

Q. A metre scale is moving with uniform velocity. This implies

- (a) the force acting on the scale is zero, but a torque about the centre of mass can act on the scale
- (b) the force acting on the scale is zero and the torque acting about centre of mass of the scale is also zero
- (c) the total force acting on it need not be zero but the torque on it is zero
- (d) neither the force nor the torque need to be zero

Ans. (b) To solve this question we have to apply Newton's second law of motion, in terms of force and change in momentum.

We know that

$$F = \frac{dp}{dt}$$

given that meter scale is moving with uniform velocity, hence, $dp = 0$

$$\text{Force} = F = 0.$$

As all part of the scale is moving with uniform velocity and total force is zero, hence, torque will also be zero.