ICSE Board
Class VI Physics
Sample Paper – 4 Solution

Question 1

1. (c) If two forces act in opposite directions on an object, then the net force acting on it is the difference between the two forces.

2. (d) When a person speaks in front of a microphone, sound energy is converted into electric energy.

3. (d) Hand span is not used for measuring time.

4. (b) Efficiency of a machine is given by output/input.

5. (b) A freely suspended compass needle aligns itself approximately in the North-South direction.

6. (d) Unit of force is Newton (N).

7. (a) P = F/A; increasing the area of contact decreases the pressure on the ground.

8. (d) Cleats are used to increase friction so as to have a better grip on the ground.

9. (a) It is a first class lever. In this action, the spine acts as the fulcrum, the load is at its front part, while the effort is at its rear part.

10. (c) Class II levers are designed to have M.A. > 1.

11. (c) Lodestone is an example of a natural magnet.

12. (a) Class I lever is that in which the fulcrum is between the load and the effort.

13. (b) The force exerted by a magnet is called magnetic force.

14. (b) A nut cracker is an example of a second order lever.

15. (c) For doing more work, more force has to be applied.

Question 2

(A)

1. Sun
2. Non-contact force
3. Mechanical Advantage
   M.A. = Load (L) / Effort (E)
4. Pulley
5. Newton

(B)

1. Physical
2. Contact
3. Magnetic compass
4. Thrust
5. Mechanical energy

Question 3

(A)

Column A	Column B
1. Beam balance	a. Measurement of mass
2. Rubbing a glass rod with silk cloth	b. Charging by friction
3. Horse-shoe magnet	c. Artificial magnet
4. Burning of a candle	d. Chemical energy
5. Self-demagnetisation	e. Magnetic keepers

(B)

1. Powder applied on a carrom board reduces friction.
2. Gravitational force is the weakest of all the forces.
3. Artificial magnets are stronger than natural magnets.
4. The time period of a simple pendulum does not depend on the mass of the bob used but on the length of the pendulum.
5. Sun is the ultimate source of energy.

Question 4

(A)

1.

Mass	Weight
It is the amount of matter contained in a body.	It is the force with which a body is attracted towards the centre of the Earth.
Its S.I. unit is kilogram.	Its S.I. unit is Newton.
It is measured by a physical balance.	It is measured by a spring balance.
It is constant and independent of the position or choice of place.	It varies from place to place on the surface of Earth.

2. A force is that physical quantity which changes or tends to change the state of rest or uniform motion of a body.

(B) The following are the uses of electromagnets:

(i) They are used in devices such as electric bell, telegraph sounder, telephone receiver, motor, generator, etc.

(ii) Electromagnets are used in electrical measuring instruments such as galvanometer, the ammeter and the voltmeter.

(iii) Huge electromagnets are also used for loading and unloading heavy loads of scrap iron and other iron objects at shipyards.

(iv) They are used by eye specialists to remove small bits of iron or steel lodged in the eyes.

Question 5

(A)

1. The distance travelled by light in one year in vacuum is called one light year.
2. Pliers, hammer and nutcracker are the simple machines of lever type.
3. The Sun is the most important, inexhaustible and main source of energy.
4. The space around a magnet, where a magnetic field is experienced, is called the magnetic field.
5. Examples of muscular force:
   (i) In arctic regions, reindeers are made to pull sledges which are used as passenger vehicles.
   (ii) Elephants are used to pull heavy logs of wood.

(B)

1. Photocell—Photocell converts light energy to electrical energy whereas burning of diesel, petrol and kerosene converts chemical energy to heat energy.
2. Stopwatch—Stopwatch is an instrument for measuring time. Others are different balances for measuring mass.
3. Ice tongs—Ice tong is an example of a lever of the third order. Others are example of levers of the first order.
4. Steel—Steel is a magnetic substance. Others are non-magnetic substances.
5. Making grooves in tyres—Making grooves in tyres increases friction while the others reduce friction.

Question 6

(A) A magnet can be demagnetised by the following ways:

1. By hammering the magnet.
2. By handling it roughly.
3. By heating the magnet to a very high temperature or by keeping it in the East-West direction.
4. By passing an alternating current around the magnet.
5. By dropping it repeatedly on a hard surface.
6. By self-demagnetisation i.e. when the two poles of a magnet are left free, the magnet loses its magnetism, which is known as self-demagnetisation.

(B)

1. The amount of work done on the machine or the energy supplied to the machine is called input or input energy.
2. The magnet which loses its magnetic properties as soon as the magnetising force is removed away from it is called a temporary magnet.
3. A laboratory thermometer is used to measure the temperature or temperature changes of other objects. The range of a laboratory thermometer is generally from −10°C to 110°C.
4. The attraction or repulsion between the poles of a magnet is known as magnetic force.
5. The length of a magnet is the total distance between the North Pole to the centre and from the centre to the South Pole of a magnet.

Question 7

(A)

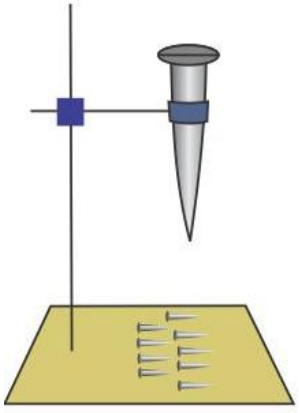
1. The advantages of an electromagnet are:
   (i) It can be magnetised and demagnetised by turning the current on or off in the coil.
   (ii) It can be made stronger than any other permanent magnet.

2. A machine is a device which is used:
   (i) To transmit force.
   (ii) To change the direction of force.
   (iii) To gain speed.
   (iv) To overcome a large resistive force by applying a relatively less amount of force.

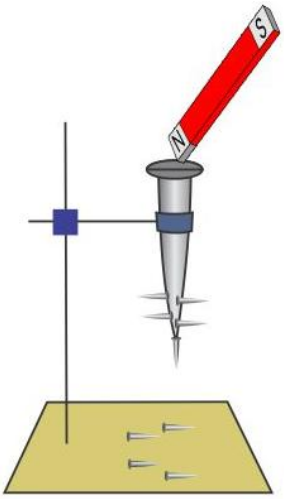
(B)

1. The advantages of friction are:
   (i) Friction enables us to walk without slipping.
   (ii) Friction enables us to write and draw on paper.
   (iii) Friction enables us to burn a matchstick.
   (iv) Friction enables us to apply brakes needed to stop a moving vehicle.

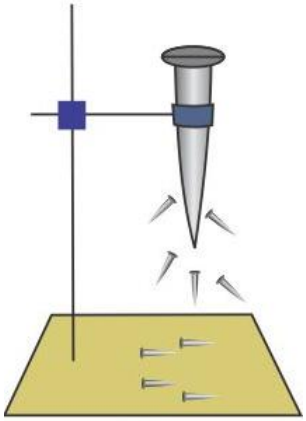
2. Preparing a magnet by the magnetic induction method:
   Put a long nail on the arm of a stand. Spread some iron pins on the base of the stand. These pins are not attracted to the nail.



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 requires the properties of magnetism.



When the magnet is removed from the head of the nail, the pins fall down showing demagnetism.



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