Chapter-9

FORCE AND LAWS OF MOTION

Sub-Topic Name:

- Force and its effects
- Balanced Force
- Unbalanced Force
- Newton's First Law of Motion
- Inertia
- Momentum
- Newton's Second Law of Motion
- Mathematical formulation of Newton’s Second Law of Motion
- Applications of Newton’s 2nd Law of Motion
- Newton's Third Law of Motion
- Applications of Newton's Third Law of Motion
- Law of Conservation of Momentum

1. Why are road accidents at high speed very much worse than accidents at low speed?
2. A body of mass 25 kg has a momentum of 125 kg m/s. calculate the velocity of the body.
3. Define 1N force.
4. Write the relationship b/w force and acceleration.
5. A gun man gets a jerk on firing a bullet why?
6. A bullet of mass 10 gm moving with a velocity of 400 m/sec gets embedded in a freely suspended wooden block of mass 900 gm. Calculate the velocity of wooden block acquired.

7. If action is always equal to reaction, explain why a cart pulled by a horse can be moved.

8. A truck started from rest and rolls down a hill with constant acceleration it travels a distance of 400 m in 20 sec. find its acceleration and force acting on it if the mass of the truck is 1 metric tones.

9. Explain the Newton's second law of motion.

10. Why does a passenger jumping out of a rapidly moving bus fall forward with his facedownwards?

11. Why can dust be removed by shaking it, or beating it by a carpet?

12. Why does a bullet when fired against a glass window pane make a hole in it, and theglass pane will smash it?

13. An athlete always runs some distance before taking a jump. Why?

14. A cricket ball of mass 70 g moving with a velocity of 0.5 m/s is stopped by a player in 0.5 s. What is the force applied by the player to stop the ball?

15. In a cricket match, why does a player lower his hands slightly while catching the ball?

16. State Newton's three laws of motion. Calculate the magnitude of force required toproduce an acceleration of 2 m/s in a body of mass 12.5 kg.

17. Define inertia. Does it depend on the mass of the body ? How will you use this inertia to

(i) dust a carpet

(ii) remove water drops from wet cloth? Explain

18. Explain how momentum gets conserved in collision of two bodies?