**Tarun Arora**  **R.L. Institute M :9416974837**

**Max Time : 1 hr** **FORCE & LAWS OF MOTION Max Marks : 25**

1. **Multiple Choice Questions : [ 1 x 15 = 15 ]**
2. Force is defined as

a) change in momentum

b) rate of change of momentum

c) The quantity that opposes inertia

d) the quantity that keep the velocity constant

1. The rate of change of momentum with respect to time is measured in

|  |  |  |  |
| --- | --- | --- | --- |
| a) kg ms-2 | b) kg ms-1 | c) kg m | d) kg |

1. The acceleration of an object is

|  |  |
| --- | --- |
| a) inversely proportional to its mass | b) directly proportional to the applied force |
| c) resisted by inertia | d) all of the above |

1. A goalkeeper in a game of football pulls his hands backwards after holding the ball shot at the goal. This enables the goalkeeper to

a) exert large force on the ball

b) reduce the force exerted by the ball on hands.

c) increase the rate of change of momentum

d) decrease the rate of change of momentum

1. Which of the following is an equation of motion of a body ?

|  |  |  |  |
| --- | --- | --- | --- |
| a) p = mv | b) F = ma | c) v – u = at | d) Ft = mv – mu |

1. According to newton’s third law of motion, action and reaction

a) always act on the same body

b) always act on different bodies in opposite direction.

c) have same magnitudes and direction

d) act on either body at normal to each other

1. The rocket works on the principle of conservation of

|  |  |  |  |
| --- | --- | --- | --- |
| a) mass | b) energy | c) momentum | d) velocity |

1. An object of mass 2 kg is sliding with a constant velocity of 4 ms-1 on a frictional horizontal table. the force required to keep the object moving with same velocity is

|  |  |  |  |
| --- | --- | --- | --- |
| a) 2 N | b) 8 N | c) 32 N | d) 0 N |

1. A water tanker filled up to 2/3 of its height is moving with a uniform speed. On sudden application of brakes , the water in the tank would

|  |  |  |  |
| --- | --- | --- | --- |
| a) move backward | b) move forward | c) be unaffected | d) rise upwards |

1. An object of mass of 2 kg is sliding with a velocity of 4 ms-1 on a frictional horizontal surface. The retarding for necessary to stop the object in 1 second is

|  |  |  |  |
| --- | --- | --- | --- |
| a) 2 N | b) 4 N | c) 8 N | d) 0 N |

1. Inertia is the property by virtue of which the body is

a) unable to change by itself the state of rest only.

b) unable to change by itself the direction of motion only.

c) unable to change by itself the state of uniform linear motion only.

d) unable to change by itself the state of rest and of uniform linear motion only.

1. Passengers standing in a bus are thrown outwards when the bus takes a turn suddenly. This happens because of

|  |  |
| --- | --- |
| a) outward pull on them | b) inertia |
| c) change in momentum | d) change in acceleration |

1. Newton’s second law gives a measure of

|  |  |  |  |
| --- | --- | --- | --- |
| a) velocity | b) force | c) momentum | d) rate of motion |

1. An unbalanced force is necessary for an object to be

|  |  |
| --- | --- |
| a) at rest | b) in motion with constant velocity |
| c) accelerated | d) all of the preceding |

1. The inertia of an object tends to cause the object

a) to increase its speed

b) to decrease its speed

c) to resist any change in the state of rest or of motion

d) to decelerate due to friction

1. **2 Marks Questions [ 2 x 2 = 4 ]**
2. What is the acceleration produced by a force of 12 Newton exerted on an object of mass 3 kg ?
3. When a carpet is beaten with a stick, dust comes out of it. Explain ?
4. **3 Marks Questions [ 3 x 2 = 6 ]**
5. A bullet of mass 20 g is horizontally fired with a horizontal velocity 150 ms-1 from a pistol of mass 2 kg. What is the recoil velocity of the pistol ?
6. An object of mass 100 kg is accelerated uniformly from a velocity of 5 ms-1 to 8 ms-1 in 6 sec. Calculate the initial and final momentum of the object. Also, find the magnitude of the force exerted on the object.

|  |  |
| --- | --- |
|  |  |
|  |  |