

# Physics

1) Define Newton's first law of motion.

→ If a body is at rest or moving ~~at a~~ at a constant speed in a straight line, it will remain at rest or keep moving in a straight line at constant speed unless it is acted upon by a force.

2) Define Inertia.

⇒ It is a property of a body by virtue of which it opposes any agency that attempts to put it in motion or, if it is moving, to change the magnitude or direction of its velocity. Inertia is a passive property and does not enable a body to do anything except oppose such active agents as forces and torques.

3) Give reasons:

a) If we try to get down from a moving bus should be tied with a rope.

⇒ If some one tries to get out of a moving bus then the momentum makes the person move forward. A person might fall in the forward direction due to moment of inertia when the speed is fast. ~~As the person~~ As the person gets out of the moving bus the momentum is reduced to zero.

b) The cars are provided with seat belts for passengers to prevent injuries in case of an accident.

b) We should use seat belts in vehicles.

⇒ The cars are provided with seat belts for passengers to prevent injuries in case of an accident. The fast running car stops suddenly. Due to this the momentum of the car reduces to zero in a very short time.

c) Luggage kept on a moving bus should be tied with a rope.

⇒ While the bus is moving, luggage tends to remain in ~~its~~ inertia of motion state. When the bus stops, the luggage tends to resist the change and may fall off. That's why it is advised to tie any luggage kept on the roof of a bus with a rope.

d) Ripe fruits and dry leaves fall down when we shake it branches.

⇒ When ~~the~~ trees is shaken, the fruits and dry leaves fall because of inertia of rest. If the fruits and leaves fall naturally without any force then it is

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because of the force of gravity. Gravity acts on all bodies whether it is in state of rest or motion.

e) We get a forward jerk when a moving vehicle applies brakes.

⇒ This results in a sudden jerk backwards when a bus moves. Also a person standing in a bus will be in state of motion, and when the brakes are applied the lower part of our body comes to the state of rest but our upper part is in state of state of motion. Hence, we tend to fall ~~back~~ forward when the bus applies brakes.

f) We get backward jerk when a vehicle starts suddenly.

⇒ When a car or a bus suddenly starts, our body which is in contact with the car or bus, tend to move forward, but the upper part of the party is in the inertia of rest, so, our body feels backward.

4) Which of the following has more inertia?

a) A cricket ball or a tennis ball.

⇒ ~~a~~ a cricket ball has more inertia than ~~a~~ a tennis ball.

b) A car or a truck.

→ The mass of the truck is more than the car.

c) A fat man or <sup>the</sup> thin man.

→ ~~The~~ thin man has more inertia than a fat man.

d) A one rupee coin or a five rupee coin.

→ A five-rupee coin has more inertia ~~than~~ than a one rupee coin.