

LESSON- FRICTION

Class: VIII Question Bank Subject: Science Paper
Type: Objective & Subjective

Maximum Marks: 60

Section - A

Q1.

Define friction. (Marks : 1)

Q2.

How does the shape of an aeroplane help to reduce fluid friction? (Marks : 2)

Q3.

How does the shape of birds help them in flying? (Marks : 2)

Q4.

How is friction caused? (Marks : 2)

Q5.

Is it possible to have fluid friction when one fluid is passed through another fluid? (Marks : 2)

Q6.

What are the factors affecting fluid friction? (Marks : 2)

Q7.

What are the two types of friction? (Marks : 2)

Q8.

What do you mean by static friction? (Marks : 2)

Q9.

What is called a rolling friction? (Marks : 2)

Q10.

What is easier to move, a static box or a box already in motion? (Marks : 2)

Q11.

In which of the cases the friction is more than the force? Why?

a. An object is rolling on a slide.

b. An object is moving on a floor.

c. An object is static on a table. (Marks : 2)

Q12.

What are fluids? (Marks : 2)

Q13.

What do you mean by the term relative motion? (Marks : 2)

Q14.

Astronaut Kalpana Chawla had an accident in space. What was the reason behind that? (Marks : 3)

Q15.

Friction produces heat. Write one advantage and one disadvantage of this property. (Marks : 3)

Q16.

Justify the statement friction is a friend and a foe. (Marks : 3)

Q17.

List a few methods to increase friction. (Marks : 3)

Q18.

List out three applications of friction in daily life. (Marks : 3)

Q19.

What is rolling friction and sliding friction? (Marks : 3)

Q20.

Why does friction between two surfaces increase when they are pressed harder? Give an activity to show the above effect. (Marks : 3)

Q21.

List the factors affecting friction (Marks : 4)

Q22.

Identify the type of friction? (Marks : 1)

- (a) Sliding friction (b) Gliding friction
(c) Rolling friction (d) Static friction

Q23.

Doors open smoothly when _____ is applied to the hinges. (Marks : 1)

- (a) ice (b) oil
(c) water (d) fine powder

Q24.

Friction in a fluid medium can be reduced by _____. (Marks : 1)

- (a) applying lubricants (b) applying wheels
(c) giving special shapes (d) increasing the surface area

Q25.

The resistance encountered when a body is moved along the surface of another is known as _____. (Marks : 1)

- (a) force (b) friction
(c) gravity (d) power

Q26.

To stop a moving vehicle, _____. (Marks : 1)

- (a) lubrication must be applied (b) acceleration must be increased
(c) brakes must be applied (d) friction must be reduced

Q27.

What will happen if we rub our palms for a few seconds? (Marks : 1)

- (a) Heat is produced. (b) The body temperature lowers
(c) The fingerprints wear out. (d) The palms feel sticky.

Q28.

Which of the following surfaces will exert maximum friction on a moving object? (Marks : 1)

- (a) Sponge (b) Tile

- (c) Polyester (d) Silk

Q29.

Why are tyres of vehicles treaded? (Marks : 1)

- (a) To reduce friction (b) To increase friction
(c) To make a pattern on the tyres (d) To increase the speed of the vehicles

Q30.

Your shoes get a better grip of the floor because of _____. (Marks : 1)

- (a) the thread-like shoe laces (b) grooves on the soles of the shoes
(c) smooth soles of the shoes (d) heels on your shoes

Q31.

Friction is caused because of _____ (Marks : 1)

- (a) force on the object. (b) roughness of the 2 surfaces in contact
(c) smoothness of a surface (d) smoothness of the 2 surfaces in contact

LESSON- FRICTION

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Section - A

Q1.

Define friction. (Marks : 1)

Solution :

The resistance encountered when one body is moved in contact with another is called friction.

Q2.

How does the shape of an aeroplane help to reduce fluid friction? (Marks : 2)

Solution :

Aeroplanes have long, pointed, streamlined shape. This allows the fluid to pass through without any swirls. This is true for all other vehicles.

Q3.

How does the shape of birds help them in flying? (Marks : 2)

Solution :

The specialised shapes of birds are known as streamlined. These shapes help to reduce the fluid friction which hinders their movement. Thus, they are able to fly better.

Q4.

How is friction caused? (Marks : 2)

Solution :

Friction is caused by two factors. One, the kind of surface (rough or smooth) in contact and second the amount of force pressing the surfaces together. The rougher the surface, stronger is the force between the surfaces and greater is the amount of friction.

Q5.

Is it possible to have fluid friction when one fluid is passed through another fluid? (Marks : 2)

Solution : Yes. It is possible. It comes under separate branch called Fluid dynamics.

Q6.

What are the factors affecting fluid friction? (Marks : 2)

Solution :

Fluid frictional force depends on the speed of the moving object with respect to the fluid, shape of the object and nature of the fluid.

Q7.

What are the two types of friction? (Marks : 2)

Solution :

Friction is of two types.

Static friction: The force between two objects that is not moving relative to each other.

Sliding friction: The resistance that a body meets while sliding along the surface of another.

Q8.

What do you mean by static friction? (Marks : 2)

Solution :

Static friction exists when two bodies are at rest even after an external force is applied on the objects.

Q9.

What is called a rolling friction? (Marks : 2)

Solution :

When one body rolls over the surface of another body, the resistance to its motion is called rolling friction.

Q10.

What is easier to move, a static box or a box already in motion? (Marks : 2)

Solution :

When the box starts sliding, the contact points on its surface do not get enough time to lock in to the contact points on the floor. So, the sliding friction is slightly lesser than the static friction. Hence, it is easier to move a box already in motion.

Q11.

In which of the cases the friction is more than the force? Why?

- a. An object is rolling on a slide.
- b. An object is moving on a floor.
- c. An object is static on a table. (Marks : 2)

Solution : In case of an static object on a table the friction is more because it is static friction and it is powerful than other friction. (2 mark)

Q12.

What are fluids? (Marks : 2)

Solution : The substances which have the ability to flow are called as fluids. Gas and liquids are called as fluids. (2 mark)

Q13.

What do you mean by the term relative motion? (Marks : 2)

Solution : The movement of the object with reference to another static or movement object is called as relative motion. (2 mark)

Q14.

Astronaut Kalpana Chawla had an accident in space. What was the reason behind that? (Marks : 3)

Solution : When the spacecraft re-enters the atmosphere, its surface gets extremely hot because of the friction between the air and the spacecraft moving at a very high speed. To protect the craft its outer surface is covered with tiles of a special material, which can tolerate very high temperature. Some of these tiles got damaged during takeoff. Heat produced by friction could not be shielded and damaged the spacecraft.

Q15.

Friction produces heat. Write one advantage and one disadvantage of this property. (Marks : 3)

Solution :

Advantage: The friction between air and meteors entering the earth's atmosphere produces sufficient heat to burn up the meteor, before it can fall to the ground and cause damage.

Disadvantage: Parts of the machine get heated up due to friction and undergo wear and tear. Hence, they need to be replaced.

Q16.

Justify the statement friction is a friend and a foe. (Marks : 3)

Solution :

Frictional force is very useful in several situations. If there was no friction between the wheels and the road, no vehicle would be able to move. Friction is also a foe because, the machine parts that come in contact with one another wear out.

Q17.

List a few methods to increase friction. (Marks : 3)

Solution :

In certain cases friction is advantageous to us. So, we need to increase friction between surfaces.

Tyres of vehicles must have grooves which help in increasing the friction with the road. And hence, prevent the tyres from slipping on wet or oily roads.

Soles of the shoes of athletes and mountaineers have spikes.

Soles of our shoes have grooves.

Q18.

List out three applications of friction in daily life. (Marks : 3)

Solution :

Some of the applications of friction in our daily life are:

- i. friction between a pen and a paper helps in writing
- ii. friction between our legs and surface helps us in walking and
- iii. friction between brake pads and wheels is used in brake system in vehicles.

Q19.

What is rolling friction and sliding friction? (Marks : 3)

Solution :

When one body rolls over the surface of another body, the resistance to its motion is called rolling friction. When a body slides over the surface of another, the resistance to its motion is called sliding friction. Rolling friction is always lesser than sliding friction.

Q20.

Why does friction between two surfaces increase when they are pressed harder? Give an activity to show the above effect. (Marks : 3)

Solution :

Since friction is due to the interlocking of irregularities between the two surfaces which slide with respect to each other, it is obvious that the force of friction will increase if the two surfaces are pressed harder. One can experience it by dragging a mat when nobody is sitting on it and when a person is sitting on it.

Q21.

List the factors affecting friction (Marks : 4)

Solution :

- i. Friction depends on the nature of surfaces in contact.
- ii. Friction depends on the state of polish of the surface. Friction is less for smooth surfaces.
- iii. Friction is independent of the area of contact.
- iv. Friction depends on how hard the two surfaces press together.

Q22.

Identify the type of friction? (Marks : 1) (Topic : Methods of Increasing and Reducing Friction)

- (a) Sliding friction (b) Gliding friction
- (c) Rolling friction (d) Static friction

Correct Answer : (c)

Solution : Rolling friction.

Q23.

Doors open smoothly when _____ is applied to the hinges. (Marks : 1) (Topic : Methods of Increasing and Reducing Friction)

- (a) ice (b) oil
- (c) water (d) fine powder

Correct Answer : (b)

Solution : Oil.

Q24.

Friction in a fluid medium can be reduced by _____. (Marks : 1) (Topic : Methods of Increasing and Reducing Friction)

- (a) applying lubricants (b) applying wheels
(c) giving special shapes (d) increasing the surface area

Correct Answer : (c)

Solution : giving special shapes.

Q25.

The resistance encountered when a body is moved along the surface of another is known as _____. (Marks : 1) (Topic : Force of Friction and Factors Affecting Friction)

- (a) force (b) friction
(c) gravity (d) power

Correct Answer : (b)

Solution : Friction.

Q26.

To stop a moving vehicle, _____. (Marks : 1) (Topic : Force of Friction and Factors Affecting Friction)

- (a) lubrication must be applied (b) acceleration must be increased
(c) brakes must be applied (d) friction must be reduced

Correct Answer : (c)

Solution :

To stop a moving vehicle, brakes must be applied.

27.

What will happen if we rub our palms for a few seconds? (Marks : 1) (Topic : Force of Friction and Factors Affecting Friction)

- (a) Heat is produced. (b) The body temperature lowers
(c) The fingerprints wear out. (d) The palms feel sticky.

Correct Answer : (a)

Solution : Heat is produced.

Q28.

Which of the following surfaces will exert maximum friction on a moving object?(Marks : 1) (Topic : Force of Friction and Factors Affecting Friction)

- (a) Sponge (b) Tile
(c) Polyester (d) Silk

Correct Answer : (a)

Solution : Sponge.

Q29.

Why are tyres of vehicles treaded? (Marks : 1) (Topic : Methods of Increasing and Reducing Friction)

- (a) To reduce friction (b) To increase friction
(c) To make a pattern on the tyres (d) To increase the speed of the vehicles

Correct Answer : (b)

Solution : To increase friction.

Q30.

Your shoes get a better grip of the floor because of _____. (Marks : 1) (Topic : Methods of Increasing and Reducing Friction)

- (a) the thread-like shoe laces (b) grooves on the soles of the shoes
(c) smooth soles of the shoes (d) heels on your shoes

Correct Answer : (b)

Solution : grooves on the soles of shoes.

Q31.

Friction is caused because of _____ (Marks : 1) (Topic : Force of Friction and Factors Affecting Friction)

- (a) force on the object. (b) roughness of the 2 surfaces in contact
(c) smoothness of a surface (d) smoothness of the 2 surfaces in contact

Correct Answer : (b)

Solution : roughness of the two surfaces in contact.