



*Answer all the questions below and then check your answers.*

- 1. What is electroplating?*
- 2. What is the purpose of electroplating?*
- 3. Which electrode is the object to be plated attached to?*
- 4. What metal is often used to electroplate cutlery?*
- 5. Name one common electrolyte used in silver plating.*
- 6. Describe the role of the anode in electroplating.*
- 7. Why is electroplating used in the jewellery industry?*
- 8. Explain the process of electroplating a copper object with nickel.*
- 9. How does electroplating prevent corrosion*
- 10. Describe the electroplating process used to coat an iron object with zinc (galvanizing).*
- 11. What are the steps to prepare an object for electroplating?*
- 12. Describe the electroplating of an object with gold and discuss its applications.*

13. Which metal is commonly used as the anode in silver electroplating?

- A) Copper      B) Zinc      C) Silver      D) Nickel

14. What is the primary purpose of galvanizing?

- A) Enhance appearance      B) Improve electrical conductivity  
C) Prevent corrosion      D) Increase strength

15. Fill in the gaps to complete the sentences below:

- a. In electroplating, the object to be plated is connected to the \_\_\_\_\_ electrode.
- b. The process of coating an iron object with zinc to prevent rust is called \_\_\_\_\_.
- c. An electrolyte commonly used in gold plating is \_\_\_\_\_.
- d. The \_\_\_\_\_ dissolves and provides metal ions in the electrolyte during electroplating.

16. Explain why a clean surface is crucial for successful electroplating.

## Answers

1. What is electroplating?

*Answer: Electroplating is the process of coating a metal object with a thin layer of another metal using electrical current.*

2. What is the purpose of electroplating?

*Answer: The purpose is to improve the appearance and prevent corrosion,*

3. Which electrode is the object to be plated attached to?

*Answer: The object to be plated is attached to the cathode (negative electrode).*

4. What metal is often used to electroplate cutlery?

*Answer: Silver.*

5. Name one common electrolyte used in silver plating.

*Answer: Silver nitrate solution.*

6. Describe the role of the anode in electroplating.

*Answer: The anode is typically made of the metal that will be plated onto the object. It dissolves into the electrolyte, providing metal ions that can be deposited onto the cathode.*

7. Why is electroplating used in the jewellery industry?

*Answer: Electroplating is used to coat jewellery with precious metals like gold or silver to enhance appearance and prevent tarnishing.*

*Electroplated jewellery is much cheaper than using a pure precious metal to make the jewellery from.*

8. Explain the process of electroplating a copper object with nickel.

*Answer: In nickel electroplating, the copper object (cathode) is submerged in a nickel solution/electrolyte. A nickel anode dissolves in the electrolyte, releasing nickel ions, which are reduced and deposited onto the copper surface when an electrical current is applied.*

9. How does electroplating prevent corrosion?

*Answer: Electroplating prevents corrosion by providing a protective coating that acts as a barrier to environmental factors such as moisture and oxygen, which can cause corrosion to set in.*

10. Describe the electroplating process used to coat an iron object with zinc (galvanizing).

*Answer: In galvanizing, the iron object is cleaned and immersed in a bath of molten zinc or a zinc solution. The iron object acts as the cathode, and a zinc anode dissolves into the electrolyte, releasing zinc ions. These ions are reduced at the cathode, forming a protective zinc coating that prevents rust.*

11. What are the steps to prepare an object for electroplating?

*Answer: The object is first cleaned to remove any dirt, grease, or oxide layer. This can be done using chemical cleaning, electrocleaning, or abrasive cleaning. Then it is rinsed and activated in a weak acid solution to ensure a proper surface for the metal ions to adhere during*

*Additional background information: Electroplating can produce hazardous waste, including toxic metal salts and cyanide solutions. Proper disposal and treatment of these wastes are crucial to prevent environmental contamination. There are also health risks for workers due to exposure to toxic chemicals and electrical hazards. Measures such as proper*

ventilation, protective clothing, and safe handling procedures are necessary to mitigate these risks.

12. Describe the electroplating of an object with gold and discuss its applications.

Answer: In gold electroplating, the object (cathode) is immersed in a gold chloride solution with a gold anode. When current is applied, gold ions from the electrolyte are reduced and deposited onto the object. This process is used in electronics (to improve conductivity and corrosion resistance of connectors), jewellery (for aesthetic and tarnish resistance), and decorative items.

13. Which metal is commonly used as the anode in silver electroplating?

- A) Copper      B) Zinc      C) Silver      D) Nickel

Answer: C) Silver

14. What is the primary purpose of galvanizing?

- A) Enhance appearance      B) Improve electrical conductivity  
C) Prevent corrosion      D) Increase strength

Answer: C) Prevent corrosion

15. Fill in the gaps to complete the sentences below:

a. In electroplating, the object to be plated is connected to the \_\_\_\_\_ electrode.

Answer: cathode

b. The process of coating an iron object with zinc to prevent rust is called \_\_\_\_\_.

*Answer: galvanising*

c. An electrolyte commonly used in gold plating is \_\_\_\_\_.

*Answer: gold chloride solution*

d. The \_\_\_\_\_ dissolves and provides metal ions in the electrolyte during electroplating.

*Answer: anode*

16. Explain why a clean surface is crucial for successful electroplating.

*Answer: A clean surface ensures good adhesion of the plated metal, prevents defects in the coating, and ensures a uniform and high-quality finish.*