

2. A proton, a neutron, an electron and an α -particle have same energy. Then, their de-Broglie wavelengths compare as

Solution:

From De-Broglie Hypothesis -

$$\lambda = \frac{h}{p} = \frac{h}{mv} = \frac{h}{\sqrt{2mE}}$$

$$\therefore \lambda \propto \frac{1}{\sqrt{m}}$$

$$\therefore \lambda_e > \lambda_p = \lambda_n > \lambda_\alpha$$