

ICSE Board
Class VI Physics
Sample Paper – 2 Solution

Question 1

1. (b) $M.A \times E = L$. Mechanical advantage is the ratio of load to effort. Hence, we get

$$M.A = \frac{L}{E}$$

$$\therefore M.A \times E = L$$

2. (b) Scissors. Scissors is a class I lever, whereas other three are class II levers.
3. (a) Pressure decreases. Pressure is inversely proportional to area. Hence, pressure decreases when area of contact increases.
4. (d) Friction. Force of friction always tends to slow down the motion of an object on a surface.
5. (c) Static friction is greater than sliding friction. Static friction is greater than sliding friction so, it becomes harder to slide a stationary box than to keep it from sliding.
6. (a) Cubic metre. Cubic metre is a derived unit and others are fundamental units.
7. (c) Friction between the two palms. When we rub our palms together, we feel them warmer due to the force of friction that comes into play when two surfaces are rubbing against each other.
8. (b) Repel each other. When two like poles of a magnet are brought close to each other, they repel each other.
9. (c) 4 km. By converting all the numbers in same unit of 'mm', we have
5 cm = 50 mm
7 mm = 7 mm
4 km = 4000000 mm
6 m = 6000 mm
So, the largest magnitude is 4 km.
- 10.(b) Induced magnetism. The magnetism acquired by a magnetic material when it is kept near (or in contact with) a magnet, is called induced magnetism.
- 11.(c) Potential energy. Water stored at a height in a dam possesses potential energy.

12.(a) Frictional force. Frictional force is a contact force which comes into play only when two surfaces are in contact.

13.(d) 100 Pa.

Given: $F = 400 \text{ N}$

$A = 4 \text{ m}^2$

We know that

$$P = \frac{F}{A}$$

$$\therefore P = \frac{400}{4} = 100 \text{ Pa}$$

14.(b) Gravitational force. All objects in the universe exert a gravitational force on all other objects.

15.(d) 6.6 m.

Given: $W = 100 \text{ J}$

$F = 15 \text{ N}$

We know that

$W = Fs$

$$\therefore s = \frac{W}{F} = \frac{100}{15} = 6.6 \text{ m}$$

Question 2

(A)

1. kelvin
2. Lever
3. Derived quantity
4. Mean solar day
5. Rolling friction

(B)

1. Hydro-electricity
2. 37°C
3. Decreased
4. Repulsion
5. Centre

Question 3

(A)

Column A	Column B
1. Volume	a. m ³
2. Heater	b. Electrical to heat
3. Claw hammer	c. Class I lever
4. Speed	d. m/s
5. Photo voltaic cell	e. Light to electrical

(B)

1. An object can be measured with an accuracy of 0.1 mm with a vernier calliper.
2. A class II lever has load in the middle.
3. Weight of an object is the force with which the object gets attracted towards the centre of the earth.
4. Static friction is greater than sliding friction and rolling friction.
5. In a solar cell, light energy is converted to electric energy.

Question 4

(A)

1. The units of derived quantities which can be expressed as a combination of basic units are called derived units.
2. There are seven base units in S.I. system.
3. Astronomical unit and light year.
4. Angstrom and nanometre.
5. The apparent change in position of object with respect to a point when viewed with left and right eye is known as parallax.

(B)

Weight of the girl = 50 kgf = $50 \times 10 = 500$ N

Area of the heels = $2 \times 1 \text{ cm}^2 = 2 \text{ cm}^2$

$$\therefore \text{Pressure exerted by the girl} = \frac{W}{A} = \frac{500}{2} = \frac{500 \times 100 \times 100}{2} = 2500000 \text{ Pa}$$

Weight of the elephant = 5000 kgf = $5000 \times 10 = 50000$ N

Area of the feet = $4 \times 250 \text{ cm}^2 = \frac{4 \times 250}{100 \times 100} \text{ m}^2$

$$\therefore \text{Pressure exerted by the elephant} = \frac{W}{A} = \frac{50000 \times 100 \times 100}{4 \times 250} = 500000 \text{ Pa}$$

Hence, we can see that the girl will exert more pressure than that of the elephant by $2500000 - 500000 = 2000000$ Pa

Question 5

(A)

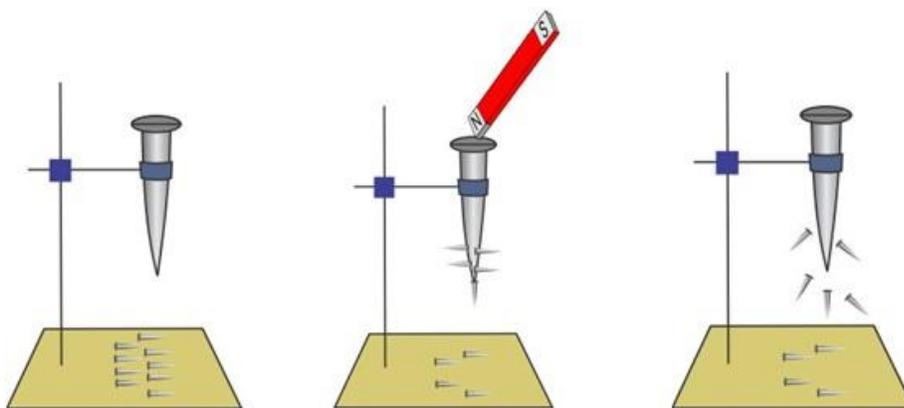
1. All machines require proper care and maintenance for their efficient and longer use.
2. 1 Joule is the amount of work done, when a force of 1 newton displaces a body by 1 metre along the line of action of force.
3. Work is said to be done when a force acts on an object and as a result of this force the object gets displaced from its initial position.
4. The space occupied by an object is known as its volume.
Its S.I. unit is metre-cubed (m^3).
5. When the potter turns his wheel, he applies muscular force.

(B)

1. Aluminium. Only aluminium is a non-magnetic substance. Others are non-magnetic substances.
2. Area. Area is a derived quantity. Others are fundamental quantities.
3. volta. volta is not a unit of temperature. Others are units for measuring temperature.
4. Frictional force. Frictional force is a contact force. Others are non-contact forces.
5. Making pores. Making pores is a way to increase the friction. Others are ways to decrease friction.

Question 6

(A) The property by which an ordinary piece of iron acquires magnetic properties due to the presence of another magnet is called magnetic induction.



Spread some iron pins on the base of a stand. These pins are not attracted to the nail. When a magnet is touched to the head of the nail, some pins at the base of the stand cling to the nail. This is because the nail turns into a magnet, and hence, acquires the property of magnetism. This is magnetic induction.

When the magnet is removed from the head of the nail, the pins fall down showing de-magnetism. Hence, the nail acquires magnetism and pins get attracted to it by induction.

(B)

1. It is defined as the mass of a cylinder of platinum-iridium alloy kept at International Bureau of Weights and Measures in Paris.
2. Muscular force is the force produced by the muscles of living beings.
3. The force acting per unit surface area is called pressure.
4. The total distance between the North Pole to the centre and the centre to the South Pole of a magnet is called the length of a magnet.
5. Efficiency is the ratio of work done by the machine to the work done on the machine.

Question 7**(A)**

1. Kinetic energy: Kinetic energy is the energy possessed by a body by virtue of its motion. It is given by the formula: $K.E = \frac{1}{2} mv^2$
Potential energy: Potential energy is the energy possessed by a body by virtue of its position with reference of the Earth. It is given by the formula: $P.E = mgh$
2. The effects of force are as follows:
 - A force can make a stationary object move.
 - A force can stop a moving object.
 - A force can change the direction of a moving object.
 - A force can change the speed of a moving object.
 - A force can change the shape and size of an object.

(B)

1. Friction is the resistance to motion experienced when two surfaces in contact move with respect to each other.
The following are the advantages of friction:
 - It is due to friction that we can walk without slipping.
 - We can hold a pen or a pencil and write due to friction.
 - It is due to friction that a nail or screw remains fixed in a wall.
 - Brakes of all automobiles work due to friction.
 - A match stick is lighted due to friction of its tip with the matchbox.
2. A screw is a rotating (winding) inclined plane.
The following are the three uses of a screw:
 - It is used to hold two pieces of wood or metal tightly.
 - Screw jack is used for lifting a car or a truck, in order to change a punctured wheel.
 - A cork screw is used for pulling out a cork from the bottles of wine or ketchup.