

BIJENDRA PUBLIC SCHOOL, PURNEA

Class - 8

Subject - SCIENCE

Chapter - 12 FRICTION

A. Very Short - Answer Questions:

1. Does friction always oppose the motion?

Ans. Yes, friction always opposes the motion of an object.

2. Two rough surfaces in contact are made smoother by polishing. Does the friction between the two increase or decrease?

Ans. Decrease.

3. Is friction a contact or non-contact force?

Ans. Friction is a contact force.

4. A machine with moving parts becomes hot. Will it become hotter or less hot if the moving parts are lubricated.

Ans. When the moving parts of a machine are lubricated then it become less hot due to decrease in friction.

5. Why do wrestlers rub soil on their hands?

Ans. Wrestlers rub soil on their hands to reduce the friction.

B. Short Answer Questions.

1. Why do we generally sprinkle a little talcum powder on a carom board?

Ans. We generally sprinkle a little talcum powder on a carom board to reduce the friction.

2. Why is it more difficult to pull a boat on the beach than on the sea?

Ans. It is more difficult to pull a boat on the beach because the contact surface is same that create more friction than the boat on the sea because contact surface is water.

3. Why are the automobile tyres made corrugated and rough?

Ans. The automobile tyres made corrugated and rough to increase friction and to provide a better grip on the ground-road to prevent skidding.

4. Why are spaceships provided with heat shield?

Ans. When spaceships enter in the earth's atmosphere it experience large frictional forces while moving through the earth's atmosphere due to which it can burn up. So that heat shield is provided to protect it.

5. Why are the bodies of boats, ships, aeroplanes etc made streamlined?

Ans. The bodies of boats, ships, aeroplanes etc are made streamlined to minimise the force of friction with the medium they travel.

C. Long Answer Questions.

1. Why is friction considered a necessary evil?

Ans. Frictional force causes loss of energy and causes wear and tear of machinery so it is considered as a evil. But on the other hand, the basic activities of life, like walking and writing on a surface are possible due to friction. Hence it is considered as necessary evil.

2. What is rolling friction?

Ans. The force of friction existing between the two surfaces in contact which one of the is rolling over the other is called rolling friction.

For example- The resistance to the motion of a ball rolling on the floor is an example of rolling friction.

3. Describe the factors on which the force of friction depends.

Ans. The force of friction depends upon the following factors:-

- i. On a horizontal surface, the force of friction is directly proportional to the weight of the body which moves.
- ii. The force of friction depends on the nature of surface in contact.
- iii. The force of friction does not depend upon the area of the surfaces in contact.

4. How can friction between two surfaces be reduced?

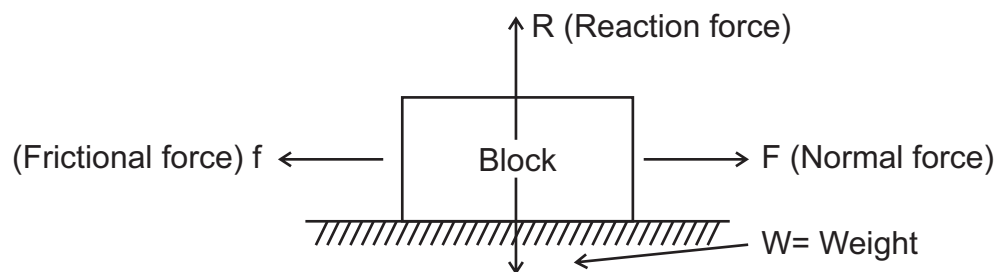
Ans. The friction can be reduced by the following methods:-

- i. By polishing the surfaces:-It removes 'hills' and 'valleys' from the surfaces to reduce the friction.
- ii. By applying oil or grease on the surfaces:-It separates the two surfaces which reduces the interlocking of two surfaces.
- iii. By sprinkling a soft, slippery fine powder on the surfaces which reduces the friction.
- iv. By using wheels, ball bearings or roller bearings:- It creates lesser friction than that on a flat surface.
- v. By streamlining the body of an object:- It is a symmetrical shape of a body which offers least resistance due to friction.

5. What is meant by saying that the friction is a self adjusting force?

Ans. Friction is a self adjusting force because it wants the objects to remain at rest not move.

According to the diagram, if an external force is applied the friction force will be equal to the magnitude of the external force, until it surpasses the threshold of motion. The weight force 'W' is balanced by reactional force R. Hence friction is called a self adjusting force.



D. Tick (✓) the odd one out giving reason.

1. Interlocking of surfaces, Force of adhesion between two surfaces, Highly polished surfaces.

Ans. Highly polished surfaces:- By this method we can reduce the friction and rest two are the cause of friction.

2. Oil, Sand, Grease, Graphite powder

Ans. Sand:- It can increase the friction and rest three can reduce the friction.

3. Aeroplanes, Birds, Ship, Cart, Boat

Ans. Cart:-It is not a streamlined shaped object but rest all are streamlined shaped body.

4. Force of adhesion:-

Ans. The two rough surface when placed together meet only at certain points and the atoms or molecules present at such points of contact attract each other due to electrostatic attractions. These attractions are called as the force of adhesion.

5. Sliding friction:-

Ans. Sliding friction is the friction that acts on objects when they are sliding over a surface. Sliding friction is weaker than static friction.

HOTS:-HIGH ORDER THINKING SKILLS

Q1. How does the streamlined body of fish help it swimming?

Ans. Fish with streamlined bodies and stiff crescent shaped caudal fin or tail tend to move rapidly through the water by swishing their tail from side to side. This action propels the fish in the forward direction

Q2. Why can't you write properly with a chalk on a glass sheet?

Ans. A glass sheet is a very smooth surface that's why it has lesser friction and we are not able to write with a chalk on a glass sheet.

Q3. When you are running on the road, you are acted upon by frictional force of the road. Is there another force of friction acting on you? Name and explain.

Ans. When you are running on the road, we are acted upon by frictional force of the road. But while running on the road there is another kind of friction that acts upon us called drag force. Drag force is the frictional force exerted by air on the body during the running period.

Q4. If there is no friction, what will happen to the moving objects.

Ans. If there is no friction then moving objects never stop so it becomes impossible to bring objects to rest because friction plays a vital role in stopping a moving object.