Bharatiya Vidya Bhavans,V.M. Public School
Ch- Force and Laws of Motion

One marks Questions

1. State and explain the law of inertia (or Newton's first law of motion).
2. The earth attracts a stone towards itself with a force of 10N. The force with which the stone attracts the earth is
    a) 20N   b) infinite   c) zero   d) 10N
3. Differentiate balanced and unbalanced forces with example for each.
4. Which has higher value of momentum: a) a bullet of mass 10g moving with a velocity of 400m/s or a cricket ball of mass 400g thrown with the speed of 90km/h.
5. How much momentum will an object of mass 10kg transfer to the floor if it falls from a height of 0.8m?
6. Name the factor on which the inertia of a body depends.
7. A ball is thrown vertically upward. What is its momentum at the highest point?

Two Marks Questions

8. State Newton's second law of motion. What is the SI unit of force?
9. A motorcycle is moving with a velocity of 90km/h and it takes 5 seconds to stop after the brakes are applied. Calculate the force exerted by the brakes on the motorcycle if its mass along with the rider is 200kg.
10. a) An athlete always runs some distance before taking a jump. Why?
    b) Why is it advised to tie luggage kept on the roof of a bus?
    c) Why does dust flies off when carpet is hit with stick?
    d) Why do we jerk wet clothes before spreading them on line?
11. A bullet of mass 20g moving with a speed of 500m/s strikes a wooden block of mass 1kg and gets embedded in it. Find the speed with which block moves along with the bullet.
12. What would happen if a fielder stops the fast moving ball suddenly? Justify your answer.
13. What are the changes possible on an object at rest if we apply on it:
    a) A balanced force   b) an unbalanced force?

Three Marks Questions

14. State Newton's third law of motion. Give two examples.
15. Give reason and give the law related to these statement s:
    a) It is easier to push an empty box than to push the box full of books.
    b) It is difficult for a fireman to hold a hose pipe which ejects large amount of water with high velocity.
16. Why does a player run for some distance before taking a long jump?
17. Why does a person fall off the back of a stationary horse, if the horse starts off suddenly?
18. A gun of mass 1000kg fires a shell of mass 2kg with a velocity of 200m/s. Calculate the velocity of recoil of the gun.

Five Marks Questions

19. a) State Newton's second law of Motion. Derive the mathematical expression for Newton's second law of motion. Why Newton's second law is called as real law of motion?
    b) Define linear momentum. State and prove the law of conservation of linear momentum.

20. a) If two balls X and Y of masses 'm' and '2m' are in motion with velocities '2V and 'V' respectively, then compare: a) their inertia b) their momentum c) force required to stop them in the same time
    b) A gun of mass M kg fires a shell of mass 1.5kg with a velocity of 150m/s and recoil with a velocity of 1.5m/s. Calculate the mass of the gun.

21. What will happen to the momentum of the body when the velocity is doubled? Derive the relation between force and momentum.

Manisha Bhatt