25 In Fig. 25.1 below, a beam of particles, each of charge q and mass m, is travelling at speed v through a region in which a magnetic field B is perpendicular to an electric field E. The beam of particles travels undeflected in this region.

In Fig. 25.2 below, the electric field is switched off. The beam is found to form an arc of a circle of radius r. The effects of gravity is negligible.

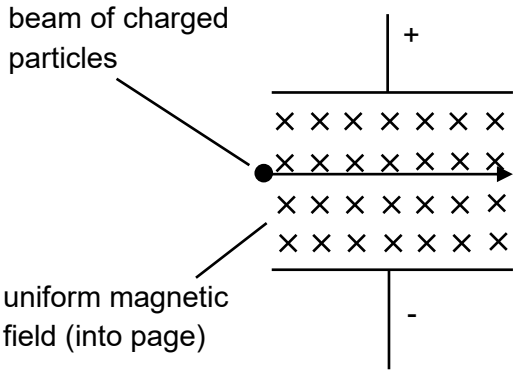

Fig. 25.1

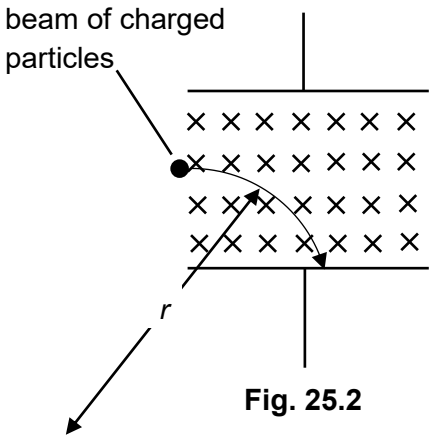

Fig. 25.2

Derive an expression for the mass m of the particle.

A $\frac{Bqr}{E}$ **B** $\frac{Eqr}{v}$ **C** $\frac{B^2qr}{E}$ **D** $\frac{B^2q}{Er}$