Physics Assignment   **Class: IX**   **July'2024**

Chapter 8: Force and Laws of Motion

1. MULTIPLE CHOICE QUESTIONS:

i.   A water tank filled upto 2/3 of its height is moving with a uniform speed. On sudden application of the brake, the water in the tank would

(a) move backward   (b) move forward   (c) come to the rest   (d) be unaffected

ii.   If the mass of a body is doubled and its velocity becomes half, then the linear momentum of the body will

(a) remain same   (b) become double   (c) become half   (d) become four times.

2. In each of the following questions, two statements are given- one labeled Assertion (A) and the other labeled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below:

a) Both A and R are true, and R is correct explanation of the assertion.

b) Both A and R are true, but R is not the correct explanation of the assertion.

c) A is true, but R is false.

d) Both assertion and reason are false.

(i) **Assertion**: When a firefly hits a bus, each of them exerts the same force.

   Reason: Firefly has more mass as compared to the windshield.

(ii) **Assertion**: Newton's third law applies to all types of forces. e.g. gravitational, electric or magnetic forces etc.

   Reason: Newton's third law of motion is applicable only when bodies are in motion.

3. Answer the following questions :

1. Differentiate between balanced and unbalanced force.
2. Derive the mathematical relation of Newton's second law of motion.
3. Water sprinkler used for grass lawns begins to rotate as soon as the water is supplied. Explain the principle on which it works.
4. A horse continues to apply a force in order to move a cart with constant speed.
5. A car travelling at velocity 54km/h stops in 6 seconds after brakes are applied. How much force do the brakes apply to the car if its mass along with its driver is 800 kg?.
6. A car weighing 1600 kg moving with a velocity of 30 m/s retards uniformly coming to rest in 20 seconds. Calculate rate of change of linear momentum of the car.
7. A hammer of mass 500 g moving at 500m/s strikes a nail. The nail stops the hammer in a very short time of 0.01s. What is the force of the nail on the hammer?