

## Chapter-2

### Worksheet-2

#### Section 1

Q1. Define 1 newton force.

Q2. What do you mean by an impact force?

Q3. Plot a graph between force applied on a body and the acceleration produced in the given mass, assuming that the magnitude of force is constantly changing.

Q4. Name the principle on which a rocket works.

Q5. Why mass is sometimes called coefficient of linear inertia?

Q6. When a force acting on a body has equal and opposite reaction, then why should the body move at all?

Q7. Suppose a ball of mass  $m$  is thrown vertically upwards with an initial speed  $v$ , its speed decreases continuously till it becomes zero. Therefore, the ball begins to fall downward and attains the speed  $v$  again before striking the ground. It implies that the magnitude of initial and final momenta of the ball are same. Yet, it is not an example of conservation of momentum. Explain why.

Q8. What is the ratio of SI units to CGS units of momentum? How do you measure the effect of an impulsive force on the body?

Q9. A bullet fired against a glass window pane makes a hole in it, and the glass pane is not cracked. But on the other hand, when a stone strikes the same glass pane, it gets smashed. Why is it so?

Q10. Why can a small mass such as a bullet kill a person when fired from a gun?

## Section 2

Q11. 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) Increases the force exerted by the ball on hands
- c) Increase the rate of change of momentum
- d) Decrease the rate of change of momentum

**Answer: d**

Q12. When a balloon held between the hands is pressed, its shape changes. This happens because:

- a) Balanced forces act on the balloon
- b) Unbalanced forces act on the balloon
- c) Frictional forces act on the balloon
- d) Gravitational force acts on the balloon

**Answer: a**

Q13. An object of mass 2 kg is sliding with a constant velocity of 4  $\text{ms}^{-1}$  on a frictionless horizontal table. The force required to keep the object moving with the same velocity is

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

**Answer: b**

Q14. The speed of a car weighing 1500 kg increases from 36 km/h to 72 km/h uniformly. What will be the change in momentum of the car?

- a) 15000 kg km/h
- b) 15000 kg m/s
- c) 54000 kg km/h
- d) 54000 g m/s

**Answer: c**

Q15. A man wearing a bullet-proof vest stands on roller skates. The total mass is 80 kg. A bullet of mass 20 g is fired at 400 m/s. It is stopped by the vest and falls to the ground. What is then the velocity of the man?

- a) 1 m/s
- b) 0.1 m/s
- c) 0.01 m/s
- d) 0 m/s

**Answer: b**

Q16. The unit of measuring the momentum of a moving body is:

- a) m/s
- b) kg·m/s
- c) kg·m/s<sup>2</sup>
- d) N m<sup>2</sup>/kg<sup>2</sup>

**Answer: b**

Q17. Which of the following is not an application of conservation of linear momentum?

- a) While firing a bullet, the gun must be held tight to the shoulder
- b) When a man jumps from a boat to the shore
- c) A rocket explodes on midway from the ground

- d) A body suspended from the hook of a spring balanced in a lift which is accelerated downward

**Answer: c**

Q18. A bullet of mass A and velocity B is fired into a wooden block of mass C. If the bullet gets embedded in the wooden block, then the magnitude of velocity of the system just after the collision will be

- a)  $\frac{A+B}{AC}$   
b)  $\frac{A+C}{B+C}$   
c)  $\frac{AC}{A+B}$   
d)  $\frac{AB}{A+C}$

**Answer: d**

Q19. The masses of two bodies are in ratio 5: 6 and their velocities are in ratio 1 : 2. Then their linear momentum will be in the ratio

- a) 5:6  
b) 1:2  
c) 12:5  
d) 5:12

**Answer: d**

Q20. A ball is thrown vertically upward in a train moving with uniform velocity. The ball will

- a) fall behind the thrower  
b) fall ahead the thrower  
c) return back the thrower  
d) fall on left of the thrower

**Answer: c**