

Exemplar Problems

Q16. If traveling at same speeds, which of the following matter waves have the shortest wavelength?

- (a) Electron
- (b) Alpha particle (He^{2+})
- (c) Neutron
- (d) Proton

Sol. (b) $\lambda = \frac{h}{mv}$. For same value of v , larger the value of mass m , shorter is the wavelength, λ . Here, α -particles have the largest mass.

Since, alpha particles have the largest mass, they have the shortest wavelength.