Home Assignment

Mass = 1200 kg
$V = 90 km/h = 25 m/s$
$V = 18 km/h = 5 m/s$
$t = 4 s$

$\Delta P = mv - mu$
$\Delta P = 1200 \times 25 = -24000 kg\ m/s$
$V = ut + at$
$5 = 25 + a \times 4$
$a = -5 m/s^2$

$|F| = |ma| = 1200 \times 5 = 6000 N$

Mass = 100 kg
t = 10 s
(i) Distance traveled in next 5 seconds d = 100m

Thus, velocity acquired by body $= V = \frac{d}{t} = \frac{100}{5} = 20 m/s$

(ii) Acceleration produce by the force, a=

$$\frac{V}{t} = \frac{20}{10} = 2m/s$$

(iii) Magnitude of force, F = ma = 100kg $2m/s^2$ = 200N

3.) = m(v-u) the rate of change of momentum = the unit of force is so chosen that the value of the constant k becomes one. $F = ma$. (b) one Newton is defined as the amount of force exerted on a body of mass 1kg to produce an acceleration of $1m/s^2$

Date
Page

Home Assignment

1. (a) Action : Force exerted on the bullet
Reaction : Recoil experienced by the gun.

(b) Action : The force exerted by the hammer on the nail
Reaction : Force acted by the table upwards, applied by the nail on the hammer.

(c) Action : Weight of the book acting downwards
Reaction : Force acted by the table upwards.

(d) Action : Force exerted by the rocket on the gases backwards.
Reaction : Force exerted by outgoing gases on the rocket in forward direction.

(c) Action : Force exerted by the feet on the ground in backward direction.
Reaction : Force exerted by the ground on feet in forward direction.

(b) Action : Force exerted by a moving train on a stationary train.
Reaction : Force exerted by a stationery train on a moving train.

2.) (a) When a fireman holds a house, which is ejecting large amounts of ~~a~~ water at a high velocity, then a reaction force is exerted on him by the ejecting water in the backward direction. This is because of Newton's third law of motion. Hence it is difficult for him to remain stable while holding the ~~house~~ house.

(b) Exerted by two objects on each other are often called an action reaction force pair, However, ~~not~~ action and reaction force pairs don't cancel because they act on different objects. Forces can cancel only if they act on the same object.

3) (a) According to Newton's third law, to every action there is an equal and opposite reaction. When we jump on the shore from the boat, we are applying force on the boat in the opposite direction, in order to move forward and hence the boat moves in the opposite direction.

(b) If a ballon filled with compressed air and its mouth untied is released with its mouth in the downward direction, the ballon moves in the upward direction

because the air present in the balloon rushes out in the downward direction. The equal and opposite reaction of downward going air pushes the balloon upwards.