Chapter 10 - Force and Types of Force

Question 1.

Choose the term to fill in the blanks:

Ans. (1) Force has to be applied to change the direction of a moving object.

(2) When an elephant drags a wooden log over the land, the forces that are applied on the log are muscular force, gravitational force and frictional force.

(3) A ball was set rolling on a large table. If its motion is to be changed, a force will have to be applied on it.

(4) The force of friction always acts against the motion.

Question 2.

Match the following:

Answer

(1) An ox pulling a cart—Muscular force

(2) Lifting a heavy iron object with a crane — Magnetic force

(3) Weighing with a spring balance — Gravitational force

(4) Applying brakes to a bicycle —Frictional force.

(5) Picking up pieces of paper with a plastic scale— Electrostatic force.

Question 3.

One or more forces are acting in the following examples. Name them.

(1) An object falling from a tall building.

Ans. Gravitational force.

(2) An aeroplane flying in the sky.

Ans. Mechanical force, muscular force, frictional force, gravitational force.

(3) Squeezing sugarcane juice with a squeezer

Ans. Mechanical force, muscular force, frictional force.

(4) Winnowing food grains.

Ans. Muscular force, gravitational force.

Chapter 10 - Force and Types of Force

Question 4.

4. Explain in your own words giving one example each:

(1) Muscular force:

Ans. The force applied with the help of muscles is called muscular force. e.g., a man who pulls the handcart uses muscular force to perform the work

(2) Gravitational force:

Ans. Earth pulls all the objects towards it. This force is called gravitational force or gravity e.g. All the things on the earth, stay on the earth due to gravitational force.

(3) Mechanical force:

Ans. The force applied with the help of machines is called mechanical force. e.g., washing machine, food processor, water pump.

(4) Electrostatic force:

Ans. Electrostatic force is produced by the materials which develop static electricity on them. e.g., Due to electrically charged materials like ebonite, plastic, rubber this force is produced.

(5) The force of friction / Frictional force:

Ans. Fictional force is created by friction. Two surfaces rub against each other and produce frictional force. e.g., the brakes used in stopping a running vehicle work on the frictional force.

(6) Magnetic force:

Ans. The force exerted by a magnet is called magnetic force. Magnetic force is used in many gadgets such as doorbell, huge cranes that lift loads.

Chapter 10 - Force and Types of Force

Question 5.

Why?

(1) **Machines are oiled from time to time.**

Ans. If machines are not oiled, the frictional force may be created between the surfaces of this machine. If frictional force is more it will slow down the speed and efficiency of the machine, therefore, machines are oiled from time to time.

(2) An object thrown upwards comes down after reaching a point.

Ans. An object thrown upwards goes up due to muscular force. At one point the muscular force becomes zero. The gravitational force then starts operating on this object. It pulls this object down. Thus, an object thrown upwards comes down after reaching a point.

(3) Powder is sprinkled on a carrom board.

Ans. The coins on the carrom board should move swiftly during play. If powder is not sprinkled on the surface of the carrom board, there would be more frictional force. This will hinder the play. Therefore, to have a smooth carrom board surface, powder is sprinkled on a carrom board.

(4) The ramp at a railway station has a rough surface.

Ans. There should be more frictional force created on the ramp of the railway station. If the surface is smooth and slippery, there will be no frictional force. People using ramp in a hurry will slip and fall down easily. In order to avoid this and keep people safe, the ramp at a railway station has a rough surface.

Chapter 10 - Force and Types of Force

Question 6.

In what way are we different?

(1) Muscular force and mechanical force:

Ans.

Muscular force	Mechanical force
(1) Muscular force is created by our muscles in our body.	(1) Mechanical force is created by the muscles, i.e., in our body. machines.
(2) Muscular force is created due to the energy created by the food we eat.	(2) Mechanical force is created due to electricity or fuel.

(2) **The Force of friction and Gravitational force:**

Ans.

The Force of friction	Gravitational force
(1) The force of friction is created between two rough surfaces.	(1) Gravitational force is created by the earth's surface and it acts on every object present on the earth.
(2) The frictional force always acts against the direction of motion.	(2) The motion of an object goes on increasing with an increase in gravitational force.
(3) The force of friction can be increased or decreased.	(3) The gravitational force cannot be increased or decreased.

Chapter 10 - Force and Types of Force

Question 7.

Write answers to the following questions in your own words.

a) What are the things that can be done by applying force?

Ans. Force can be applied to almost all things. Lifting, pulling, riding a bicycle, pushing a load, squeezing or bending something, driving vehicles, using different machines, and almost all the day-to-day activities are done by applying force.

b) What is meant by weight?

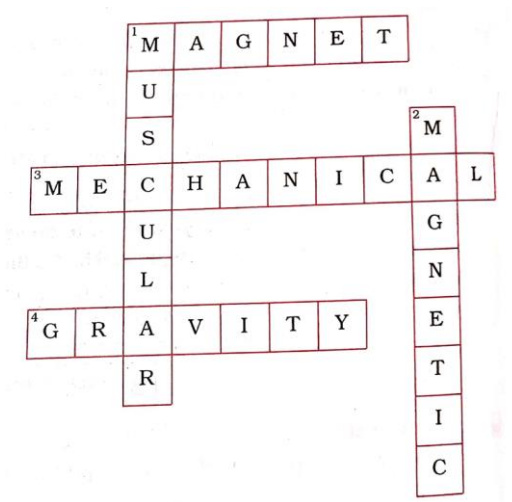
Ans. The gravitational force acting on an object is called the weight of that object.

c) Which machines run on muscular force?

Ans. Handcart, plough, ores of boat, bullock cart, horse carriage, bicycle, grinding stone, etc. are the machines that run on muscular force.

Question 8.

Solve the following crossword puzzle:



Down:

(1) _____ force is to be applied to push a scooter that has failed.

Chapter 10 - Force and Types of Force

(2) _____ force can be used to pick up scattered pins.

Across:

1)A _____ pulls an iron nail towards itself.

(3) _____ force was used when the farm was ploughed with a tractor.

(4) It is due to the force of _____that raindrops fall to the ground.