Multiple Choice Questions (MCQs)

1. Which of the following is a good conductor of electricity?
a) Pure water
b) Distilled water
c) Lemon juice
d) Sugar solution

2. During electrolysis of water, which gas is released at the positive electrode?
a) Hydrogen
b) Oxygen
c) Nitrogen
d) Carbon dioxide

3. Which of the following solutions will not conduct electricity?
a) Sugar solution
b) Salt solution
c) Lemon juice
d) Copper sulfate solution

4. The chemical effect of electric current was first observed by:
a) Alessandro Volta
b) Michael Faraday
c) Benjamin Franklin
d) Thomas Edison

5. The device used to test the conductivity of liquids is:
a) Ammeter
b) Bulb
c) Battery
d) Voltmeter

6. When copper sulfate solution is electrolyzed, the substance deposited on the cathode is:
a) Sulfur
b) Hydrogen
c) Copper
d) Oxygen

7. An electrolyte is a substance that:
a) Dissolves in water to give sugar
b) Conducts electricity in solid form
c) Conducts electricity in molten or dissolved state
d) Prevents conduction of electricity

8. Which of these metals is used for electroplating?
a) Silver
b) Iron
c) Lead
d) Nickel

9. Electrolysis of water results in the release of:
a) Oxygen and nitrogen
b) Nitrogen and hydrogen
c) Hydrogen and oxygen
d) Carbon dioxide and oxygen

10. Which of the following statements is incorrect?
a) Electrolysis of water requires an acid or base.
b) Pure water is a good conductor of electricity.
c) Electrolysis involves breaking down of a compound using electric current.
d) Copper sulfate solution conducts electricity.

Assertion and Reasoning

a) Both A and R are true, and R is the correct explanation of A.
b) Both A and R are true, but R is not the correct explanation of A.
c) A is true, but R is false.
d) A is false, and R is true.

11. Assertion (A): Copper is a good conductor of electricity.
Reason (R): Copper has free electrons that allow easy flow of electric current.
12. Assertion (A): In electroplating, the metal to be plated is connected to the positive terminal.
Reason (R): Positively charged ions are deposited on the positive electrode.
13. Assertion (A): Distilled water does not conduct electricity.
Reason (R): Distilled water does not contain dissolved salts.

Case Study-Based Questions

Case Study 1:
Rahul connected a battery, bulb, and copper wires to test the conductivity of different liquids like saltwater, lemon juice, and vegetable oil. He noticed the bulb glowed only with saltwater and lemon juice.

14. Explain why the bulb glowed with saltwater and lemon juice but not with vegetable oil.
15. Suggest another liquid that could make the bulb glow.

Case Study 2:
In an electroplating factory, they use an electrolyte solution of copper sulfate to coat iron with copper. The iron article is dipped in the electrolyte and connected to the negative terminal of the battery.

16. Explain why iron is connected to the negative terminal.
17. What would happen if copper were connected to the negative terminal instead?