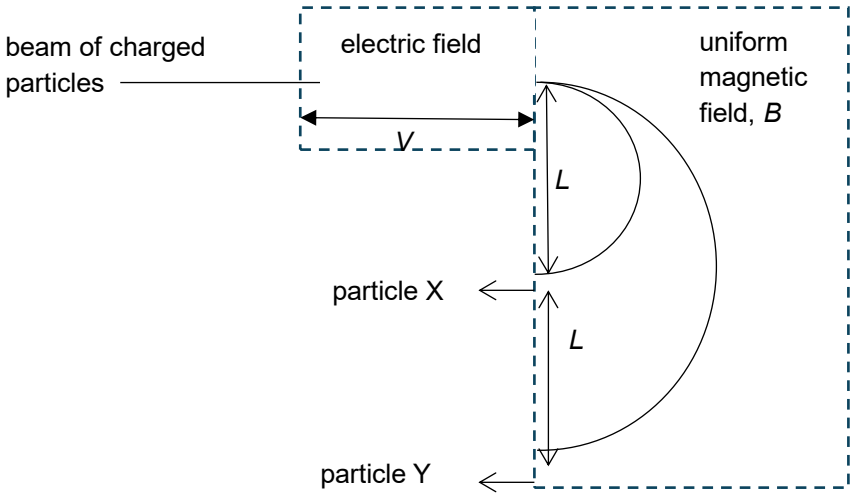
23

A beam consists of two different particles X and Y. Initially of negligible energy, they are both accelerated through the same potential difference V before entering a region with uniform magnetic field of strength B. Particles X and Y exit from the magnetic field at distance L and $2L$ from the entry point respectively.



α_X and α_Y are the mass to charge ratio of particles X and Y respectively. Which of the following is correct?

A

$2\,\alpha_X = \alpha_Y$

B

$\alpha_X = 2\,\alpha_Y$

C

4 $\alpha_X = \alpha_Y$

D

$\alpha_X = 4\ \alpha_Y$