Class 08 Basic sciences chapter Force-and-pressure Questions answer

1. Q. what do we do to change the speed or direction of the motion of a moving body
Answer: We have to apply force to change the speed or direction of the motion of a moving body.

2. What makes a moving ball to rest in a while even is no force is applied
Answer: Force of friction brings the moving ball to rest in a while even is no force is applied.

3. What makes a ball thrown up into the air fall back to the ground?
Answer: Gravitational force of earth causes the ball to fall back to the ground

4. Mention the three types of force that can act from a distance?
Answer: Three types of force that can act from a distance are: (a) Gravitational force (b) Frictional force (c) Magnetic force

5. Mention the three disadvantages of friction between the parts of a machine?
Answer: Three disadvantages of friction between the parts of a machine are as follows: (a) It causes surfaces to wear down. (b) It produces heat. (c) It wastes energy

6. what is pressure? what is the SI unit of pressure?
Answer: Pressure is defined as the perpendicular force acting on unit area of an object.
Presure = Threust/Area
The SI unit of pressure is N/m2 or pascal

7. Define 1 pascal?
Ans: 1 pascal is pressure act on applying 1 n force on area of 1m2

8. What makes a coaster placed over the rim of a glass of water to stick to the glass even when the glass is inverted.
Answer: Atmospheric pressure causes a coaster placed over the rim of a glass of water to stick to the glass even when the glass is inverted.

9.Why is cutting edge of knife made sharp?
Ans: The cutting edge of knife made sharp so that force distributed over small area creating large pressure. This makes cutting easier.

10. What is the SI unit of force?
Answer: The SI unit of force is Newton (N).

1 N = kg x m/s2

11. What is the CGS unit of force?
Ans: The CGS unit of force is the dyne which is defined as 1 g x cm/s2,

B. Answer these questions

1. Give two example of situation in which it is helpful to increase friction?
Ans: (i) applying brakes (ii) walk on the ground (ii) Write with pencil on paper

2. What is streamline body? How it is helpful for a body to have such a shape?
Answer A streamlined body is defined as a body with narrow front and back and brooder at middle. This reduces the air and water resistance to its movement.

3. How does oil and ball bearing help to reduce friction?
Answer (a) Oil reduces friction by filling up the dents on the surfaces that move against each other in a machine. It also prevents direct contact between the surfaces by forming a film between them.

(b) Ball bearing converts sliding friction into rolling friction, which is less than sliding friction. This helps in reducing friction.

4. When you push something heavy, the resistance you feel decreases as the body starts moving. Explain with examples?
Answer : When we push something heavy, the resistance offered by friction force we feel decreases as the body starts moving because friction force has limit strength. For example when we apply force to move table , force applied at first used to manage the friction force. As soon as applied force became greater than the frictional force body stat moving and we feel least resistant.

5. (a) What are the characteristics of magnetic, electrostatic and gravitational forces have in common?
(b)What happen when a body leaves the earth gravitational field?
Answer : (a) Magnetic, electrostatic and gravitational forces are non contact force that can act from a distance.

(b) When a body leaves the earth's gravitational field, feel weightless. For example astronauts in space feel weightlessness because the earth's gravity has less effect on them.

6. (a) If every object attract every other object in the universe, why do we not attract each other?
(b) Why is moons force of gravity is lesser than that of earth?

Answer Answer (a) Gravitational force depends on the mass of two bodies

concerned. Therefore, gravitational force act between the bodies on the earth is so small that it cannot be felt.

(b) Gravitational force depends on the masses of the two bodies. Moon has considerably less mass than the earth itself. Therefore, force of gravity of moon is less than that of the earth.

7. Calculate the weight of 1 Kg mass.

Answer: Mass = 1 Kg, g = 9.8 m/s2
Weight = Attraction force on a body by earth = m x g (Acceleration due to gravity)
W = 1 x 9.8 = 9.8 N Thus, Weight of 1 Kg mass is 9.8 N.

8. What is Centripetal force?

Answer: When a body moves in a circular path, it changes its direction at every point. The force which keeps the body in the circular path acts towards the centre of the circle. This force is called centripetal force.

If there is no centripetal force, the body will move in a straight line tangent to the circular path.

9. If the moon attracts the earth, why does the earth not move towards the moon?
Answer: The earth is much larger than the moon so, the acceleration produced on the earth surface cannot be noticed

10. The gravitational force acts on all objects in proportion to their masses. Why, then, a heavy object does not fall faster than a light object?
Answer: Acceleration due to gravity does not depend on mass of object . Hence, all bodies fall with the same acceleration provided there is no air or other resistance

C. Answer these questions

1. What does a spring balance measure? How do you demonstrate the principal on which it works?
Answer Spring balance measures the weight of a body.

Take a spring and hang it on a nail and note the length. Now, hang a small stone from the other end of the spring and note the increase in length. Hang a bigger stone and note the change in length of the spring again.

It would be observed that the bigger the stone, greater is the extension of the spring, as

a bigger stone has more mass. Therefore, it is pulled by the earth with a greater force. The extension of the spring gives the weight of the body. This is the principle on which a spring balance works.

2. How is pressure in liquid related with depth? How do you demonstrate this?

Answer: Pressure increases with the depth of a liquid. Let us prove it with the following example.
Take a plastic bottle filled with water. Now make four holes one above another from top to bottom in a line. The flow of water from the bottom whole travel furthest because pressure exerted at his point is the heighest.

Or,

Utube and fix it on a board. Fill half of the tube with water such that both the arms of the tube have equal water level. This will work like a manometer. Now, attach one end of one meter rubber tube over one end of Utube and attach funnel to the other end of the rubber tube. Stretch a thin balloon over the mouth of the funnel and fix it with thread or rubber band. Lower the funnel slowly into a bucket of water. The difference between the heights of water in the two arms of manometer will increase as the funnel goes deeper into the bucket of water. This shows that pressure increases with the depth of the liquid.

3. How does friction help and creates problems when you cycle?

Answer:

Friction helps us in cycling in the following ways:
1. It helps us in applying brakes.
2. It helps the cycle to move.
3. It keeps our feet on the pedals.
4. It helps us in gripping the handlebar.
5. It helps us to sit on the saddle.

Friction creates problems while cycling in the following ways

1. Friction between moving parts wastes energy.
2. Friction causes wearing down.
3. Air resistance wastes our energy.

D. Complete the sentence

1. Rolling friction is <u>less</u> then the sliding friction.

2. A body has weight because of gravitational force.
3. The force which opposes the motion of one body over another is frictional force.
4. The smoother the surface, the lesser is the frictional force.
5. Kinetic friction is less than the static friction.
6. The smaller the area over which a force is applied, the higher is the pressure.
7. The pressure at a particular depth in a liquid is same in every direction

E .Choose the correct options

1. (c) between all bodies in the universe

Gravitational force acts between all bodies in the universe because it is a universal force.

2. (c) 1 kgf = 9.8 N

The relation between the SI units of force and weight of a one kilogram mass is given by the formula:
1 kgf = 9.8 N
3. (b) 10 N/m2

If a force of 100 N acts on an area of 10 m2, the pressure equals 10 N/m2 because:

Pressure = Force/Area

4. (d) water reduces friction between the road and the tyres
A car skids on a wet road because water reduces the friction between the road and the tyres

5. (c) Friction helps a ship move through water
There is no friction between a ship moving through water

F. Match the columns

Answer :
1. Gravitational force B, t, n
2. Frictional force A, o, s
3. Magnetic force B, p
4. Electrostatic force B, q

A. Contact force

B. Non contact force
m. Makes a pencil work
n. Acts between any two objects
o. Always opposes motion
p. Can act on iron but not on paper
q. Can act on paper
r. A non contact force that depends on mass
s. Reduces when a body starts moving
t. Prevents objects from flying away from earth