

## **Chemical effect of electric current**

### **FM 15**

#### **Situation-Based Question**

A. Riya set up an electric circuit using a battery, a bulb, connecting wires, and a beaker containing distilled water. She noticed that the bulb did not glow. When she added a few drops of lemon juice to the water, the bulb started glowing.

1. Why did the bulb not glow when distilled water was used?
2. Why did the bulb glow after adding lemon juice?
3. What does this experiment show about the nature of lemon juice?

B. Ankit wanted to check whether tap water conducts electricity. He dipped two carbon electrodes connected to a battery and a LED into a beaker containing tap water. After some time, small bubbles appeared on one electrode.

4. Why did bubbles appear on the electrode?
5. Which process is taking place in the water?
6. Name one gas that may be present in the bubbles.

#### **Assertion reason based question**

1. Assertion (A): Distilled water does not conduct electricity.

Reason (R): Distilled water does not contain dissolved salts or ions.

2. Assertion (A): Bubbles of gas are seen at the electrodes when electric current is passed through acidulated water.

Reason (R): Electric current causes chemical decomposition of water.

3. Assertion (A): In electroplating, the object to be plated is connected to the negative terminal of the battery.

Reason (R): Metal ions from the electrolyte get deposited on the object connected to the negative terminal.

4. Assertion (A): A LED glows dimmer in salt solution compared to a metallic wire.

Reason (R): Liquids generally offer more resistance to electric current than metals.

5. Assertion (A): Tap water conducts electricity but distilled water does not.

Reason (R): Tap water contains dissolved impurities that help in conduction of electricity.

### **Subjective type of question**

1. A. Draw a diagram showing the galvanisation process. (1)

B. This process is showing electroplating of which metal on whom. (1)

C. Write chemical reactions taking place at both the electrodes. (1)

D. Which metal should be placed at anode and cathode in this process? (1)

### **Situation-Based Question 3**

During electroplating, a student connected a copper plate to the positive terminal of a battery and an iron spoon to the negative terminal. Both were dipped in a solution of copper sulphate.

Questions:

1. Which material will get coated and why?
2. Why is copper sulphate solution used in this process?
3. Write one use of electroplating in daily life.

### **Situation-Based Question 4**

A teacher demonstrated an experiment in class where a compass needle was placed near a current-carrying wire. The needle showed a slight deflection when the switch was turned on.

Questions:

1. Why did the compass needle deflect?
2. What does this indicate about electric current?
3. Name the effect of electric current shown here.

### **Situation-Based Question 5**

A student tested different liquids such as salt solution, sugar solution, and distilled water using an electric tester.

Questions:

1. Which liquid will allow the tester to glow and why?
2. Why does sugar solution not conduct electricity?
3. What type of substances conduct electricity in solutions?

Note

Situation based question 3, 4 and 5 homework