

# 1. FORCE AND PRESSURE

## : TEXTUAL QUESTIONS AND ANSWERS :

1. Give two examples each of the situations in which you push or pull to change the state of motion of objects.

A. Examples of situations in which we push :

- (i) We have to push the switch, to switch on.
- (ii) We have to push a car, if it has starting problem.
- (iii) We have to push the accelerator in a car to speed up.

Examples of situations in which we pull :

- (i) We have to pull the rope to hoist a flag.
- (ii) We have to pull the rope to draw a bucket of water from the well.
- (iii) We have to pull the rope to win in the Tug of War game.

2. Give two examples of situations in which applied force causes a change in the shape of an object.

A. Examples of situations in which applied force causes a change in the shape :

- (i) We apply force on a rubber band to change its shape by stretching.
- (ii) We apply force on a sponge to change its shape.
- (iii) We apply force on a tooth paste tube to change its shape.

3. Fill in the blanks in the following statements.

- (a) To draw water from a well we have to ..... at the rope.
- (b) A charged body ..... an uncharged body towards it.
- (c) To move a loaded trolley we have to ..... it.
- (d) The north pole of a magnet ..... the north pole of another magnet.

A. (a) pull

- (b) pulls (attracts)
- (c) push
- (d) pushes (repels)

4. An archer stretches her bow while taking aim at the target. She then releases the arrow, which begins to move towards the target. Based on this information fill up the gaps in the following statements using the following terms:

muscular

contact

non-contact

gravity

friction

shape

attraction

- (a) To stretch the bow, the archer applies a force that causes a change in its .....
- (b) The force applied by the archer to stretch the bow is an example of ..... force.
- (c) The type of force responsible for a change in the state of motion of the arrow is an example of a ..... force.
- (d) While the arrow moves towards its target, the forces acting on it are due to ..... and that due to ..... of air.

- A. (a) shape  
(b) muscular  
(c) contact  
(d) gravity, friction

**5. In the following situations identify the agent exerting the force and the object on which it acts. State the effect of the force in each case.**

- (a) Squeezing a piece of lemon between the fingers to extract its juice.
- (b) Taking out paste from a toothpaste tube.
- (c) A load suspended from a spring while its other end is on a hook fixed to a wall.
- (d) An athlete making a high jump to clear the bar at a certain height.

A. (a) Squeezing a piece of lemon between the fingers :

Force applied by the fingers.

Force applied on the lemon.

Force can change the shape of lemon.

(b) Taking out paste from a toothpaste tube :

Force applied by the fingers.

Force applied on the toothpaste tube.

Force can change the shape of the tube.

(c) A load suspended from a spring while its other end is on a hook :

Force applied by the suspended load.

Force applied on the spring.

Force can change the shape of the spring.

(d) An athlete making a high jump :

Force applied by the muscles of the athlete.

Force applied on the athlete.

Force can change the state of motion of the athlete

**6. A blacksmith hammers a hot piece of iron while making a tool. How does the force due to hammering affect the piece of iron?**

- A. (i) Blacksmith hammers a hot piece of iron while making a tool.  
(ii) The force due to hammering causes the change in the shape of the iron.  
(iii) So that, the iron can be moulded in the shape of the required tool.

**7. An inflated balloon was pressed against a wall after it has been rubbed with a piece of synthetic cloth. It was found that the balloon sticks to the wall. What force might be responsible for the attraction between the balloon and the wall?**

- A. (i) An inflated balloon was rubbed with a synthetic cloth.  
(ii) The balloon sticks to the wall.  
(iii) It is due to electrostatic force.

**8. Name the forces acting on a plastic bucket containing water held above ground level in your hand. Discuss why the forces acting on the bucket do not bring a change in its state of motion.**

A. Forces acting on bucket are as follows :

- (i) Muscular force of arms acting upward.  
(ii) Force of gravity acting downward.

Reason for no change in the state of motion :

- (i) The two forces are acting in equal and opposite directions.  
(ii) Thus they cancel each other's effect.  
(iii) So, the forces acting on the bucket do not bring a change in its state of motion.

**9. A rocket has been fired upwards to launch a satellite in its orbit. Name the two forces acting on the rocket immediately after leaving the launching pad.**

A. The forces that act when a rocket leaves launching pad are as follows :

- (i) Gravitational force of the earth (always in downward direction)  
(ii) Frictional force of air (in opposite direction to the motion of the rocket)

**10. When we press the bulb of a dropper with its nozzle kept in water, air in the dropper is seen to escape in the form of bubbles. Once we release the pressure on the bulb, water gets filled in the dropper. The rise of water in the dropper is due to ..... [ D ]**

- A. pressure of water  
B. gravity of the earth  
C. shape of rubber bulb  
D. atmospheric pressure