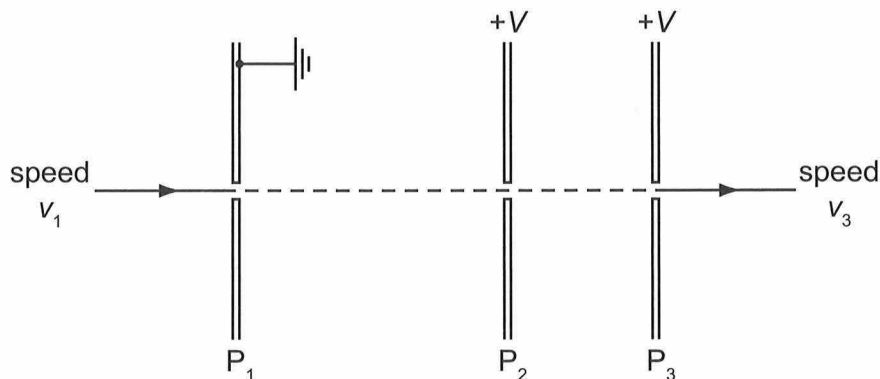


- 23** An electron of mass m and charge e passes through a hole in an earthed plate P_1 with speed v_1 .



The electron is accelerated towards two plates P_2 and P_3 both of which are at potential $+V$.

The electron passes through holes in both plates P_2 and P_3 and emerges from plate P_3 with speed v_3 .

Which expression gives the energy conversion for the electron when passing from P_1 to P_3 ?

- A** $\frac{1}{2} m(v_3 - v_1)^2 = Ve$
- B** $\frac{1}{2} m(v_3 - v_1)^2 = 2Ve$
- C** $\frac{1}{2} m(v_3^2 - v_1^2) = Ve$
- D** $\frac{1}{2} m(v_3^2 - v_1^2) = 2Ve$