Question:1

Write one word for the following.

1. An unbroken path through which electric current can flow .....
2. A very thin wire made of a special material (such as tungsten) which glows in a bulb .....
3. Tightly wound coils found in appliances which heat up .....
4. A safety device used to prevent an over flow of electric current .....
5. A device used to open or close an electric current .....

Solution:

1. Circuit.
2. Filament.
3. Solenoid.
4. Fuse.
5. Electric switch.

Question:2

Wire one example for the following.

1.	One necessary component of an electric circuit	.....
2.	A material used to make the filament of an electric current	.....
3.	An appliance that is based on the heating effect of electric current	.....
4.	A material used to make the core of an electromagnet	.....

Solution:

1. Electric cell.

Electric cell is a necessary component of an electric circuit.

2. Tungsten.

Tungsten is used to make the filament of an electric bulb.

3. Electric iron box.

Electric iron box works on the principle of heating effect of electric current.

4. A piece of soft iron.

A piece of soft iron is used to make the core of an electromagnet.

Question:3
In a circuit diagram, the various components of the circuit are represented by

(a) standard pictures
(b) circle
(c) lines
(d) standard symbols
Solution:
(d) Standard symbols.
The various components in a circuit diagram are represented by standard symbols.

Question:4
The heating effect of electric current is used in

(a) an electric bulb
(b) an electric toaster
(c) a room heater
(d) all of these
Solution:
(d) All of these.

Objects like electric bulb, electric heart, electric toaster etc. works on the principle of the heating effect of electric current.

Question:5
An electric fuse is a

(a) an electric circuit
(b) a heating device
(c) an element in a bulb
(d) a safety device
Solution:
(d) A safety device.
An electric fuse is a safety device.

Question:6

When an electric current flows through a wire, it

(a) cools down
(b) behaves like a magnet
(c) it boils
(d) melts easily

Solution:

(b) Behaves like a magnet.
An electric wire carrying current can behave like a magnet.

Question:7

A hammer, a gong and a soft iron strip are all parts of

(a) an electromagnet
(b) an electric bell
(c) an electric fuse
(d) electric circuit

Solution:

(b) An electric bell.
A hammer, a gong and a soft iron strip are the parts of an electric bell.

Question:8

Fill in the blanks with the correct words.

1. Two or more cells joined together form a ..... (circuit/battery).
2. An electric current can flow through a ..... (conductor/insulator).
3. For electric current to flow, the wires should not have any ..... (continuity/discontinuity).
4. A fuse is said to blow when the circuit is ..... (closed/broken).
5. In an electric bell, it is the ..... (soft iron strip/hammer) that strikes the gong.

Solution:

1. Two or more cells joined together form a battery.
2. An electric current can flow through a conductor.
3. For electric current to flow, the wires should not have any discontinuity.
4. A fuse is said to blow when the circuit is broken.
5. In an electric bell, it is the hammer that strikes the gong.Two or more cells are joined together to form a battery.

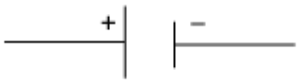
Question:9

List four basic components of an electric circuit and draw their standard symbols.

Solution:

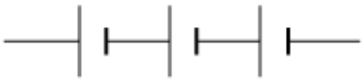
The four basic components of an electric circuit are

(i) Cell



Symbolic representation

(ii) Battery



Symbolic representation

(iii) Switch

ON position:

Symbolic representation

OFF position:

Symbolic representation

(iv) Bulb

Symbolic representation

Question:10

What is an electromagnet? Give two uses of electromagnets. Name two factors on which the strength of an electromagnet depends.

Solution:

When an electric current passes through a conductor, the conductor behaves like a magnet. This is called as electromagnet. Electro magnets are extensively used in electric devices such as electric fans, refrigerators, washing machines etc. The strength of an electromagnet mainly depends on,

(i) The number of turns of the wire wounded around the metallic core.
(ii) The amount of electric current passing through it.

Question:11

Describe a simple experiment to demonstrate that an electric current produces a magnetic effect.

Solution:

Take two wires and remove the insulation from the two ends of the both wires.connect one wire to the negative terminal of cell.secure the connection with the insulation tape .similarly connect the end with the positive terminal of cell.place the magnetic compass near the wire .keep the eye on the magnetic

compass.the magnetic compass will be deflected which shows current carrying wire produce magnetic field.

Question:12

What is the purpose of using an electromagnet in an electric bell?

Solution:

The main purpose of using electromagnets in electric bells is to make and break the electric circuit in an electric bell. When the switch is on, the electric current flows through the circuit, allowing the electromagnet to pull the iron strip, which makes the hammer, hit the gong to ring the bell. As soon as the iron strip gets attracted to the electromagnet, it moves away from the screw causing the circuit to break. When the circuit breaks, the electric current stops which turns off the electromagnet. The iron strip, again come back to its original position and touches the screw. This in turn closes the circuit, allowing the current to pass through it.

Question:13

List the three conditions that have to be fulfilled for electric current to flow.

Solution:

Electric current flows in a circuit when the following conditions are fulfilled.

(i) There should be an electrical source, *i.e.,* one or more electric cells connected to a circuit.

(ii) There should not be any gaps or discontinuity in the wires connected to the circuit.

(iii) The switch connected to the circuit should be kept closed.

Question:14

What is the heating effect of electric current?

Solution:

In general, when electric current passes through a conductor, it produces heat. This is called the heating effect of electric current. For example, when an electric current flows through a bulb, the filament of the bulb gets heated and is converted into light.

Question:15

What is a solenoid?

Solution:

A solenoid is a device which can be used as electromagnet. it is made up of long wire that has been wound many times(usually around a hollow metallic core) into a tightly packed coil.solenoid has a shape of cylinder.

Question:16

Name any three parts of an electric bell.

Solution:

An electric bell consists of an electromagnet, a strip of iron and a hammer. When the switch is on, the current flows through the circuit which allows the electromagnet to pull the strip of iron. This makes the hammer attached to the iron piece hit the gong and ring the bell.

Question:17

Give reasons for the following.

(a) An electric current does not flow in a circuit when the switch in the in the circuit is 'open'.
(b) The wire in an electric fuse is made of a material that melts easily.
(c) An electric bulb feels hot to touch after it has been on for some time.
(d) A magnetic needle gets deflected when it is brought close to a current carrying conductor.
(e) The soft strip of an electric bell gets attracted to the electromagnet when the electric ell is switched on.

Solution:

(a) When the switch is closed there will be continuity in the circuit which allows the electricity to pass through it, whereas when the switch is open, there will be a gap created in the circuit and hence electric current does not flow in the circuit.

(b) The wire in the electric fuse is designed in such a way that it allows only a certain amount of current to pass through it. When excess amount of electricity passes through it, the wire melts due to the heat, causing the circuit to break.

(c) The electric bulb contains a very thin wire called filament to conduct electricity. When an electric current flows through the bulb, the bulb glows and the filament carrying current gets heated. This happens due to the heating effect of electric current.

(d) When electric current flows through a conductor, the conductor carrying current behaves like a magnet. Hence it can deflect the magnetic needle kept close to it.

(e) When the switch is on, the current flows through the circuit, creating a magnetic field, which allows the electromagnet to pull the strip of iron. This makes the hammer attached to the iron piece hit the gong and ring the bell.