B. Types of Friction and Reducing Friction

1. Door hinge is a jointed device that allows the turning of a door. If we apply oil on door hinges, the friction will

a increase
b decrease
c disappear altogether
d will remain unchanged

2. A boy rolls a rubber ball on a wooden surface. The ball travels a short distance before coming to rest. To make the same ball travel longer distance before coming to rest, he may

a spread a carpet on the wooden surface
b cover the ball with a piece of cloth
c sprinkle talcum powder on the wooden surface
d sprinkle sand on the wooden surface

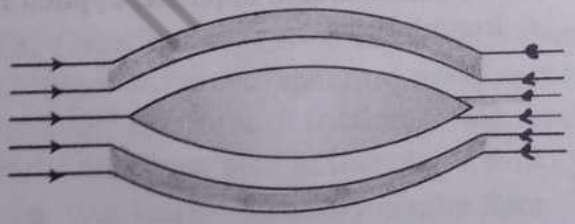
3. Four children were asked to arrange forces due to rolling, static and sliding frictions in a decreasing order. Their arrangements are given below. Choose the correct arrangements.

a Rolling, static, sliding
b Rolling, sliding, static
c Static, sliding, rolling
d Sliding, static, rolling

4. You must have observed a cow ploughing the field. A cow struggles in its first few steps to pull a plough. Why is it so?

a Static friction is greater than sliding friction
b Sliding friction is greater than rolling friction
c No frictional force acts after the cart is in motion
d Air friction is greater during the first few steps of motion

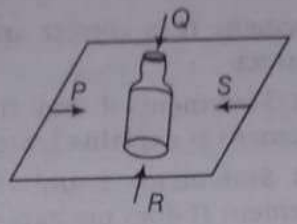
5. A rocket and a bird have a streamlined shaped body (as shown in figure below) because



Streamlined body

a it gives force to move
b it moves through air with minimum friction
c it increases the speed of the object
d All of the above

6. The bottle in the picture is rolling from *P* towards *S*. From which direction should frictional force act to slow down the rolling bottle?



a *P** **b** *Q** **c** *S** **d** *R*

7. Which of the following cases represent dynamic friction?

a

b

c None of them
d Both (a) and (b)

8. Roller–skating is the travelling on surfaces with roller–skates. It is a form of sport and can also be a form of transportation.

Why do we move faster on roller-skates than on shoes?

a The roller-skates have rollers to reduce friction.
b The roller-skates have more surface in contact with ground.
c The roller-skates have no gravitational force.
d The roller-skates absorb heat from the ground.

9. We need energy to overcome friction. During friction, unwanted heat energy is produced. Friction can be reduced by the use of _____

I. Rollers
II. Gears
III. Lubricants
IV. Ball bearings

a I, II and III
b I, III and IV
c II, III and IV
d I, II and IV

10. When we apply some force on an object held stationary at a place, then force of friction comes into play in direction opposite to the direction of motion of the object.

When the applied force is doubled (object is still at rest), then friction becomes

a doubled **b** halved
c quadrupled **d** zero

11. Given below is a list of some items/quantities.

I. Lubricants	II. Streamlined bodies
III. Heat	IV. Polished surface
V. Ball bearing	

Pick the odd one(s) out from the above list.

a I and IV
b II and IV
c Only III
d III and V

12. Choose the appropriate options from the box to fill in the blanks.

(i) increase (ii) reduce (iii) more (iv) less
(v) motion (vi) friction (vii) ball bearings
(viii) rubbing

I. Lubricants help to increase _____ .
II. Friction can be reduced by _____ .
III. Sprinkling of powder on caromboard _____ friction.
IV. Sliding friction is _____ than the static friction.

Codes

	I	II	III	IV
a	(vi)	(i)	(iii)	(ii)
b	(iv)	(ii)	(vi)	(v)
c	(vii)	(vi)	(iii)	(i)
d	(v)	(vii)	(ii)	(iv)

13. Match the following columns.

Column I	Column II
A. Rough surface	1. No friction
B. Wheels	2. More friction
C. Streamlined bodies	3. Less friction
D. Space	4. Submarines and rockets

Codes

	A	B	C	D
a	2	3	4	1
b	1	2	4	3
c	3	1	2	4
d	2	3	1	4

14. Select the incorrect statement.

a Grass and dampness on a cricket ground increase friction.
b Friction causes parts of a machine to wear out.
c Moving parts of a car (e.g. wheel) become hot due to friction.
d Friction is less on a dry floor than a wet floor.

15. Complete the following information using the words given in the options below:

Friction can be increased by increasing the _____ of the surfaces in contact. Friction can be minimised by _____ the surfaces using oil and grease and by using _____ between machine parts. A substance that is introduced between two surfaces in contact, to reduce friction, is called a _____ . _____ can be minimised by giving suitable shapes to the objects moving in the fluids.

a Roughness, lubricating, ball bearing, lubricant, fluid friction
b Fluid friction, lubricant, ball bearing, roughness, lubricating
c Roughness, lubricant, fluid friction, lubricating, ball bearing
d Fluid friction, lubricating, ball bearing, lubricant, roughness

Direction (Ques. 16-17) *Answer the questions as per the crossword given below:*

G	F	H	C	R	O	P	Q	N	O	R	L
Z	F	T	C	O	N	T	O	M	M	L	U
E	G	R	O	L	V	I	N	G	H	P	B
N	S	O	Y	L	G	H	R	N	C	O	R
S	L	T	R	I	S	O	M	R	G	L	I
T	I	K	V	N	L	L	N	V	R	I	C
U	D	L	O	G	U	C	K	S	V	S	A
P	I	S	I	T	A	N	O	T	N	H	N
M	N	N	B	E	L	I	T	A	G	I	T
H	G	C	E	I	J	L	K	T	S	N	K
B	A	L	L	B	E	A	R	I	N	G	B
O	R	T	S	U	V	X	W	C	M	H	C

16. Which of the following type of friction is not mentioned in the crossword?

a Static **b** Dynamic
c Sliding **d** Rolling

17. How many ways of reducing friction are mentioned in the crossword?

a 3 **b** 4 **c** 5 **d** 2