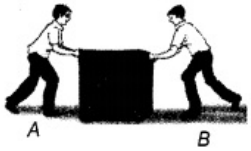
Unit 11(Force)

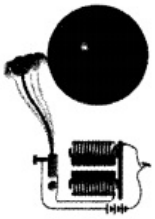
Multiple Choice Questions

Question. 1 In figure, two boys A and B are shown applying force on a block. If the block moves towards the right, which one of the following statements is correct?



(a) Magnitude of force applied by A is greater than that of B
(b) Magnitude of force applied, by A is smaller than that of B
(c) Net force on the block is towards A
(d) Magnitude of force applied by A is equal to that of B
Answer. (a) Magnitude of force applied by A is greater than that of B because the block moves towards right i.e. towards B.

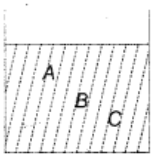
Question. 2 In the circuit shown in figure, when the circuit is completed, the hammer strikes the gong. Which of the following force is responsible for the movement of hammer?



(a) Gravitational force alone (b) Electrostatic force alone
(c) Magnetic force alone (d) Frictional force alone
Answer.(c)It will be magnetic force because as electric current flows through the coil, it behaves like electromagnet and magnetic force is created.

Question. 3 During dry weather, while combing hair, sometimes we experience hair flying apart. The force responsible for this is
(a) force of gravity (b) electrostatic force
(c) force of frictio'n . (d) magnetic force
Answer. (b) The electrostatic force is responsible for it, since on combing the hair, the comb and hair get oppositely charged.

Question. 4 Figure, shows a container filled with water. Which of the following statements is correct about pressure of water?

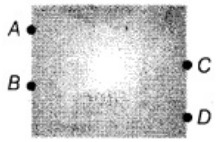


(a) Pressure at A > Pressure at B > Pressure atC
(b) Pressure at A = Pressure at B = Pressure at C
(c) Pressure at A < Pressure at B > Pressure atC
(d) Pressure at A < Pressure at B < Pressure at C
Answer. (d) Pressure at A < Pressure at B < Pressure at C because water pressure increases with increase in depth.

Question. 5 Two objects repel each other. This repulsion could be due to the
(a) frictional force only
(b) electrostatic force only (c) magnetic force only
(d) either a magnetic or an electrostatic force
Answer. (d) The reason for repulsions may be either an electrostatic (in case of similar charges) or a magnetic (in case of similar pole_s) force.

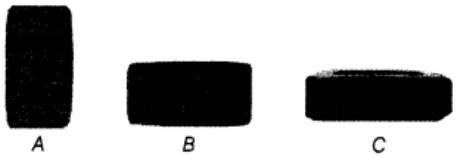
Question. 6 Which one of the following forces is a contact force?
(a) Force of gravity (b) Force of friction
(c) Magnetic force (d) Electrostatic force
Answer. (b) Force of friction is a contact force. It always acts when the bodies are in contact.

Question. 7 A water tank has four taps fixed at points A,B,C and D as shown in figure. The water will flow out at the same pressure from taps at



(a) B and C (b) A and B (c) C and D (d) A andC
Answer. (a) Since, B and C are at the same level. So, the pressure will remain same at B and C.

Question.8



A brick is kept in three different ways on a table as shown in figure. The pressure exerted by the brick on the table will be
(a) maximum in position A (b) maximum in position C
(c) maximum in position B (d) equal in all cases
Answer. (a) Pressure will be maximum in position A because area of contact is minimum in this case and area is inversely proportional to pressure.

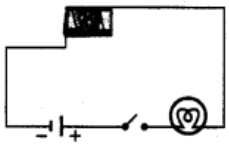
Very Short Answer Type Questions

Question. 9 A ball of dough Is rolled into a flat chapatti. Name the force exerted to change the shape of the dough.
Answer. The shape of dough is changed due to the muscular force applied by the hand.

Question. 10 Where do we apply a force while walking?
Answer. We apply a force on ground while walking and ground applies reaction force on our foot due to which we are able to move forward.

Question. 11 A girl is pushing a box towards East direction. In which direction should her friend push the box SQ that it moves faster in the same direction?
Answer. Her friend should push the box towards East direction, so that it will start moving more fast towards East because the magnitude of force increases.

Question. 12 In the circuit shown in figure, when the key is closed, the compass needle placed in the match box deflects. Name the force which cases this deflection.



Answer. On closing the switch, the current starts flowing in the wire and due to this current, a magnetic field established around the wire which exerts magnetic force on the needle and it gets deflected.

Question. 13 During dry weather, clothes made of synthetic fibre often stick to the skin. Which type of force is responsible for this phenomenon?
Answer. The electrostatic force starts working between the cloth made of synthetic fibre and sticks to skin.

Question. 14 While sieving grains, small pieces fall down. Which force pulls them down?
Answer. It is the force of gravity which is responsible for the grains to fall down.

Question. 15 Does the force of gravity act on dust particles?
Answer. Yes, force of gravity acts on the dust particles.

Question. 16 A gas filled balloon moves up. Is the upward force acting on it larger or smaller than the force of gravity?
Answer. The upward force will be greater than the force of gravity.

Question. 17 Does the force of gravitation exist between two astronauts in space?
Answer. Yes, there will be gravitational force between the astronauts because every object in universe, whether small or large, exerts a force on every other object, it is the universal law of gravitation.

Short Answer Type Questions

Question. 18 A chapatti maker is a machine which converts balls of dough into chapatties. What effect of force comes into play in this process?

Answer. The force on unit area is called pressure, works on the chapaties. This is the pressure which works on the dough balls and make them chapatties with the help of machine.

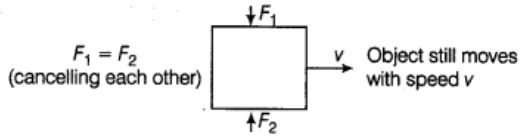
Question. 19 Figure shows a man with a parachute. Name the force which is responsible for his downward motion. Will he come down with the same speed without the parachute?

Answer. The name of force responsible for the downward motion of the parachute is force of gravity.

No, because the air friction will become less.

Question. 20 Two persons are applying forces on two opposite sides of a moving cart. The cart still moves with the same speed in the same direction. What do you infer about the magnitudes and direction of the forces applied?

Answer. The magnitude of forces will be equal and it acts in opposite direction, so that they are cancelling each other. We can understand this by using the following diagram:



Question. 21 Two thermocol balls held close to each other but move away from each other, when they are released. Name the force which might be responsible for this phenomenon. Explain.

Answer. This is electrostatic force which is created due to the rubbing and since, same charges are induced on two balls, so they move away from each other.

Question. 22 Fruits detached from a tree fall down due to the force of gravity. We. know, that a force arises due to the interaction between two objects. Name the objects interacting in this case.

Answer. The interacting objects in this case are: earth and fruits.

Earth applies force of gravity on fruit towards its centre. So, fruit falls down.

Question. 23 A man is pushing a cart down a slope. Suddenly the cart starts moving faster and he wants to sloyy it down. What should he do?

Answer. Man can do following things:

(i) He can start pulling the cart instead of pushing it in order to balance the downward force due to gravity.

(ii) He can go the other side by moving himself very fast in the direction of motion and try to slow down the speed of cart by giving an opposite force to the moving cart.

Question. 24 Figure shows a car sticking to an electromagnet. Name the forces acting on the car. Which one of them is larger?

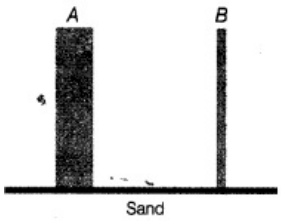
Answer. The forces working on the car are
(i) Force of gravity (downwards) (ii) Magnetic force (upwards)
Since, the car is moving upwards, so magnetic force due to the electromagnet is greater.

Long Answer Type Questions

Question. 25 An archer shoots an arrow in the air horizontally. However, after moving some distance, the arrow falls to the ground. Name the initial force that sets the arrow in motion. Explain why the arrow ultimately falls down?
Answer. The archer shoots an arrow by applying muscular force to stretches the string of the bow. When the string is released, it regains its original position that provides the initial force to set the arrow in motion horizontally.
The force of gravity that acts on the arrow in the downward direction and hence, the arrow ultimately falls to the ground.

Question. 26 It is difficult to cut cloth using a pair of scissors with blunt blades. Explain.
Answer. It is difficult to cut cloth using a pair of scissors with blunt blades because blunt blades have more area and due to which applied force produces very less pressure. As we know that pressure is inversely proportional to area of cross-section, so it is difficult to cut cloth
from blunt blades.
$\left(\text{As; } p = \frac{F}{A}\right)$

Question. 27 Two rods of the same weight and equal length have different thickness. They are held vertically on the surface of sand as shown in figure. Which one of them will sink more? Why?



Answer. As we know that pressure exerted by the body is inversely proportional to the area where force is applied. So, the thinner rod, i.e. rod B will sink more because it has less area of cross-section in contact with the surface, hence it will exert more pressure on the sand with respect to the rod A.

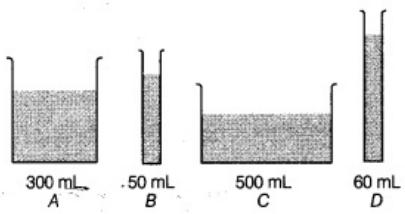
Question. 28 Two women are of the same weight. One wears sandals with pointed heels while the other wears sandals with flat soles. Which one would feel more comfortable while walking on a sandy beach? Give reasons for your answer.
Answer. While walking on a sandy surface, one needs the footwears of larger area so that the

pressure exerted on the ground is minimum. So, in this case, the woman having the sandals with pointed heels will be less comfortable in walking while the other woman wears sandals with flat soles feels more comfortable while walking on sandy beach.

Question. 29 It is much easier to burst an inflated balloon with a needle than by a finger. Explain.

Answer. Because needle tip has very less area of cross-section in comparison to that of our finger and we know that pressure exerted by a force is inversely proportional to the area where it has been applied, so pressure exerted will be more by the needle tip than the finger. –

Question. 30 Observe the vessels A, B, C and D as shown in figure carefully.



Volume of water taken in each vessel is as shown. Arrange them in the order of decreasing pressure at the base of each vessel. Explain.

Answer. Pressure at depth due to the liquid column depends upon

(i) gravitational acceleration (g)

(ii) density of liquid

(iii) height of liquid

And in this case, g and density are same, so only thing that can change pressure is height.

So, the order of pressure exerted by the fluid A, B, C and D at the base is given by

PD > PB> PA > PC