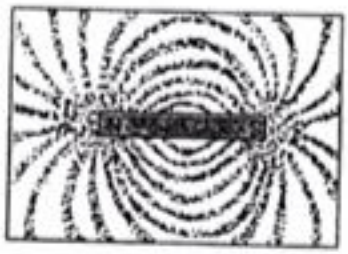
Question 8.
What is a magnetic compass ? State its use.
Answer:

Magnetic compass is a device which is used to locate the direction of a place. It always rests in a North-South direction. It is used in the navigators in : ships, submarines, aeroplanes etc.

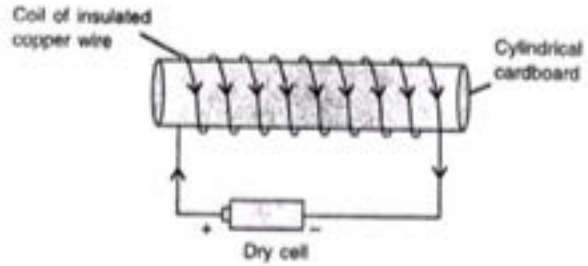
Magnetic compass

Question 9.
Explain the meaning of the term magnetic field.
Answer:
The space around the magnet where its influence can be experienced is known as magnetic field. This field is formed by the magnetic lines of force which run from the North pole to the South pole. These lines can be found to be maximum crowded at the two ends of the magnet which are the poles i.e. the North pole and the South pole.



Magnetic field

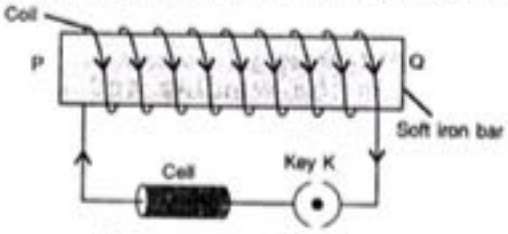
Question 10.
What is an electromagnet ?
Answer:
An electromagnet — An electromagnet is a temporary magnet which behaves as a magnet when electric current is passed through the insulated copper wire and loses its magnetism when current is stopped. It has a soft iron piece called the core with an insulated copper wire wound on it.



Question 11.
Name the material of an electromagnet.
Answer:
Iron bar, insulated copper wire, battery.

Question 12.
Draw a labelled diagram to make a soft iron bar as an electromagnet. Describe in steps the procedure.
Answer:
Usually, the electromagnets are made in two shapes :
(1) bar or I shaped magnet and (2) horse shoe or U shaped magnet.

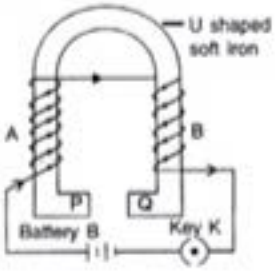
1. **To make a fiar or I shaped electromagnet**: Take a soft iron bar PQ and wind a thin insulated copper wire around the bar. Connect a cell or a battery B, and a key K in series between the ends of the coil. The circuit diagram is shown in figure.



Making a bar electromagnet

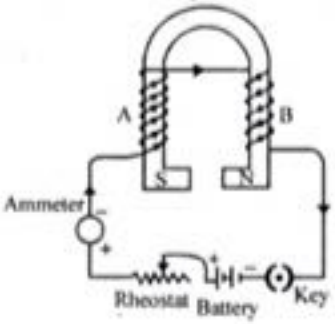
When key K is closed, current passes through the winding of the coil and the bar becomes a magnet. As the key K is opened, the current stops flowing in the coil and the bar loses its magnetism. Thus, the bar behaves like an electromagnet.

2. **To make a horse shoe or U shaped electromagnet**: Take a U shaped soft iron piece. Wind a thin insulated copper wire on its arms such that the winding in the two arms is in opposite direction. In figure winding in the arm A starts from the front and is in clockwise direction (when seen from the bottom).
On reaching the upper end of the arm A, winding starts from the back at the top of the arm B and is in anticlockwise direction. Connect a battery B and a key K between the two ends of the wire.



Question 13.
You are given a U shaped soft iron piece, insulated copper wire and a battery. Draw a circuit diagram to make a horse shoe electromagnet.
Answer:

End A becomes S-pole and B becomes N-pole.



Question 14.
Name two factors on which the strength of magnetic field of an electromagnet depends.
Answer:
The magnetic field of an electromagnet (I or U-shaped) can be increased by the following two ways :

1. By increasing the number of turns of winding in the solenoid.
2. By increasing the current through the solenoid.

Question 15.
State two ways by which the strength of magnetic field of an electromagnet can be increased.
Answer:
The magnetic field of the electromagnet can be increase in the following two ways :

1. By inserting a rod of soft iron or steel inside the cylindrical tube. This rod is called the core.
2. By increasing the total number of turns of the coil.

Question 16.
State two common uses of electromagnets.
Answer:
Uses of electromagnet —

1. In electrical appliances such as electric bell, fan etc.
2. In lifting heavy loads of iron scrap.
3. To remove tiny particles of iron from the wound.
4. In loading furnaces with iron.
5. In separation of magnetic substances from the non-magnetic substances.

Question 17.
Name a domestic device in which an electromagnet is used.
Answer:
Electromagnet is used in ELECTRICAL APPLIANCES like ELECTRIC BELL, RADIO, T.V., FAN and MOTORS etc.

Question 21.
Define the term current.
Answer:
An electric current is a flow of electric charge. In electric circuits this charge is often carried by moving electrons in a wire.
The S.I. unit of electric current is the ampere.

Question 22.
Name four appliances which work using electricity.
Answer:

1. an electric iron
2. an electric heater
3. an electric kattle
4. an immersion rod

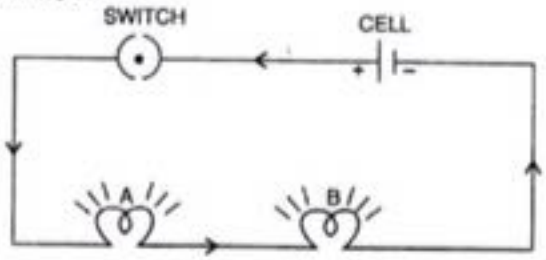
Question 23.
Name two sources of electricity.
Answer:

1. dry cell and battery
2. generator and solar cell

Question 24.
What is a battery ?
Answer:
If we use a group of two or more cells, it is called a battery. A battery is used where we require more electricity.

Question 25.
What is an electric circuit ?
Answer:
For a smooth flow of electric current, a complete circuit is needed. This is known as electric circuit.

Question 26.
Describe an experiment to show that electricity flows only if the circuit is complete and it does not flow if the circuit is incomplete.
Answer:
Take two torch bulbs A and B. Connect them to a cell through a switch as shown in fig. The bulbs are said to be in series. Close the switch (i.e., the circuit it completed), you will see that both the bulbs glow.



Circuit is complete, both bulbs glow

Now take out the connection of the bulb B as shown in fig. Now close the switch, you will observe that the bulb A does not glow, because the circuit is now incomplete.