

- Chapter- 11.Friction

Time to answer

1. what is friction?

ans. Friction can be defined as the force that opposes the motion of an object.

2. on what factor does friction depend?

Ans. Friction depends on

1. nature of the surface of the object(rough surface more friction ,smooth surface less friction)
2. weight of the object (more weight more friction, less weight less friction)

3. why friction is more on a rough surface as compared to smooth surface ?

Ans. Friction is always more on a rough surface compared to a smooth surface. This is because rough surface offers more resistance to the movement of an object over it compared to a smooth surface.

4. what is static friction?

Ans. Type of friction exist between two bodies that are relatively at rest ,even though an external force is acting on them this is called static friction.

5 what is rolling friction?

Ans. It is the friction when one body rolls over the surface of another body. This force slows down the motion of a rolling object.For example, roller skates have wheels that help in moving very fast.

II. give reason for each of the following

1. A ball rolling on the ground stops after sometime.

Ans. A ball rolling on the ground stops after sometime due to the force of friction which is exerted by the rough surface of garden.

2. Aeroplanes and cars have streamlined shapes.

Ans. Aeroplanes and cars have streamlined shapes to reduce fluid friction or drag that it encounters when flying through the sky .

3. It is difficult to write on a grazzled paper

Ans. It is difficult to write on a grazzled paper because of less friction and smooth surface.

4. Shoes of athletes have grooves on their soles

Ans. shoes of athletes have grooves on their soles because grooves increase the friction and gives good grip to the person on the ground.

5. Machine parts are oiled occasionally

Ans. Machine parts are oiled occasionally to prevent rusting.when lubricants like oil and grease are applied on the moving part of machine this form of thin layer between the two surface and the moving surfaces do not directly rub each other thus the movement become is smooth and hence reduces the friction.

6. It is easier to roll a barrel than pull it on the ground

Ans. It is easier to roll a barrel than to pull it on the ground because rolling friction is less than sliding friction.

Ill very short answers

1. name the force that opposes motion and produces heat.

Ans. Friction opposes motion and produces heat.

2. what type of Shape do boats and ships have?

Ans. Boats and ships have streamlined shapes .

3. write a disadvantage of friction.

Ans. a. Friction causes damage to machines. the heat generated by friction raises the temperature of the machine and damage it .

b. Friction causes wear and tear the soles of shoes and tyres of vehicles wear out gradually when used for a long time .

3. write one way in which we can increase friction.

Ans. By increasing the roughness of surfaces- it is one of the most common method to increase friction. Tyres are treaded and grooves are made on the underside of shoes to make their surface rough .

short answers question 1.

1. Define friction

Ans. Friction can be defined as the force that opposes the motion of an object. for example if we roll a ball on the ground we will see that is it stops after sometime.

2. what is drag?

Ans. Drag is the force of friction on object that moves through fluids.

3. what is static friction?

Ans. static friction is the type of friction that exist between two bodies that are relatively at rest even though an external forces acting on them .for example when we apply force to move a heavy work from one place to another a force is required to overcome so that it can start moving from rest.

4. Define rolling friction.

Ans. Rolling friction opposes force coming into play when one body actually rolls over the surface of another body . For example roller skates have wheels that help in moving very fast The Wheels of the skates experience rolling friction while moving.

5. on what factor does the force of friction depends.

Ans.a. on horizontal surface the force of friction is directly proportional to weight of body which moves.

b. force of friction depends upon the nature of the surface in contact with each other. force of friction is very less between two polished and smooth surface and is more between two rough surface.

Long answer questions

1. Explain the cause of friction give an example.

Ans. Different cause of frictions are following

- Friction is caused by rubbing our hand together which produces heat. for example in winter when we rub our hand it gets warmer and hence produces heat.
- Friction is caused due to interlocking of surface where interlocking of two surface opposes the motion of one body over another and give rise to frictional force.
- Friction is caused when the surface is rough which can be seen only through microscope and appears as tiny Hills and valleys.

2. Explain three types of friction

Ans. 1. Static friction - This type of friction exist between two bodies that are relatively at rest even though and external forces acting on them. for example when we apply force to move a heavy box from one place to another a force is required to overcome friction so that it can start moving from rest.

2. sliding friction - it is opposing force that comes into play when one body actually slides over the surface of another body for example of wooden block experience sliding friction when it is moved over the flat surface of the table.

3. Rolling friction - This opposes force coming into play when one body actually rolls over the surface of another body. for example roller skates have wheels that help in moving very fast The Wheels of the skates experienced rolling friction by moving.

3. How can the force of friction be increased ?

- I. Increasing the roughness of the surface - it is one of the most common method to increase friction tyres are treated and grooves are made on the underside of shoes to make their surface rough.
- II. By drying the surface is another way of increasing friction - sand and gravel are thrown as on a slippery ground during the rainy season to increase friction gymnast often rubs some coarse substance on their hands to have a better grip a coarse substance increases friction.
- III. The use of Brake pads is another way of increasing friction - the brake pads in a brake system of bicycle do not touch the wheels until you press the brakes .The brakes are pressed the friction is increased and the bicycle slows down.

4. write three advantages of friction.

Ans. Three advantages of friction are :

- I. Spikes provided under the shoes of player and athlete increase friction and thus enable them to have a better grip on the ground while running.
- II. we are able to write on a paper with a pen or pencil due to friction between tip of the pen or pencil and the paper.
- III. The brakes of moving vehicle help them to slow down due to friction between the brakes and wheels of the vehicle.

5. Describe any three ways to reduce friction.

Ans. The three ways to reduce friction are:

1. By lubricating the surface - it is one of the most common method to reduce friction lubricants like oil and grease are applied on the moving part of machine .this forms a thin layer between the surface and the moving surface do not directly rub each other .Thus the movement become smooth.
2. By polishing the surface - when a surface is polished the irregularities of the surface is covered making it is more smooth reducing friction greatly.
3. By streamlining the shape of an object - aeroplanes boats and other vehicles are made streamlined in shape to reduce the resistance offered by air.

Hots

1. why is powder is sprinkled on a carrom board before playing?

Ans. Powder is sprinkled on a carrom board before playing to make the surface is smooth and to reduce the friction.

- 2. why do women apply soap solution on their hands to put on bangles?**

Ans. women apply soap solution on their hands to put on bangles to make the surface is smooth and hands reduces the friction.

- 3. what would happen if there is no friction?**

Ans. if there is no friction we will not be able to walk on ground, we will not be able to write on paper, neither any vehicle could move nor any person can easily.