

EXERCISE # 1

A Very Short Answer Type Questions

- Q.1** Define friction.
- Q.2** What is meant by sliding friction ?
- Q.3** What is rolling friction ?
- Q.4** What is meant by air resistance ?
- Q.5** When does static friction come into play ?
- Q.6** Which force is responsible for wear and tear of machinery ?
- Q.7** Which is greater—rolling friction or sliding friction ?
- Q.8** What are lubricants ?
- Q.9** What are fluids ?
- Q.10** Do fluids exert friction ?

B Short Answer Type Questions

- Q.11** You spill a bucket of soapy water on a marble floor accidentally. Would it make easier or more difficult for you to walk on the floor? Why
- Q.12** Explain why sportsmen use shoes with spikes.
- Q.13** Iqbal has to push a lighter box and Same has to push a similar heavier box on the same floor. Who will have to apply a larger force and why ?

- Q.14** Explain why sliding friction is less than static friction.
- Q.15** Explain why objects moving in fluids must have special shapes.
- Q.16** Why are the soles of shoes grooved ?
- Q.17** Give examples to show that friction is both a friend and a foe.
- Q.18** Why does friction increase if the two surfaces are pressed ?
- Q.19** A labourer has to push a heavy trunk. What should he do to reduce his effort in pushing it and why ?
- Q.20** Why is friction essential ? Give three examples.

C Long Answer Type Questions

- Q.21** Give five examples to show that friction is increased deliberately.
- Q.22** Why are heat resistant tiles laid along the surface of spaceships ?
- Q.23** What is meant by lubrication ? Why do we lubricate the moving parts of our vehicles? Name some lubricants and where they are used.
- Q.24** What is meant by "streamlined shape" ? Where and why is this shape used ? To whom has nature provided streamlined body?

EXERCISE # 2**Single Correct Answer type Questions**

- Q.1** Force of friction is directly proportional to
(A) size
(B) area
(C) weight
(D) all these factors of the moving body
- Q.2** Which of the following is the least ?
(A) static friction
(B) sliding friction
(C) rolling friction
(D) limiting friction
- Q.3** Friction between two flat surface can be reduced by,
(A) greasing
(B) using ball bearing
(C) decreasing the area
(D) All of the above
- Q.4** The flying machine offering the least frictional force should be
(A) irregular
(B) tree-like
(C) symmetrical with many arms
(D) streamlined
- Q.5** Frictional force increases with the increase in
(A) roughness of the surface
(B) smoothness of the surface
(C) distance between two bodies
(D) none of these
- Q.6** Lubrication of moving surfaces
(A) removes friction
(B) reduces friction
(C) increases friction
(D) has no effect on friction
- Q.7** Frictional force is due to between two moving surfaces
(A) softness
(B) roughness
(C) distance
(D) none of these
- Q.8** The maximum value of force required to make the body just to slide is known as
(A) dynamic friction
(B) static friction
(C) limiting friction
(D) rolling friction
- Q.9** Rolling friction is always more than the
(A) dynamic friction
(B) static friction
(C) limiting friction
(D) none of these
- Q.10** What can you use to reduce the force of friction on an object ?
(A) Lubricate the surface
(B) Streamline the body shape
(C) Reduce the surface area in contact of two bodies
(D) All of these
- Q.11** Which of the statement is correct about rolling and sliding friction ?
(A) Rolling friction is greater than sliding friction
(B) Rolling friction is lesser than sliding friction

- (C) Rolling and sliding frictions acting on a body are equal
(D) None of these

Q.12 A body will experience the minimum friction in –
(A) Vacuum (B) Air
(C) Fresh water (D) Sea water

Q.13 Ball bearings are used to
(A) increase surface area
(B) decrease surface area
(C) increase friction
(D) decrease friction

Q.14 Lubricants are used to
(A) reduce friction
(B) increase friction
(C) make a surface shiny
(D) make a surface oily

Q.15 SI unit of force of friction is
(A) N (B) kg wt
(C) kg ms^{-2} (D) Joule

Q.16 Ball bearings are used to
(A) increase friction

- (B) decrease friction
(C) optimize friction
(D) remain same

Q.17 The use of lubricants makes the surface
(A) smooth (B) rough
(C) very rough (D) no effect

Q.18 The frictional force with the in roughness of the surfaces
(A) increases, increase
(B) decrease, decrease
(C) decrease, increase
(D) increases, decrease

Q.19 The maximum force of friction when the body is just beginning to move is known as the
(A) limiting friction (B) rolling friction
(C) static friction (D) none of these

Q.20 The friction that exists between a surface sliding on another surface is called the
(A) dynamic friction (B) rolling friction
(C) static friction (D) none of these

ANSWER KEY**EXERCISE-1****A Very Short Answer Type Questions**

- Sol.1** Friction is the force which resists the motion of a body, while moving on a surface.
- Sol.2** When one surface is sliding over the other, sliding friction comes into play.
- Sol.3** When one body rolls over the surface of another body, the resistance to its motion is called the rolling friction.
- Sol.4** There is friction between a moving object and the air through which it moves known as air resistance.
- Sol.5** Static friction comes into play to counter balance the applied force on the body.
- Sol.6** Force of friction.
- Sol.7** Sliding friction is greater than rolling friction.
- Sol.8** The substances which reduce friction are called lubricants.
- Sol.9** Fluids is the common name given to gases and liquids.
- Sol.10** Yes, fluids also exert friction.

B Short Answer Type Questions

- Sol.11** It would be more difficult to walk on the floor with soapy water because when we walk on a soapy floor, there is little friction between the floor and the feet, so it becomes difficult to walk.

Sol.12 Sportsman use shoes with spikes to increase the friction. In this way, the sportsman can run faster.

Sol.13 Seema will have to apply more force because the weight of the box increase and the friction increases. For a heavier box the ridges of the surfaces get interlocked more.

Sol.14 Sliding friction is less than static friction because it comes into play once the body has started sliding. To make the body slide more force is required to overcome the irregularities in the surface of the body.

Sol.15 Fluids also exert a frictional force on the body moving through them. Therefore, the shape of the body is streamlined to overcome the frictional force of fluids and to move smoothly through them.

Sol.16 Soles of shoes are grooved so as to provide better grip between the shoes and the ground.

Sol.17 Friction is friend in the following ways – it helps us to walk, to write on the blackboard and to apply the brakes of a car. Friction is foe in the following ways it causes wear and tear of machinery and shoes, it produces heat in the machinery.

Sol.18 Since the friction is due to the interlocking of irregularities in the two surface which slide with respect to each other, it increases when the two surfaces are pressed harder.

Sol.19 The labourer should put some cylindrical logs of wood under the trunk. In this way the area of contact between the two

surfaces is reduced. Rolling friction is less than sliding friction.

Sol.20 Friction is necessary between the soles of our feet and ground so that we can walk without slipping.

Friction helps us in writing on paper.

Friction makes it possible to light a match stick, by rubbing it along the rough surface of the match box.

C Long Answer Type Questions

Sol.21 (a) Athletes wear spiked shoes to help them run fast.

(b) Mountaineers wear spiked shoes while walking on snow.

(c) The tyres of vehicles are grooved.

(d) The roads are made rough.

(e) The blackboard is made rough.

Sol.22 The spaceships are sent into the space from the rockets with a very high speed. This create a very high frictional force between the air and spaceship. As result, the

spaceship gets heated to red hot. The heat resistant tiles save the spaceship from burning.

Sol.23 Lubrication means oiling the machines from time. Lubrication of the moving parts is done to reduce friction between them. We can use oil or grease in machines. Graphite can be used in machines which reach a very high temperature.

Sol.24 Streamlined shape means they are narrow in front and broader at the back. The bodies of aeroplanes, missiles and rockets are streamlined to reduce friction with air. Ships and boats have a streamlined shape to reduce friction with air. Nature has given birds and fish streamlined bodies.

EXERCISE-2

Ques.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	D	C	D	D	A	B	B	C	D	D	B	A	B,D	A	A
Ques.	16	17	18	19	20										
Ans.	B	A	A	A	A										