A mass 'm' is supported by a massless string wound around a uniform hollow cylinder of mass m and radius R. If the string does not slip on the cylinder, with what acceleration will the mass fall on release ?

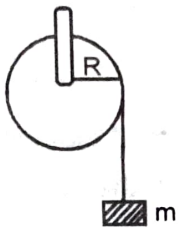
[JEE MAIN 2014]

(A) $\frac{2g}{3}$

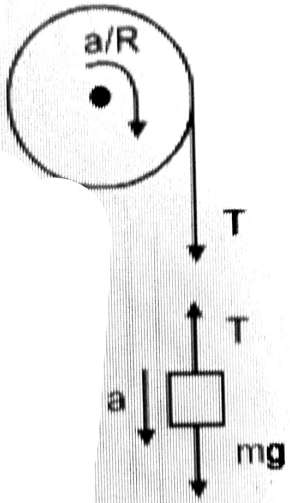
(B) $\frac{g}{2}$

(C) $\frac{5g}{6}$

(D) g



Sol.



$mg - T = ma$ .....(1)

$T.R = mR^2 \frac{a}{R}$ .....(2)

$\frac{g}{2} = a$