

- 3 (a) Define *electric field strength*.

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[1]

- (b) An electron is accelerated from point A to point B by a uniform electric field, as illustrated in Fig. 3.1.

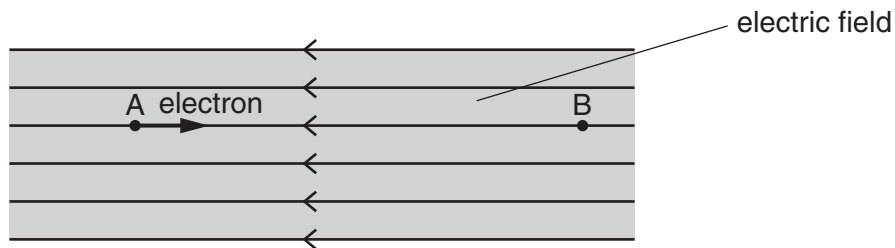


Fig. 3.1

The distance between A and B is 12 mm. The velocity of the electron at A is 2.5 km s^{-1} and at B is 18 Mm s^{-1} .

Calculate

- (i) the acceleration of the electron,

acceleration = m s^{-2} [2]

- (ii) the change in kinetic energy of the electron,

change in kinetic energy = J [3]

(iii) the electric field strength.

electric field strength = V m^{-1} [3]

(c) An α -particle moves from A to B in the electric field in (b).

Describe and explain how the change in the kinetic energy of the α -particle compares with that of the electron. Numerical values are not required.

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.....[3]

[Total: 12]