Name _____ Date _____ Class _____

20.1 THE MEANING OF OXIDATION AND REDUCTION

Section Review

Objectives

- Define *oxidation* and *reduction* in terms of the loss or gain of oxygen or hydrogen and the loss or gain of electrons
- State the characteristics of a redox reaction and identify the oxidizing agent and reducing agent

Vocabulary

- oxidation-reduction reactions
- redox reactions
- oxidation
- reduction
- reducing agent
- oxidizing agent

Part A Completion

Use this completion exercise to check your understanding of the concepts and terms that are introduced in this section. Each blank can be completed with a term, short phrase, or number.

Oxidation–reduction, or ___1___, reactions are an important category of chemical reactions. Oxidation is considered to be any shift of electrons ___2___ from an atom. Reduction includes any shift of electrons ___3___ an atom. An oxidation reaction is always accompanied by a ___4___ reaction. The substance that does the oxidizing (the ___5___ agent) is ___6___ . The substance that does the reducing (the ___7___ agent) is ___8___ .

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

Part B True-False

Classify each of these statements as always true, AT; sometimes true, ST; or never true, NT.

_____ **9.** Reduction is the complete or partial gain of electrons by a substance.

_____ **10.** In the reaction $2Na + Cl_2 \rightarrow 2NaCl$, sodium is the reducing agent.

_____ **11.** In the reaction $2Na + Cl_2 \rightarrow 2NaCl$, sodium is being reduced.

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_____ **12.** To protect an iron ship hull, you should attach a metal that is easily reduced.

Part C Matching

Match each description in Column B to the correct term in Column A.

Column A	Column B
_____ **13.** combustion	**a.** a metal that loses electrons easily
_____ **14.** oxidation	**b.** complete or partial loss of electrons or gain of oxygen
_____ **15.** oxidizing agent	**c.** oxidation of metals to metallic ions by oxygen and water in the environment
_____ **16.** corrosion	**d.** a metal that resists corrosion
_____ **17.** zinc	**e.** a chemical change in which oxygen reacts with another substance, often producing energy in the form of heat and light
_____ **18.** gold	**f.** a substance that accepts electrons in a redox reaction

Part D Questions and Problems

Answer the following in the space provided.

19. Define *oxidation* and *reduction* in terms of the loss or gain of electrons.

20. In the equation given, identify the substance oxidized, the substance reduced, the oxidizing agent, and the reducing agent.

$$Zn + Cu^{2+} \rightarrow Zn^{2+} + Cu$$

21. Explain how putting a block of zinc or aluminum on the iron hull of a large ship will protect the ship from corrosion.

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