

Article Questions: “Flaking Away” - RedOx and Electrochemistry

1. Define:
 - a. Oxidation -

 - b. Reduction -

2. Rust-making is considered an _____ reaction.

3. According to experts, the redox reaction that forms rust needs three ingredients. Describe them below:
 - a. Anode -

 - b. Cathode -

 - c. Electrolyte solution -

4. Steel is a mixture of iron and what other elements?

5. Which element in steel is the one to rust?

6. Why is iron the “perfect anode for an electrochemical reaction”?

7. What leads to the creation of anodic regions on steel?

8. What does the water on the surface of steel do?

9. Once the ferrous hydroxide ($\text{Fe}(\text{OH})_2$) is formed, what does it react with to form ferric oxide?
 - a. What is another name for ferric oxide?

10. What completes the circuit to allow electrons to flow from the anode to the cathode?

11. What is the reason why coastal areas and cold climates have a higher incidence of rust on cars than other areas?

- a. Where does this substance come from in coastal areas?
- b. Where does this substance come from in colder/snowy climates?
- c. In addition to speeding up the redox reaction, what does this substance do to water?

12. Does pure, unruined iron exist very often in nature?

13. Scientists say that using Gold or Silver on cars would be a better choice than iron.

- a. Explain why they believe this.
- b. Why is this not a REAL option for car owners? (Provide two reasons)

14. What is the best and cheapest way to prevent corrosion/rusting in cars?

- a. Why does this work?

15. This article focuses mostly on cars but what are a few other situations where rusting might be a costly issue?