Potentiometry and Electrochemistry Fundamentals

Chemistry · Practice Test · 12 Questions

1. What is the name of the science that studies processes where a potential difference arises spontaneously?

A) Electrolysis
B) Potentiometry
C) Electrochemistry
D) Voltaic science

2. In the 19th century, who discovered that electric current could be generated by a chemical reaction?

A) Michael Faraday
B) Alessandro Volta
C) Svante Arrhenius
D) Antoine Lavoisier

3. When a zinc rod is placed in water, what charge does the metal rod develop over time?

A) Positive
B) Neutral
C) Negative
D) Alternating

4. According to Figure 1, what happens to the zinc rod when it releases zinc ions into the solution?

A) It gains a positive charge.
B) It becomes neutral.
C) It releases electrons.
D) It develops a negative charge.

5. The equation Zn -> Zn^{2+} + 2e? represents which process?

A) Reduction
B) Oxidation
C) Neutralization
D) Dissociation

6. What causes the liquid (water) to gain a positive charge when a zinc rod is placed in it, as described in the text?

A) The water absorbs electrons.
B) The water absorbs positive zinc ions.
C) The water releases its own positive ions.
D) The water gains a negative charge from the rod.

7. Why does the zinc rod release fewer positive ions as its negative charge increases?

A) The positive ions are repelled by the solution.
B) The negative charge on the rod repels the positive ions.
C) The positive ions are attracted to the water.
D) The concentration of ions in the solution becomes too high.

8. What is reached when, per unit of time, the same number of ions leave the solution as return to the rod?

A) A reaction completion
B) An equilibrium situation
C) A phase change
D) A saturation point

9. Once equilibrium is reached, what happens to the potential difference between the rod and the solution?

A) It increases continuously.
B) It decreases to zero.
C) It remains constant.
D) It fluctuates rapidly.

10. What is the concentration of $[Zn^{2}+]$ in the solution after equilibrium is reached?

A) It increases further.
B) It decreases significantly.
C) It remains unchanged.
D) It becomes zero.

11. The interaction between metal atoms and ions in a solution, as described with the zinc rod, is also observed in what other process mentioned?

A) Evaporation
B) Condensation
C) Electrolysis
D) Diffusion

12. In the electrolysis of a $ZnSO_4$ solution, if a Zn rod is used as the anode, what is being removed from the solution?

A) Oxygen
B) Water molecules
C) Zinc ions
D) Sulfate ions