CBSE

FORCE AND LAWS OF MOTIONS WS 2

Class 09 - Science

Section A

1. The SI unit of force is: **[1]**

   a) Newton
   b) Newton per second
   c) Newton per square metre
   d) Newton metre

2. A truck carries sand. Due to hole in the base of truck, significant amount of sand falls continuously. For the same condition of working of the engine, the speed of the truck should **[1]**

   a) increase
   b) cannot be found
   c) remain the same
   d) decrease

3. On a 3 kg mass, 5 newton of force acts for 0.1 second. The impulse imparted to the mass is (in kg m/s): **[1]**

   a) 0.16
   b) 1.0
   c) 1.5
   d) 0.5

4. **Assertion (A):** The first law of motion is also known as the law of inertia. **[1]**
   Reason (R): Newton's first law of motion states that a body at rest will remain at rest, and a body in motion will continue in motion in a straight line with a uniform speed unless it is compelled by an external force to change its state of rest or of uniform motion.

   a) Both A and R are true and R is the correct explanation of A.
   b) Both A and R are true but R is not the correct explanation of A.
   c) A is true but R is false.
   d) A is false but R is true.

5. **Fill in the blanks:** **[1]**

   (a) _____ forces cannot produce motion in a stationary body or stop a moving body. **[1]**

6. The given image shows an effect of force that it can **[1]**

   a) Change the shape of the object
   b) Move a stationary object
   c) Stop a moving object
   d) Change the size of the object

7. Which effect of force is observed in the given image? **[1]**

a) A force can change the speed of a moving body

b) A force can change the shape of the object

c) A force can move a stationary body

d) A force can stop a moving body

8. Newton's first law gives the _____ definition of force. **[1]**

a) quality

b) quantitative

c) qualitative

d) quantity

9. An object moving along a straight path with accelerated motion. The correct statement about the object- **[1]**

A. Its velocity keeps changing

B. Its speed keeps changing

C. A force is always acting on it

D. Its mass keeps on changing

a) (B) and (C) are correct

b) All of these

c) (A), (B) and (C) are correct

d) (A) and (B) are correct

10. What did Galileo conclude on the basis of his experiments on the motion of objects? **[1]**

11. Does every force produce motion in every object? **[1]**

12. Why do bicycles begin to slow down when we stop pedalling? **[1]**

13. When a body moves on a flat surface, will its speed change? **[1]**

14. Name the scientist who proved for the first time that objects move with constant speed when no force acts on them. **[1]**

15. Define force of friction. **[1]**

Section B

16. Deduce Newton's first law from the second law. **[2]**

17. Two balls of the same size of different materials, rubber and iron are kept on the smooth floor of a moving train. The brakes are applied suddenly to stop the train. Will the balls start rolling? If so, in which direction? Will they move with the same speed? Give reasons for your answer. **[2]**

18. Why it is advised to tie any luggage kept on the roof of a bus with a rope? **[2]**

Section C

19. **State True or False:** **[3]**

(a) A body continues to be in a state of rest or in a state of uniform motion along a straight line unless acted upon by an external unbalanced force. **[1]**

(b) A force can change the speed of a moving body. **[1]**

(c) The first law of motion states that the rate of change of momentum of an object is proportional to the applied unbalanced force in the direction of the force. **[1]**

Section D

20. Give a reason for the following questions: **[5]**

i. It is difficult to balance our body when we accidentally step on a peel of a banana.

ii. Pieces of bursting crackers fall in all possible directions.

iii. A glass pane of a window is shattered when a flying pebble hits it.

iv. It is easier to stop a tennis ball than a cricket ball moving at the same speed.

v. A javelin thrower is marked foul if an athlete crosses over the line marked for the throw. Athletes often fail to stop themselves before the line.