An object in the form of a thin spherical shell has a diameter of 5 cm and a mass of 3 g. Calculate the moment of inertia about an axis that passes through the center.

Given:

Mass of the object: $M = 3\ g = 0.003\ kg$

Diameter of the object $d = 5\ cm = 0.05\ m$

Radius of the object $r = 0.025\ m$

Determine: Moment of Inertia of object: I

Use formula:

$$I = (\tfrac{2}{3})Mr^2 \text{ ----------(1)}$$

Substituting for M and r in (1):

$$\mathbf{I = (\tfrac{2}{3}) \times 0.003 \times (0.025)^2 = 1.25 \times 10^{-6}\ kg\text{-}m^2}$$