ICSE Board
Class VI Physics
Sample Paper – 3 Solution

Question 1

1. (c) Water stored at a height in a dam possesses potential energy.

2. (c) $W = F\ s$
$= m\ g\ s$
$= 500 \times 10 \times 4 = 2 \times 10^4$ J

3. (a) The length of a curved surface can be measured using a thread or a divider.

4. (a) The attraction of iron filings to the poles of a magnet is maximum.

5. (b) The moving parts of machines should be lubricated.

6. (c) When more than one force acts on an object, the effect on the object is the result of the net force acting on it.

7. (a) Players use muscular force by moving their limbs. The force resulting from the action of muscles is called muscular force. Activities such as bending, movement, breathing, digestion of food etc. involve muscular force.

8. (a) One Pascal is the pressure generated by a force of 1 N or 1 m^2.

9. (c) A staircase is an example of an inclined plane.

10. (a) Time period of a simple pendulum depends upon the length of the pendulum.

11. (a) Sportsmen use shoes with spikes because such shoes provide more friction which helps them to have better grip on the ground.

12. (b) The force acting on a unit area of a surface is called pressure.

13. (a) Non-contact force is also called action-at-a-distance force because such a force can act even without any actual contact between the two objects involved.

14. (d) Artificial magnet used in the laboratory to detect the direction is a magnetic needle.

15. (b) Magnetic force is a non-contact force, because a magnet can influence another magnet or magnetic material even when they are placed at a distance.

Question 2

(A)

1. Physical quantity
2. Frictional force
3. Kinetic energy
4. Efficiency
5. Pressure

(B)

1. Matter
2. Friction
3. Energy
4. Reduce
5. Isolated

Question 3

(A)

Column A	Column B
1. Steel	a. Permanent magnet
2. Mass	b. kilogram
3. Force acting due to the Earth on a body	c. Gravitational force
4. Seesaw	d. Class I lever
5. Temperature	e. Celcius

(B)

1. The S.I. unit of time is second.
2. Pressure is inversely proportional to area.
3. Magnetic force is an example of non-contact force.
4. A falling stone converts potential energy into kinetic energy.
5. On rubbing a glass rod with a silk cloth, electrons move from the silk to the glass rod, thereby the glass rod gets positively charged and the silk cloth gets negatively charged.

Question 4

(A)

1. One metre: It is defined as the distance between two fine lines engraved on a platinum-irridium bar kept at the International Bureau of Weights and Measures in Paris maintained at 0^oC.
2. One kilogram: It is defined as the mass of a cylinder of platinum-irridum alloy kept at the International Bureau of Weights and Measures in Paris.
3. Surface area: The surface area of a plane figure is the measure of the surface enclosed by its boundary. Its S.I. unit is square metre (m^2).

(B) Magnetic energy is a type of energy obtained through magnets. Like poles of a magnet repel each other while unlike poles attract each other. The forces of attraction and repulsion are due to magnetic energy. This magnetic force could be used to perform work. Big machines are designed in such a way that they use magnetic energy. Example: Magnetic cranes are used to lift heavy loads. A magnetic belt is used to separate iron from other scrap. The working of the Maglev train is also based on the principle of magnetic repulsion.

Question 5

(A)

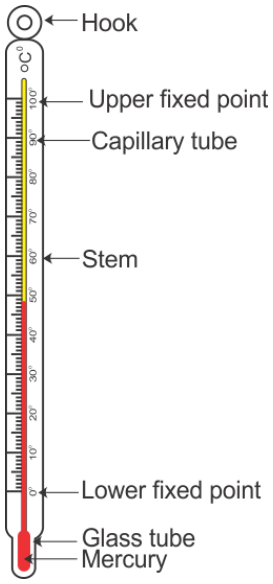
1. If the length is 1 metre and the breadth is 1 metre of a rectangular object, then the area of that object is 1 square metre.
2. The points of a magnet where the attraction appears to be maximum are called the poles of the magnet.
3. One advantage of using a pulley is that it allows us to apply the force in a convenient direction.
4. Types of forces are muscular force, electrostatic force and magnetic force.
5. Capacity to do work is called energy.

(B)

1. Lodestone — Lodestone is a natural magnet but others are artificial magnets.
2. Muscular force — Muscular force is a contact force. Others are non-contact force.
3. Lion — Lion does not have a streamline body.
4. Solar cell — Solar cell converts solar energy to heat energy. Others convert chemical energy to heat energy.
5. Metre — Metre is a unit of length. Others are units of time.

Question 6

(A) A thermometer is a device which measures the temperature in a reliable manner.



It is made of a long, narrow, uniform glass tube with a bulb which contains mercury or alcohol. The bulb attached to a narrow glass tube is called the capillary tube and the outer body is triangular in shape. The most common type of thermometer is the mercury thermometer. There are different types of thermometers such as the clinical thermometer, the laboratory thermometer and the maximum-minimum thermometer. A clinical thermometer is used to measure the temperature of the human body. A laboratory thermometer is used to measure temperatures or temperature changes of other objects. A maximum–minimum thermometer is used to measure the daily temperature in order to prepare weather reports.

(B)

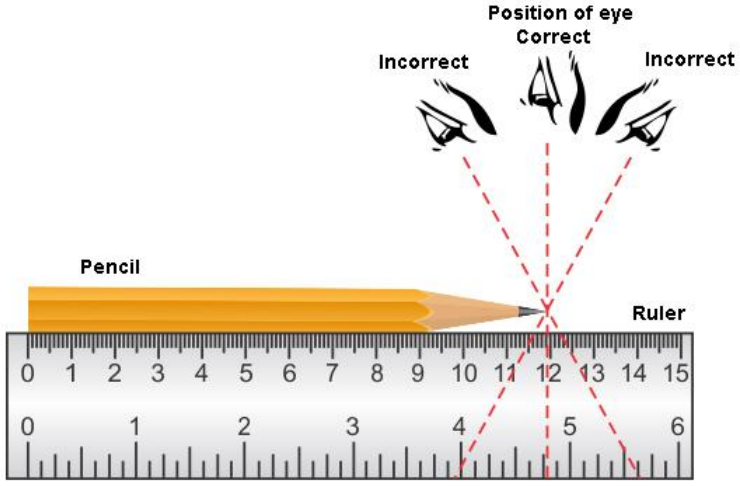
1. A machine is said to be ideal if there is no dissipation of energy i.e., the work output is equal to the work input.
2. The amount of material or matter in a body is called mass.
3. Magnetic compass is an instrument which is used to find the directions and has a thin magnetic needle connected from a pivot so that it can rotate freely.
4. Pressure is the force acting per unit area in a direction perpendicular to the surface of an object.
   Pressure = Force / Area
5. The frictional force which comes into action when a roller rolls over a surface is called rolling friction.

Question 7

(A)

1. The mechanical advantage of a machine is less than its velocity ratio (VR) due to friction between its different parts and the weight of its different parts.

2. The following things should be kept in mind while measuring the length of any object:
   Example: Measuring the length of a pencil.



   1. The object should be placed carefully so that one of its ends is at the number zero of the ruler.
   2. Place the scale in contact with the object (i.e. pencil) along its length.
   3. If the zero mark is not clear, use any other full mark of the scale and then subtract the reading of this mark from the reading at the other end. The difference is the length of the object.
   4. Your eye must be exactly in front of the point where the measurement is to be taken.

(B)

1.
   (a) Mechanical energy to heat energy.
   (b) Chemical energy to heat energy and light energy.
   (c) Heat energy to mechanical energy.
   (d) Electrical energy to mechanical energy.

2. The functions of a machine are:
   (i) It can multiply force.
   Example: A jack is used to multiply force
   (ii) It can increase speed.
   Example: A gear is used to increase speed
   (iii) It can change the direction of the effort applied
   Example: A pulley is used to change the direction of force.