

$$R_2 = m(g - g) = 0$$

The apparent weight of the body becomes zero.

(v) If lift is accelerating downward with an acceleration greater than g , then body will lift from floor to the ceiling of the lift.

Rocket

Rocket is an example of variable mass following law of conservation of momentum.

Thrust on the rocket at any instant $F = -u \left(\frac{dM}{dt} \right)$

where u = exhaust speed of the burnt and $\frac{dM}{dt}$ = rate of gases combustion of fuel.

Velocity of rocket at any instant is given by $u = v_0 + u \log_e \left(\frac{M_0}{M} \right)$

where, v_0 = initial velocity of the rocket,

M_0 = initial mass of the rocket and

M = present mass of the rocket.

If effect of gravity is taken into account then speed of rocket

$$u = v_0 + u \log_e \left(\frac{M_0}{M} \right) - gt$$

Friction

A force acting on the point of contact of the objects, which opposes the relative motion is called friction.

It acts parallel to the contact surfaces.

Frictional forces are produced due to intermolecular interactions acting between the molecules of the bodies in contact.

Friction is of three types:

1. Static Friction

It is an opposing force which comes into play when one body tends to move over the surface of the other body but actual motion is not taking place.

Static friction is a self adjusting force which increases as the applied force is increased,

2. Limiting Friction

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