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Force and Pressure

Multiple Choice Questions

1. Which one of the following force always oppose motion?
- | | |
|------------------------|------------------------|
| A. gravitational force | B. electrostatic force |
| C. muscular force | D. friction |

Ans. D. friction

2. Pressure is defined as _____.
- | | |
|------------------------|-------------------------------|
| A. force per unit area | B. force per square unit area |
| C. force | D. force per area |

Ans. A. force per unit area

3. Which one of the following statements is false about force.
- Forces applied on an object need not to be in the same direction.
 - No objects interaction is required for a force to come into play.
 - Motion imparted to objects will be due to the action of a force.
 - The strength of a force is usually expressed by its magnitude.

Ans. B. No objects interaction is required for a force to come into play.

4. When a force applied on an object are equal and opposite, then this force
- May move the object.
 - Change the shape of the object and may move the object.
 - May stop a moving object.
 - Do not move the object but may cause a change in its shape.

Ans. D. Do not move the object but may cause a change in its shape.

5. Leaves and fruits fall to the ground when they get detached from a plant. Which one of the following force is acting on it?
- | | |
|------------------------|------------------------|
| A. muscular force | B. magnetic force |
| C. gravitational force | D. electrostatic force |

Ans. C. gravitational force

6. Which one of the following is an example of contact force?
- | | |
|------------------------|------------------------|
| A. magnetic force | B. muscular force |
| C. electrostatic force | D. gravitational force |

Ans. B. muscular force

Very Short Answer Questions

1. What is a force?

Ans. A push or a pull on an object is called a force.

2. The strength of a force is usually expressed by its _____.

Ans. Magnitude

3. Objects or things fall towards the earth because it pulls them. This force is called the _____.

Ans. Force of gravity or gravitational force.

4. Write the formula to find out pressure.

Ans. Pressure = force / area on which it acts

5. State whether the following statement is True or False.

Gases exert pressure on the walls of their container.

Ans. True

6. The pressure exerted by this air is known as _____.

Ans. Atmospheric pressure

7. Which force acts on every object in the universe?

Ans. Gravitational force.

Short Answers Questions

1. Find out the type of force acting on the below situations.

a. A coin or a pen falls to the ground when it slips out of your hand.

b. A boat comes to rest if we stop rowing it.

c. When a person lifts a bucket of water.

Ans. a. Gravitational force

b. Friction

c. Muscular force

2. Describe the state of motion of an object.

Ans. The state of motion of an object is described by its speed and the direction of motion. The state of rest is considered to be the state of zero speed. An object may be at rest or in motion; both are its states of motion.

3. Write one point of difference between contact and non-contact force with an example.

Contact force	Non-contact force
A force which can be applied only when it is in contact with an object.	A force which can be applied even without being in contact with an

	object.
Ex: Muscular force	Ex: Magnetic force

4. **Why do you think a ball rolling along the ground gradually slows down and comes to rest?**

Ans. The force responsible for changing the state of motion of the ball is the force of friction. It is the force of friction between the surface of the ball and the ground that brings the moving ball to rest.

5. **Porters place a round piece of cloth on their head when they have to carry heavy loads. Why?**

Ans. Porters place a round piece of cloth on their heads when they have to carry heavy loads. By doing this they increase the area of contact of the load with their head. So, the pressure on their head is reduced and they find it easier to carry the load.

6. **What type of force is friction – contact or non-contact? Why?**

Ans. The force of friction always acts on all the moving objects and its direction is always opposite to the direction of motion. Since the force of friction arises due to contact between surfaces, it is a type of contact force.

The non-contact force is a force which can produce its effect without making a contact with an object.

7. **Why do you think pressure acts on the area of a surface?**

Ans. Smaller the area, larger the pressure on a surface for the same force. For example, the area of the pointed end of the nail is much smaller than that of its head. The same force, therefore, produces a pressure sufficient to push the pointed end of the nail into the wooden plank.

8. **Do you think sometimes application of force does not result in a change in the state of motion? Describe with an example.**

Ans. It is common experience that many a time application of force does not result in a change in the state of motion. For example, a heavy box may not move at all even if you apply the maximum force that you can exert. Again, no effect of force is observed when you try to push a wall.

9. **Why does a rubber sucker stick to the surface of any object?**

Ans. The sucker sticks to the surface because the pressure of atmosphere acts on it.

10. **Define muscular force. Give example.**

Ans. The force is caused by the action of muscles in our body. The force resulting due to the action of muscles is known as the muscular force. Animals like bullocks, horses, donkeys and camels are used to perform various tasks for us.

11. **Write a short on electrostatic force.**

The force exerted by a charged body on another charged or uncharged body is known as electrostatic force. This force comes into play even when the bodies are not in contact. The electrostatic force, therefore, is another example of a non-contact force.

Long Answer Questions

1. **Describe an activity to show that ‘a force can change the state of motion’.**

Take a rubber ball and place it on a level surface such as a table top or a concrete floor. Now, gently push the ball along the level surface. Push the ball again while it is still moving. Next, place your palm in front of the moving ball. Remove your palm as soon as the moving ball touches it. A ball at rest begins to move when a force is applied on it. This shows that a force can change the state of motion.

2. **What are the effects of application of force on an object? Explain.**

Ans. A force

- a. may make an object move from rest.
- b. may change the speed of an object if it is moving.
- c. may change the direction of motion of an object.
- d. may bring about a change in the shape of an object.
- e. may cause some or all of these effects.

3. **Demonstrate an experiment to show that liquids exert pressure on the walls of the container.**

Ans. Take a plastic bottle. You can take a discarded water or soft drink bottle. Fix a cylindrical glass tube, a few cm long near its bottom.



This can be done by slightly heating one end of the glass tube and then quickly inserting it near the bottom of the bottle. Make sure that the water does not leak from the joint. If there is any leakage, seal it with molten wax. Cover the mouth of the glass tube with a thin rubber sheet. Now fill the bottle up to half with water.

Due to pressure applied by water, rubber sheet fixed to the glass tube bulges. This shows that liquids exert pressure on the walls of the container.

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