

| Shape of the body   | Axis Of rotation   | Expression for Moment of Inertia   |
|---|--|--|
| One dimensional rod of mass M and length L                  | 1) Center of Rod and $\perp$ to length<br>2) One end and $\perp$ to length   | $\frac{ML^2}{12}$<br>$\frac{ML^2}{3}$  |
| Sphere of mass M and Radius                                 | 1) Any diameter<br>2) Any tangent plane  | $(\frac{2}{5})MR^2$<br>$(\frac{7}{5})MR^2$   |
| Circular disc of Mass and radius R                          | 1) Through center, $\perp$ to plane of Disk<br>2) any diameter<br>3) tangent in the plane of the disc<br>4) tangent $\perp$ to plane of disk | $(\frac{1}{2})MR^2$<br>$(\frac{1}{4})MR^2$<br>$(\frac{5}{4})MR^2$<br>$(\frac{3}{2})MR^2$ |
| Circular ring of mass M and radius R                        | 1) Through center, $\perp$ to plane of ring<br>2) any diameter<br>3) tangent in the plane of the ring<br>4) tangent $\perp$ to plane of ring | $MR^2$<br>$(\frac{1}{2})MR^2$<br>$(\frac{3}{2})MR^2$<br>$2MR^2$                          |
| Cylinder of mass M ,radius R and length L                   | 1) own axis<br>2) through center $\perp$ to length   | $(\frac{1}{2})MR^2$<br>$M(\frac{R^2}{4} + \frac{L^2}{12})$                               |
| Rectangular lamina of Mass M,length L and breath B          | 1) Length of lamina and in its plane<br>2) breath of lamina and in its plane<br>3) Center of lamina and $\perp$ to its plane                 | $\frac{MB^2}{3}$<br>$\frac{ML^2}{3}$<br>$\frac{M(L^2 + B^2)}{12}$                        |
| Rectangular block of Mass M,Length L,Breadth B and Height H | Through center of block and parallel to Length or breadth or height of the block   | $\frac{M(H^2 + B^2)}{12}$<br>$\frac{M(L^2 + H^2)}{12}$<br>$\frac{M(L^2 + B^2)}{12}$      |