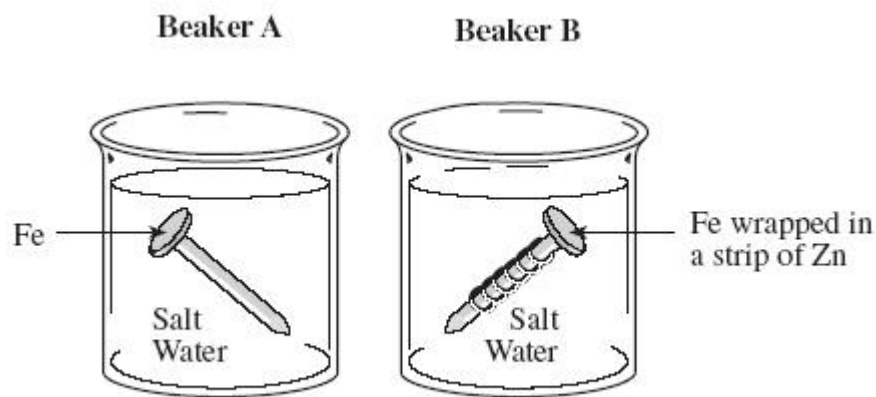


Practice - Selecting Preferred Reactions

- A sample of copper is placed in $\text{HNO}_{3(\text{aq})}$ and another sample of copper is placed in $\text{HCl}_{(\text{aq})}$.
 - In which acid does a spontaneous redox reaction occur with the copper? _____
 - Calculate the E° for the reaction that occurs. _____
- In a fuel cell, the following spontaneous redox reaction occurs in a basic solution:
$$2\text{H}_2(\text{g}) + \text{O}_2(\text{g}) \rightarrow 2\text{H}_2\text{O}(\text{l}) \text{ (basic)}$$
 - Write the balanced half reaction that occurs at the anode:
 - Write the balanced half reaction that occurs at the cathode:
 - Determine the E° for the fuel cell.
- What happens to iron as it corrodes?
 - It loses electrons and is reduced.
 - It gains electrons and is reduced.
 - It loses electrons and is oxidized.
 - It gains electrons and is oxidized.
- Why is aluminum a good choice for the manufacture of outdoor structures?
 - Pure aluminium is easily reduced.
 - Pure aluminium is not easily oxidized.
 - Pure aluminium is easily reduced, but forms a protective coating.
 - Pure aluminium is easily oxidized, but forms a protective coating.
- Why is gold a good choice for the manufacture of jewelry?
 - Pure gold is not easily reduced.
 - Pure gold is not easily oxidized.
 - Pure gold is easily reduced, but forms a protective coating.
 - Pure gold is easily oxidized, but forms a protective coating.
- A sample of Zn corrodes in moist air.
 - Write the reduction half-reaction.
 - What metal could be attached to the sample to prevent the corrosion of the zinc? Explain.

7. Consider the following diagrams:



a. Predict what should happen to the Fe in Beaker A.

Prediction: _____

Explanation: _____

b. Predict what should happen to the Fe in Beaker B.

Prediction: _____

Explanation: _____

8. Which of the following will inhibit the corrosion of iron?

- A. high $[O_2]$ B. wet conditions C. coating with zinc D. increasing the temperature

9. How is the formation of rust on an iron can inhibited by a tin coating?

- A. The tin is a sacrificial anode C. The tin is a weaker reducing agent than iron
B. The tin cathodically protects the iron D. The tin keeps the oxygen away from the iron

10. Describe two chemically different methods of preventing the corrosion of iron. Explain how each method works.

Method #1: _____

Explanation :

Method #2: _____

Explanation :

11. Which of the following metals could be used to cathodically protect iron?

- A. tin B. lead C. zinc D. copper

12. Which of the following metals could be used to cathodically protect iron?

- A. gold B. lead C. aluminium D. cobalt