

Name: _____
Blk: _____ Date: _____

Chemistry 12
Electrochemistry Lesson #12
CORROSION OF METALS: CAUSE AND PREVENTION

I. CORROSION: A SPONTANEOUS REACTION

A. Process:

Corrosion is simply the _____.
Oxidation is the loss of _____, where a solid metal gives rise to a _____ ion and electrons.

For example, the corrosion of COPPER involves:

II CORROSION OF IRON (_____)

The most commonly known form of corrosion is the _____.
The two major agents responsible for "_____" are:
_____ and _____.

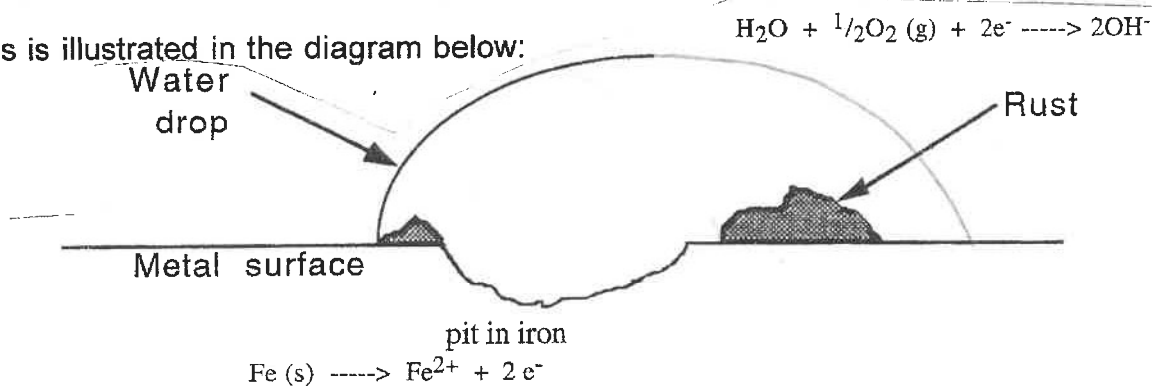
A. Importance:

Iron is the most important _____ metal.

B. Occurrence:

Physical strain on structures creates _____ which are more easily _____ (acts as the anode). The result is that _____ may form at points far from where the iron _____.

C. The Process is illustrated in the diagram below:



- 1.
- 2.
- 3.
- 4.
- 5.

D. Factors that determine the RATE of Corrosion:

Corrosion requires: _____ and _____

Corrosion is **enhanced** by:

1. Heat _____
2. Salt _____
3. Acid _____

III. THE PREVENTION OF CORROSION

A. Coating- e.g.:

If oxygen cannot make contact with the metal, there will be no corrosion

B. Sacrificial coating e.g.:

a coating of a more _____ metal will protect a metal surface from reaction, until all the coating has been destroyed

Because the _____ half-reaction has a lower _____ it will undergo oxidation instead of the _____ half-reaction

C. Cathodic Protection e.g.:

Metals with a stronger oxidizing ability than iron will become the _____ and therefore, iron becomes the _____.

HOMEWORK: Answer the questions below along with the PLO's : V1-V4

1. Use the diagram on the front to:
 - a. indicate the motion of electrons in the metal
 - b. Indicate where the water and oxygen molecules come in contact with the electrons.
 - c. indicate the motion Fe^{2+} and OH^- ions in solution.
 - d. label the anode and cathode.

2. For the diagram below identify:
 - a. Which is the more active metal.
 - b. Which metal loses electrons more easily.
 - c. Draw the direction of the electrons traveling in the wire
 - d. Label the anode and cathode _____

_____ Surface of the ground _____

