WS-12 → Newton's Ist law ①

6th foundation +

Task.

⑥

when a train suddenly starts moving forward, the Passenger standing in the compartment tends to fall backward is an example of inertia of rest. The reason behind this is the lower part of the Passenger's body is in close contact with the train. As the train starts moving, his lower part attains the motion at once, but the upper part due to inertia of rest cannot attain the motion, simultaneously, ie it tends to remain at the same place.

⑦

Newton's Ist law of motion states that a body at rest remains at rest, (or) if in motion, remains in motion at a constant velocity unless acted on by a net external force.... inertia is the tendency of an object to remain at rest (or) remain in motion. inertia is the property possessed by a body by virtue of it's mass.

(8)

When a body is released from rising helicopter, the velocity of the body is equal to velocity of helicopter at the time of releasing.

Because of inertia of motion and direction, the body unable to change it's state of motion and direction immediately so it continuous it's direction of motion to certain height until it's [body] velocity is zero. there by it starts [From maximum height] falling down.

(9)

when the tree is at rest, the fruits are also at rest when the tree is vigorously shaken, the tree is in motion while the fruits are at rest due to their inertia of rest

The force acting on the fruits in changing directions and results in the fruits detaching from the trees.

(10)

Shaking is the process of changing the speed of motion and direction of motion. As wet dog shakes its body the water droplets already set into motion with certain speed in particular direction will fly outward due to their inertia of motion as well as inertia of direction ie) the water droplets cannot change their speed & direction of motion of their own.

(11)

According to law of inertia, when cloth is pulled from a table, the table cloth comes in state of motion, but dishes remain stationary due to inertia of ~~Heer~~ rest. Therefore when we pull the cloth from table, the dishes remains stationary.

(12)

we know that mass is defined as the quantity of matter present in a body.

Every body poses inertia by virtue of mass. so mass is taken as the measure of inertia. so mass, inertia both will have same S.I units.

(13)

when the wheel rotates at a higher speed, the mud sticking to the wheel flies off tangentially, this is due to inertia of direction. In order that the flying mud does not spoil the clothes of passers by, the wheels are provided with mud guards.

L TASK

CUG

(2) He gains energy to take him through the long distance An athlete runs before jumping to gain momentum because it helps in jumping higher and longer because of the inertia of motion gained due to motion. when the athletes jump, they already have a forward motion that would be greater than that of a jump made from standing in one spot.

(3)

when the horse suddenly stops, the rider falls in the forward direction due to the inertia of motion, The lower portion of the rider comes to rest along with the horse while the upper portion of the rider still continues to move forward. hence he falls forward.

(4)

The inertia of rest keeps the dust in position and the dust gets removed as the carpet moves away Due to inertia of rest, a body tends to be in rest or will oppose any motion, that is why the inertia of rest keeps the dust in position and the dust gets removed as the carpet moves away.

(9)

Given $m = 1\ kg$

$$\text{weight} = mg = 1 \times 9.8 = 9.8\ N$$

Jee mains level

(2)

If an object experiencing balanced forces, the net force acting on the body becomes zero.

$\therefore$ Acceleration $= 0 \Rightarrow v =$ constant

$\therefore$ the body moving with constant velocity.

(6)

when the car starts suddenly moving in forward direction. this happens when car starts suddenly, the passengers fall in backward in the car.

it is due to inertia of rest.

(7)

when the horse suddenly stops, the rider falls in the forward direction due to inertia of motion.

The lower portion of the rider comes to rest along with the horse while the upper portion of the rider still continues to move forward. hence he falls forward.

(8)

Passengers are thrown outwards because of inertia of direction. If suddenly the breaks are applied passengers will be thrown forward, and if suddenly the bus is accelerated the passengers will be thrown backward