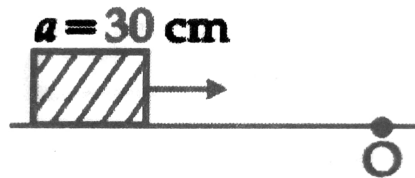A cubical block of side 30 cm is moving with velocity 2 ms^{-1} on a smooth horizontal surface. The surface has a bump at a point O as shown in figure. The angular velocity (in rad/s) of the block immediately after in hits the bump, is :

$a = 30$ cm

(A) 13.3   (B) 5.0   (C) 9.4   (D) 96.7

Sol. Using conservation of angular momentum

$$mv\frac{a}{2} = \frac{2}{3}ma^2\omega \Rightarrow \omega = \frac{3v}{4a} = 5\,\text{rad}/\text{s}$$