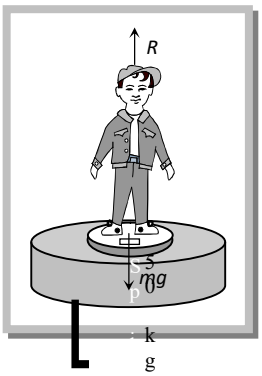
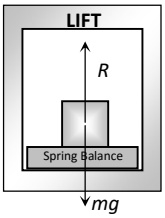
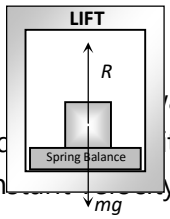
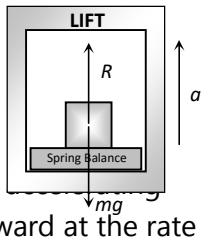
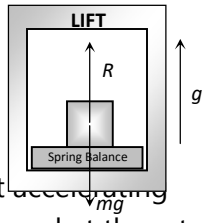
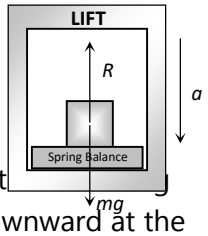
Apparent Weight of a Body in a Lift.

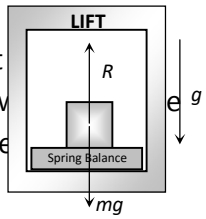
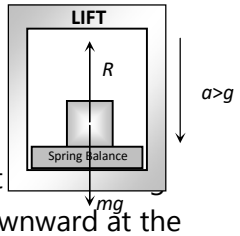
When a body of mass m is placed on a weighing machine which is placed in a lift, then actual weight of the body is mg.

This acts on a weighing machine which offers a reaction R given by the reading of weighing machine. This reaction exerted by the surface of contact on the body is the apparent weight of the body.



Condition	Figure	Velocity	Acceleration	Reaction	Conclusion
 Lift is at rest		v = 0	a = 0	R – mg = 0 ∴ R = mg	Apparent weight = Actual weight
 Lift ...ward or ...th con...y		v = constant	a = 0	R – mg = 0 ∴ R = mg	Apparent weight = Actual weight

 Lift accelerating upward at the rate of 'a'		v = variable	a < g	R – mg = ma ∴R = m(g + a)	Apparent weight > Actual weight
 Lift accelerating upward at the rate of 'g'		v = variable	a = g	R – mg = mg R = 2mg	Apparent weight = 2 Actual weight
 Lift accelerating downward at the rate of 'a'		v = variable	a < g	mg – R = ma ∴ R = m(g – a)	Apparent weight < Actual weight

Lift dov e rate 		v = variable	a = g	mg – R = mg R = 0	Apparent weight = Zero (weightlessness)
Lift downward at the rate of a(>g) 		v = variable	a > g	mg – R = ma R = mg – ma R = – ve	Apparent weight negative means the body will rise from the floor of the lift and stick to the ceiling of the lift.