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**Max Time : 1 hr** **Class = 9th Science Test Max Marks : 35**

**Motion , Forces and Laws of motion , Gravitation**

1. Multiple choice questions : [ 1 X 10 = 10 ]
2. What is linear momentum of a toy car of mass 300 g, moving with a speed of 18 km/h.

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| --- | --- | --- | --- |
| a) 1.5 kg m/s | b) 3 kg m/s | c) 5.4 kg m/s | d) None |

1. Which force is responsible for tides in the ocean at night?

|  |  |
| --- | --- |
| a) Gravitational pull of Sun | b) Gravitational pull of Moon |
| c) Gravitational pull of Earth | d) None of these |

1. Calculate the force required to impart a car, a velocity of 30 m/s in 10 seconds. The mass of the car is 1500 kg.

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| --- | --- | --- | --- |
| a) 4500 N | b) 5000 N | c) 3000 N | d) zero |

1. A body starting from rest acquires a velocity of 10 m/s in 2 seconds. The acceleration of the body is :

|  |  |  |  |
| --- | --- | --- | --- |
| a) 5 m/s2 | b) 10 m/s2 | c) 1 m/s2 | d) zero |

1. Which of the following graphs show that the body is at rest?

|  |  |  |  |
| --- | --- | --- | --- |
| a) | b) | c) | d) |

1. When a branch of a tree is shaken, some of the fruits may fall down. This happens due to :

|  |  |
| --- | --- |
| a) Inertia of rest | b) Inertia of motion |
| c) Inertia of direction | d) None of the above |

1. What is the standard value of G?

|  |  |
| --- | --- |
| a) G = 6.67 x 10 – 11  Nm2/kg2 | b) G = 6.67 x 10 – 8  Nm2/kg2 |
| c) G = 7.76 x 10 – 11  Nm2/kg2 | d) None of these |

1. The gravitational force between two objects is ‘F’. How will the force change when distance between them is reduced to half?

|  |  |  |  |
| --- | --- | --- | --- |
| a) 4 F | b) 2 F | c) F/4 | d) F/2 |

1. SI unit of weight is :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Newton | b) kilogram | c) gram | d) none |

1. A body weighs 40 kg on the surface of earth. Its mass and weight at the centre of earth are :

|  |  |  |  |
| --- | --- | --- | --- |
| a) 40 kg , 40 kg | b) 40 kg , zero | c) zero , zero | d) zero , 40 kg |

1. What is the quantity which is measured by the area occupied below the velocity-time graph? [ 1 ]
2. Why is it advised to tie any luggage kept on the roof of a bus with a rope. [ 1 ]
3. Define acceleration due to gravity. [ 1 ]
4. Define inertia. [ 1 ]
5. Define distance and displacement. [ 1 ]
6. What is the magnitude of gravitational force between the earth and a 1 kg object on its surface? Mass of earth = 6 x 1024 kg and radius of earth = 6.4 x 106 m. [ 2 ]
7. (a) A trolley, while going down an inclined plane, has an acceleration of 2 cm/s2 starting from rest. What will be its velocity 3 s after the start? [ 2 ]

(b) A racing car has a uniform acceleration of 4 m/s2. What distance will it cover in 10 s after start?

1. Differentiate between Speed , Velocity and Acceleration with the help of its expressions and S.I. unit.

[ 2 ]

1. Differentiate between mass and weight. [ 2 ]
2. (a) The gravitational force between two objects is 100 N. How should the distance between these objects be changed so that force between them becomes 50 N? [ 3 ]

(b) If distance between two masses is quadrupled, what will be the new force of attraction between them? Given the initial gravitational pull is 9.8 N.

1. Define all three laws of Newtons. [ 3 ]
2. (a) A body travels a distance of 15 m from A to B and then moves a distance of 20 m at right angles to AB. Calculate the total distance travelled and the displacement. [ 3 ]

(b) A particle is moving in a circle of diameter 5 m. Calculate the distance covered and the displacement when it completes 3 revolutions.

(c) A farmer moves along the boundary of a square field of side 10 m in 40 s. What will be the magnitude of displacement of the farmer at the end of 2 minutes 20 seconds

1. (a) Joseph jogs from one end A to the other end B of a straight 300 m road in 2 minutes 30 seconds and then turns around and jogs 100 m back to point C in another 1 minute. What are the joseph’s average speeds and velocities in jogging (a) from A to B (b) from A to C ? [ 3 ]

(b) A train travels 60 km/h for 0.52 h ; at 30 km/h for the next 0.24 h and at 70 km/h for the next 0.71 h. What is the average speed of the train?