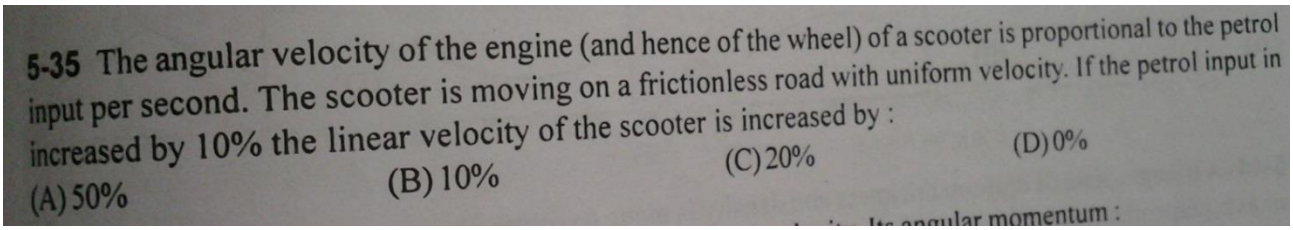
Answer on Question #56550-Physics-Mechanics-Relativity



5-35 The angular velocity of the engine (and hence of the wheel) of a scooter is proportional to the petrol input per second. The scooter is moving on a frictionless road with uniform velocity. If the petrol input in increased by 10% the linear velocity of the scooter is increased by :

(A) 50% (B) 10% (C) 20% (D) 0%

momentum :

Solution

The angular velocity is

$$\omega \sim \frac{dm_{petrol}}{dt}.$$

The linear velocity is

$$v = \omega R,$$

where $R = const$ is radius of the wheel.

Thus,

$$v = \omega R \sim \frac{dm_{petrol}}{dt}$$

So, linear velocity also is increased by 10%.

Answer: (B) 10%.