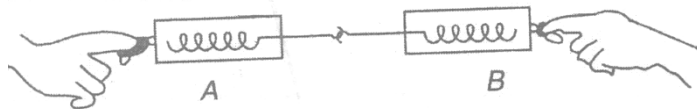# CLASS IX- PHYSICS
FORCE AND LAWS OF MOTION
ASSIGNMENT 3

MULTIPLE CHOICE QUESTION - 3.1

1. If a moving ball A collides with another moving ball B, then :

    (A) momentum of A = momentum of B

    (B) (momentum + A + momentum of B) before collision = (momentum A + momentum of B) after collision

    (C) neither A nor B

    (D) A or B both are possible

2. When a bullet is fired from a gun. The gun recoils to :

    (A) conserve mass   (B) conserve momentum

    (C) conserve K.E.   (D) none of these

3. A bullet is motion hits and gets embedded in a solid resting on a frictionless table. What is conserved ?

    (A) Momentum and K.E.   (B) Momentum alone   (C) K.E. alone   (D) None of these

4. A bullet of mass 0.01 kg is fired from a gun weighing 5.0 kg. If the initial speed of the bullet is 250 m/s, calculate the speed with which the gun recoils :

    (A) -0.50 m/s   (B) -0.25 m/s   (C) + 0.05 m/s   (D) + 0.25 m/s

5. Forces of action and reaction are :

    (A) equal and in same direction   (B) equal and in opposite direction

    (C) unequal and in same direction   (D) unequal and opposite.

6. Forces of action and reaction act :

    (A) one after the other on same body   (B) simultaneously on same body

    (C) one after the other on different bodies   (D) simultaneously on different bodies

7. A man is standing on a boat in still water. If he walks towards the shore the boat will :

    (A) more away from the shore   (B) remain stationary

    (C) move towards the shore   (D) sink

8. In the action and direction were to act on the same body :

    (A) the resultant would be zero   (B) the body would not move at all

    (C) both A and B are correct   (D) neither A nor B is correct

9. Consider two spring balances hooked as shown in the figure. We pull them in opposite directions. If the reading shown by A is 1.5 N, the reading shown by B will be :

    (A) 1.5 N   (B) 2.5 N   (C) 3.0 N   (D) Zero

10. Newton used, quantity of motion' for :

(A) momentum

(B) force

(C) acceleration due to gravity

(D) none of these

11. A cannon after firing recoils due to :

(A) conservation of energy

(B) backward thrust of gases produced

(C) Newton's first law of motion

(D) Newton's' third law of motion

12. A Diwali rocket is ejecting 0.05 kg of gases per second at a velocity of 400 ms^{-1}. The accelerating force on the rocket is :

(A) 20 dyne   (B) 20 Newton   (C) 20 kg wt.   (D) sufficient data not given

13. The forces of action and reaction have _____ magnitude but _____ direction :

(A) same, same   (B) same, opposite   (C) opposite, same   (D) opposite, opposite

14. Choose correct statement :

(A) Action and reaction forces act on same object.

(B) Action and reaction forces act on different objects.

(C) A and B both are possible.

(D) Neither A nor B is correct.

SUBJECTIVE QUESTION -3.2

1. What is total momentum of the gun and bullet just before firing ?

2. Explain of application of law of conservation of momentum.

3. State Newton's third law of motion.

4. Explain why it is difficult for a fireman to hold a hose, which ejects large amount of water at a high speed.

5. State third law of motion. Give two examples in support of this law.

6. If someone jumps to the shore from boat, the boat moves in the opposite direction. Explain why ?

7. (i) What is the physical principle involved in the working of a jet plane ?

(ii) Do the action and reaction act on the same body or direction bodies ? How are they related in magnitude and direction ? Are they simultaneous or not ?

8. Two cars A and B are moving towards each other on a horizontal surface. The can A has mass 60 g and moves towards the right with speed of 60 cms^{-1} The car B has a mass of 100 g and moves towards the left with a speed of 20 cms^{-1}. The two cars collide and get stuck to each other. With what velocity will they move after the collision ?