CLASS IX- PHYSICS
FORCE AND LAWS OF MOTION
ASSIGNMENT 2

OBJECTIVE DPP - 2.1

1. Newton's second law of motion :

    (A) defines force   (B) defines inertia   (C) gives measure of force   (D) none of these

2. Newton's second law of motion is :

    (A) qualitative   (B) quantitative

    (C) both qualitative and quantitative   (D) neither qualitative nor quantitative

3. Momentum measures amount of _____ in a body :

    (A) inertia   (B) motion   (C) velocity   (D) acceleration

4. Force measures rate of change of _____ a body :

    (A) mass   (B) inertia   (C) velocity   (C) momentum

5. C.G.S. unit of force is :

    (A) m/s   (B) s/ m   (C) dyne   (D) Newton

6. Momentum has same unit as :

    (A) impulse   (B) torque   (C) moment of force   (D) couple

7. When force of 1N acts on mass of 1kg. which is able to move freely, the object moves with a /an:

    (A) speed of 1 ms^{-1} (B) speed of 1 kms^{-1}

    (C) acceleration of 10 ms^{-2} (D) acceleration of 1ms^{-2}

8. The net force acting on a body of mass of 1 kg moving with a uniform velocity of 5 ms^{-1} is :

    (A) 5N   (B) 0.2 N   (C) 0 N   (D) None of these

9. A body of mass 20 kg moves with an acceleration of 2ms^{-2}. The rate of change of momentum is S.I. unit is

    (A) 40   (B) 10   (C) 4   (D) 1

10. A body of mass M strikes against wall with a velocity v and rebounds with the same velocity. Its change in momentum is :

    (A) zero   (B) Mv   (C) -Mv   (D) -2 Mv

11. Gram weight is a unit of :

    (A) mass   (B) weight   (C) A and B both   (D) neither A nor B

12. 9.8 N is equal to :

    (A) 1 kgf   (B) 1 kgwt   (C) A and B both   (D) Neither A nor B

13. A body of mass 5 kg undergoes a change in speed from 20 m/s to 0.20 m/s. The momentum :

    (A) increases by 99 kgm/s   (B) decreases by 99 kgm/s

    (C) increases by 101 kgm/s   (D) decreases by 101 kgm/s

14. The combined effect of mass and velocity is taken into account by a physical quantity called :

A) torque   (B) moment of force   (C) momentum   (D) all of them

15. How many dynes are equal to 1N ?

(A) 10^8 (B) 10^4 (C) 10^5 (D) 10^3

16. Choose correct relation :

(A) $a = \dfrac{F}{m}$ (B) $aF = m$ (C) $m = F \times a$ (D) none of these

SUBJECTIVE QUESTION - 2.2

1. Name of quantities on which momentum of a body depends.

2. What is S.I. unit of momentum ?

3. Is momentum vector or scalar ?

4. Two similar trucks are moving with same velocities on a road. One of them is loaded while another one is empty. Which of the two ill require a larger force to stop it in same time ?

5. Explain meaning of the following equation F = ma. Symbol have their usual meaning.

6. Explain how Newton's second law of motion can be explained to define the unit of force and also name the unit.

7. A 1000 kg vehicle moving with a speed of 20 ms^{-1} is brought to rest in a distance of 50 metre by applying brakes :

   (i) Find the acceleration.

   (ii) Calculate the unbalanced force acting on the vehicle.

   (iii) The actual force applied by the brakes will be slightly less than that calculated in, why ? Give reasons.

8. Write the expression for impulse.

9. Name a quantity which has same unit as that of impulse.

10. Derive relation between impulse and momentum.

11. A 5 quintal car is moving with a velocity of 54 kmh^{-1}. What is its impulse if it is stopped within 0.5s by application of backward force ? Also determine the force applied.