Question 2. A ball of mass 100g is moving with a velocity of 100 $msec^{-1}$. Find its wavelength.

A. 6.63×10^{-35} m

B. 6.63×10^{-30} m

C. 6.63×10^{-33} m

D. 6.63×10^{-32} m

Solution: (A)

Using De-broglie's equation, given m = 100g, v = 100 m/s

$\lambda = h / mv$

λ = De-broglie wavelength

M = 100g = 100 / 1000 kg = 0.1 kg

v = 100 ms^{-1}

$\lambda = 6.626 \times 10^{-34} / 0.1 \times 100 = 6.626 \times 10^{-35}$ m