \times 10^{-19} \text{ C}$$

$$1.6 \times 10^{-20} \text{ C}$$

[1]

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

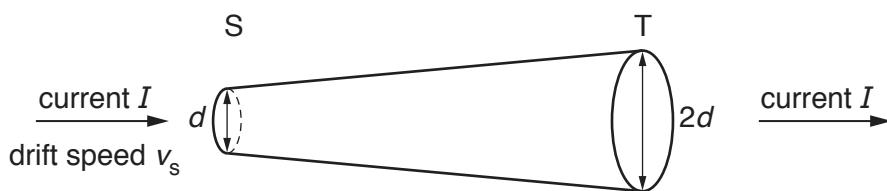


Fig. 6.1

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.

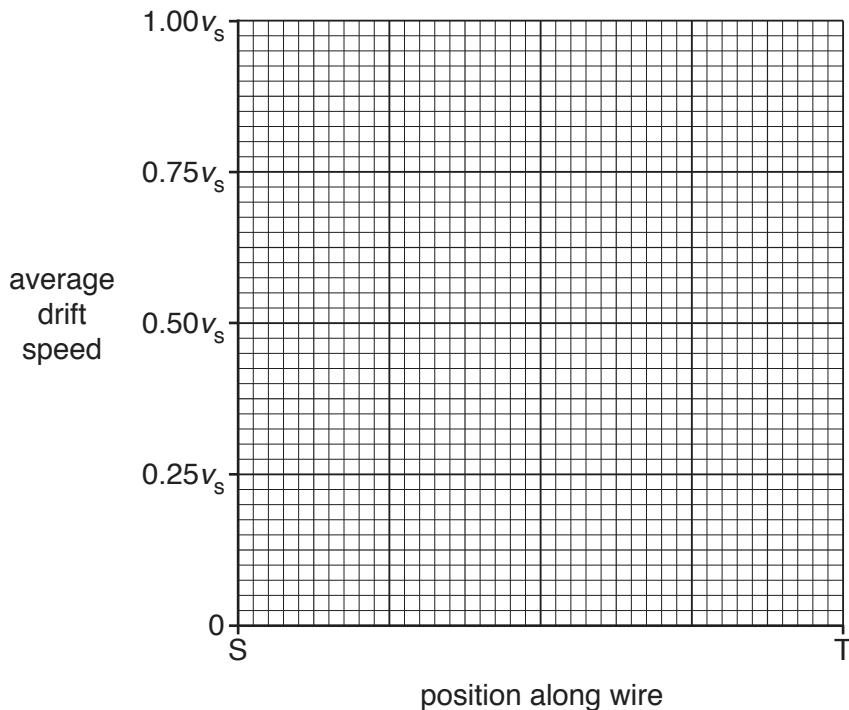


Fig. 6.2

[2]

[Total: 4]