

Assessment**Chapter 10****BLM 10-4****Chapter 10 Test****Goal**

Assess your understanding of the concepts studied in Chapter 10.

Procedure

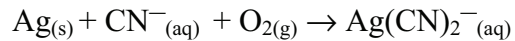
Answer the following questions directly on the page. If necessary, attach a separate sheet of paper.

Questions

1. Indicate which of the following situations describe redox reactions. For the redox reactions, identify the reducing agent and the oxidizing agent.
 - (a) Methane (CH_4) burns in oxygen to produce carbon dioxide and water.
 - (b) Copper metal forms copper(I) oxide on exposure to air.
 - (c) Iron rusts to form iron(III) oxide, Fe_2O_3 .
 - (d) A solution of barium nitrate is mixed with a solution of sodium sulfate.
 - (e) Magnesium metal placed in a solution of zinc nitrate.
2. In which one of the following situations will a redox reaction not occur? Explain your answer.
 - (a) Zinc metal is placed in a solution of copper(II) sulfate
 - (b) Magnesium metal is placed in a solution of zinc nitrate.
 - (c) Copper metal is placed in a solution of iron(II) sulfate
 - (d) Aluminum metal is placed in a solution of cadmium nitrate.
 - (e) Iron metal is placed in a solution of tin(II) nitrate.

3. Write the oxidation numbers for each of the atoms in the following chemical species.
- (a) ammonium oxalate, $(\text{NH}_4)_2\text{C}_2\text{O}_4$
- (b) ethanol, $\text{C}_2\text{H}_5\text{OH}$
4. Tarnish (silver sulfide) may be removed from a silver plate by placing the spoon in contact with a metallic container holding a solution of baking soda.
- (a) If you wanted to test this method of removing tarnish, what readily-available type of metal container would you choose?
- (b) Explain your answer, including half-reaction equations in your explanation.
5. Would you store a solution of zinc nitrate in an aluminum container? Use half-reactions to explain your answer.

6. Balance the following equation using the half-reaction method. The reaction occurs in basic conditions.



7. Balance the following equation using the oxidation number method. Assume the reaction takes place in a neutral solution.

