1. A car is moving with uniform velocity on a rough horizontal road. Therefore, according to Newton's first law of motion

(a) No force is being applied by its engine

(b) A force is surely being applied by its engine

(c) An acceleration is being produced in the car

(d) The kinetic energy of the car is increasing

1. A person is sitting in a travelling train and facing the engine. He tosses up a coin and the coin falls behind him. It can be concluded that the train is

(a) Moving forward and gaining speed

(b) Moving forward and losing speed

(c) Moving forward with uniform speed

(d) Moving backward with uniform speed

1. A block can slide on a smooth inclined plane of inclination  kept on the floor of a lift. When the lift is descending with a retardation *a*, the acceleration of the block relative to the incline is

(a)  (b) 

(c)  (d) 

1. A 60 *kg* man stands on a spring scale in the lift. At some instant he finds, scale reading has changed from 60 *kg* to 50*kg* for a while and then comes back to the original mark. What should we conclude ?

(a) The lift was in constant motion upwards

(b) The lift was in constant motion downwards

(c) The lift while in constant motion upwards, is stopped suddenly

(d) The lift while in constant motion downwards, is suddenly stopped

1. When a body is acted by a constant force, then which of the following quantities remains constant

(a) Velocity (b) Acceleration

(c) Momentum (d) None of these

1. A man of weight *mg* is moving up in a rocket with acceleration 4 *g*. The apparent weight of the man in the rocket is

(a) Zero (b) 4 *mg*

(c) 5 *mg* (d) *mg*

1. A spring balance and a physical balance are kept in a lift. In these balances equal masses are placed. If now the lift starts moving upwards with constant acceleration, then

(a) The reading of spring balance will increase and the equilibrium position of the physical balance will disturb

(b) The reading of spring balance will remain unchanged and physical balance will remain in equilibrium

(c) The reading of spring balance will decrease and physical balance will remain in equilibrium

(d) The reading of spring balance will increase and the physical balance will remain in equilibrium

1. As shown in the figure, two equal masses each of 2 *kg* are suspended from a spring balance. The reading of the spring balance will be

2*kg*

2*kg*

(a) Zero

(b) 2 *kg*

(c) 4 *kg*

(d) Between zero and 2 *kg*

1. A player kicks a football of mass 0.5 *kg* and the football begins to move with a velocity of 10 *m/s*. If the contact between the leg and the football lasts for *sec*, then the force acted on the football should be

(a) 2500 *N* (b) 1250 *N*

(c) 250 *N* (d) 625 *N*

1. The engine of a jet aircraft applies a thrust force of  during take off and causes the plane to attain a velocity of 1 *km*/*sec* in 10 *sec*. The mass of the plane is

(a)  (b) ****

(c)104 Kg (d) 106 kg

1. Two identical spheres are placed in contact with each other. The force of gravitation between the spheres will be proportional to (*R* = radius of each sphere)

(a) *R* (b) 

(c)  (d) None of these

1. Suppose that the force of earth's gravity suddenly disappears, choose the correct answer out of the following statements

(a) The weight of the body will become zero but mass remains the same

(b) The mass of the body will become zero but the weight remains the same

(c) Both the mass and weight will be the same

(d) Mass and weight will remain the same

1. An earth satellite is moved from one stable circular orbit to a further stable circular orbit, which one of the following quantities increase

(a) Gravitational force (b) Gravitational P.E.

(c) Linear orbital speed (d) Centripetal acceleration

1. Two planets revolve round the sun with frequencies  and  revolutions per year. If their average orbital radii be  and  respectively, then  is equal to

(a)  (b) 

(c)  (d) 

1. There is no atmosphere on the moon because

(a) It is closer to the earth

(b) It revolves round the earth

(c) It gets light from the sun

(d) The escape velocity of gas molecules is lesser than their root mean square velocity here

1. Two heavenly bodies  and , not far off from each other are seen to revolve in orbits

(a) Around their common centre of mass

(b) Which are arbitrary

(c) With  fixed and  moving round 

(d) With  fixed and  moving round 

1. The mass of the moon is about 1.2% of the mass of the earth. Compared to the gravitational force the earth exerts on the moon, the gravitational force the moon exerts on earth

(a) Is the same (b) Is smaller

(c) Is greater (d) Varies with its phase

1. A clock S is based on oscillation of a spring and a clock P is based on pendulum motion. Both clocks run at the same rate on earth. On a planet having the same density as earth but twice the radius

(a) S will run faster than P

(b) P will run faster than S

(c) They will both run at the same rate as on the earth

(d) None of these

1. Consider earth to be a homogeneous sphere. Scientist A goes deep down in a mine and scientist B goes high up in a balloon. The value of *g* measured by

(a) A goes on decreasing and that by B goes on increasing

(b) B goes on decreasing and that by A goes on increasing

(c) Each decreases at the same rate

(d) Each decreases at different rates

1. The mass of the moon is  of the earth but the gravitational pull is  of the earth. It is due to the fact that

(a) The radius of the moon is  of the earth

(b) The radius of the earth is  of the moon

(c) Moon is the satellite of the earth

(d)None of the above

1. A force of 19.6 *N* when applied parallel to the surface just moves a body of mass 10 *kg* kept on a horizontal surface. If a 5 *kg* mass is kept on the first mass, the force applied parallel to the surface to just move the combined body is

(a) 29.4 *N* (b) 39.2 *N*

(c) 18.6 *N* (d) 42.6 *N*

1. If the normal force is doubled, the coefficient of friction is

(a) Not changed (b) Halved

(c) Doubled (d) Tripled

1. A body of weight 50 *N* placed on a horizontal surface is just moved by a force of 28.2 *N*. The frictional force and the normal reaction are

28.2 *N*

45*°*

50 *N*

(a) 10 *N*, 15 *N*

(b) 20 *N*, 30 *N*

(c) 2 *N*, 3 *N*

(d) 5 *N*, 6 *N*

1. Block A weighing 100 *kg* rests on a block B and is tied with a horizontal string to the wall at C. Block B weighs 200 *kg*. The coefficient of friction between A and B is 0.25 and between B and the surface is 1/3. The horizontal force P necessary to move the block B should be 

*B*

*A*

*P*

*C*

(a) 1150 *N*

(b) 1250 *N*

(c) 1300 *N*

(d) 1420 *N*

1. A rough vertical board has an acceleration ‘*a*’ so that a 2 *kg* block pressing against it does not fall. The coefficient of friction between the block and the board should be

*a*

2 *kg*

(a) 

(b) 

(c) 

(d) 

1. A stone weighing 1 *kg* and sliding on ice with a velocity of 2 *m*/*s* is stopped by friction in 10 *sec*. The force of friction (assuming it to be constant) will be

(a)  (b) 

(c) 0.2 *N* (d) 20 *N*

1. A body of mass 10 *kg* slides along a rough horizontal surface. The coefficient of friction is. Taking , the least force which acts at an angle of 30° to the horizontal is

(a) 25 *N* (b) 100 *N*

(c) 50 *N* (d) 

1. A lift is moving downwards with an acceleration equal to acceleration due to gravity. A body of mass M kept on the floor of the lift is pulled horizontally. If the coefficient of friction is , then the frictional resistance offered by the body is

(a) *Mg* (b) 

(c)  (d) Zero

1. In the above question, if the lift is moving upwards with a uniform velocity, then the frictional resistance offered by the body is

(a) *Mg* (b) 

(c)  (d) Zero

1. A body of mass 2 *kg* is moving on the ground comes to rest after some time. The coefficient of kinetic friction between the body and the ground is 0.2. The retardation in the body is

(a)  (b) 

(c)  (d) 