2. FRICTION

: TEXTUAL QUESTIONS AND ANSWERS :

1. Fill in the blanks.

(a) Friction opposes the …….. between the surfaces in contact with each other.

(b) Friction depends on the …… of surfaces.

(c) Friction produces ……

(d) The sprinkling of powder on the carrom board ……..……. friction.

(e) Sliding friction is …….. than the static friction.

A. (a) relative motion (b) nature (c) heat (d) reduces (e) less

2. Four children were asked to arrange forces due to rolling, static and sliding frictions in decreasing order. Their arrangements are given below. Choose the correct arrangement. [C]

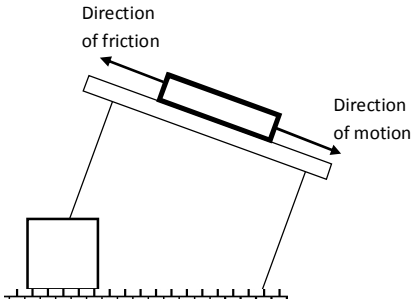
A. rolling, static, sliding
B. rolling, sliding, static
C. static, sliding, rolling
D. sliding, static, rolling

3. Alida runs her toy car on a dry marble floor, wet marble floor, newspaper and towel spread on the floor. The force of friction acting on the car on different surfaces in increasing order will be …… [A]

A. wet marble floor, dry marble floor, newspaper and towel.
B. newspaper, towel, dry marble floor, wet marble floor.
C. towel, newspaper, dry marble floor, wet marble floor.
D. wet marble floor, dry marble floor, towel, newspaper.

4. Suppose your writing desk is tilted a little. A book kept on it starts sliding down. Show the direction of frictional force acting on it.

A. (i) Frictional force will act upward.
(ii) i.e., the direction of friction is opposite to that of sliding book.



5. You spill a bucket of soapy water on a marble floor accidentally. Would it be easier or more difficult for you to walk on the floor? Why?

A. (i) We can walk because of friction between our feet and the ground.
(ii) Soapy water on the marble floor creates very less friction than normal floor.
(iii) We can slip on marble floor with soapy water.
(iv) Hence it is very difficult to walk on the marble floor if soapy water is spilled.

6. Explain why sportsmen use shoes with spikes?

A. (i) Spikes increase the friction with the ground.

(ii) They give more grip while walking or running.

(iii) They reduce slipping on the ground.

(iv) Hence sportsmen use shoes with spikes.

7. Iqbal has to push a lighter box and Seema has to push a similar heavier box on the same floor. Who will have to apply a larger force and why?

A. (i) If the mass of an object increases, then the friction between the object and floor increases.

(ii) A heavy object produces more friction.

(iii) A lighter object produces less friction.

(iv) So Seema will have to apply a larger force to move heavy box.

8. Explain why sliding friction is less than static friction?

A. (i) If there is static friction in between two objects, a greater force is required to break the interlocking between two surfaces.

(ii) When there is motion, a smaller force is required to keep the object in motion.

(iii) There is no need to break interlocking when they are in motion.

(iv) Hence the sliding friction is less than the static friction.

9. Give examples to show that friction is both a friend and a foe.

A. Some points are given below which show that friction is both a friend and a foe :

Friction as a friend :

(i) It allows us to grip and catch any object.

(ii) It helps us to walk comfortably on the floor.

(iii) It helps to minimise the speed or to stop any moving object.

(iv) It helps us to write.

(v) Due to friction, we can hold the food items and eat with our mouth.

Friction as a foe :

(i) It causes wear and tears in objects.

(ii) It causes damage to the parts of machines and tools, which require money to repair.

(iii) It reduces the speed of moving objects, so more force or fuel is required.

(iv) It produces hurdles in moving any object freely.

(v) Due to friction heat is produced and the machines will damage.

10. Explain why objects moving in fluids must have special shapes.

A. (i) To overcome the fluid friction acting on the objects which are moving in liquids must have a special shape.

(ii) Efforts are therefore made to minimise the friction.

(iii) So, objects are given a special shape having pointed fronts with little broader middle portion which gets tapered at the back. This is called streamlined.