1. (b) Since, force needed to overcome frictional force.
2. (a) The coin falls behind him it means the velocity of train was increasing otherwise the coin fall directly into the hands of thrower.
3. (a) Acceleration of block in a stationary lift = 

If lift is descending with acc. then it will be (*g–a*)sin*θ*.

but in the problem acceleration = – *a* (retardation)

Acceleration of block =  = 

1. (c) For upward acceleration apparent weight 

If lift suddenly stops during upward motion then apparent weight =  because instead of acceleration, we will consider retardation.

In the problem it is given that scale reading initially was 60 *kg* and due to sudden jerk reading decreasing and finally comes back to the original mark *i.e.,* 60 *kg*.

So, we can conclude that lift was moving upward with constant speed and suddenly stops.

1. (b)  for a given body if constant then *a* = constant.
2. (c) 
3. (d) The fictitious force will act downwards. So the reading of spring balance will increase. In case of physical balance, the fictitious force will act on both the pans, so the equilibrium is not affected.
4. (b) In this case, one 2 *kg wt* on the left will act as the support for the spring balance. Hence its reading will be 2 *kg*.
5. (c) Force on the football 

.

1. (b) Acceleration produced in jet = 



 Mass = .

1. (c) 
2. (a) In the absence of gravity weight of the bodies will become zero but mass will not change.
3. (b)  If *r* increases then *U* also increases.
4. (d) According to Kepler's law 

If *N* is the frequencs then 

or ⇒ 

1. (d)
2. (a)
3. (a) Force between earth and moon 

This amount of force, both earth and moon will exert on each other *i.e.* they exert same force on each other.

1. (b) . If density is same then 

According to problem  ∴ 

For clock *P* (based on pendulum motion) 

Time period decreases on planet so it will run faster because 

For clock *S* (based on oscillation of spring)

So it does not change.

1. (d) For scientist *A* which goes down in a mine 

For scientist *B*, which goes up in a air 

So it is clear that value of *g* measured by each will decreases at different rates.

1. (b) Gravitational pull depends upon the acceleration due to gravity on that planet.

,

⇒=

∴ 

1. (a)    *i.e.* limiting friction depends upon the mass of body. So, 

⇒

1. (a) Coefficient of friction is constant for two given surface in contact. It does not depend upon the weight or normal reaction.
2. (b)

*f*

28.2 *cos* 45*°*

50 *N*

28.2sin45*°*

*R*

Frictional force = * *

Normal reaction 

1. (b) Friction between block *A* and block *B* & betweenblock *B* and surface will oppose the *P*

  

=1250 *N*

1. (a) For the limiting condition upward friction force between board and block will balance the weight of the block.

*F*

*mg*

*R*

*ma*

*m*

*i.e. *

⇒ **

⇒ **

⇒ **

1. (b) 

 

 Friction force 

1. (c) Let *P* force is acting at an angle 30° with the horizontal.

For the condition of motion 



⇒ ⇒

⇒  

1. (d)  for downward motion of lift

If  then  

1. (b) When the lift is moving upward with constant velocity then,   
2. (d) We know that *a* 