Chemical Equations Practice

1. i) For each of the following, write a **word equation** to represent the chemical reaction that is being described. (Don't forget to include the state of the matter (s, l, g, aq) in brackets after each chemical name.)
   ii) Below the word equation, write the **skeleton equation**.

a) When mixed together and heated, a solution of barium carbonate undergoes a chemical reaction to produce a solid barium oxide precipitate and carbon dioxide gas.

b) Aqueous silver nitrate ($AgNO_{3\,(aq)}$) reacts with potassium chloride to form a solid deposit of silver chloride and dissolved potassium nitrate.

c) The human brain uses dissolved glucose ($C_6H_{12}O_6$) and dissolved oxygen to produce energy through cellular respiration, resulting in the formation of dissolved carbon dioxide and water.

d) A "tin" can containing iron metal reacts slowly with oxygen gas in the air to produce a coating of red-brown rust, called iron (III) oxide.

e) Aluminum foil will react with a copper (II) chloride solution to yield a precipitate of solid copper metal and an aluminum chloride solution.

f) When ignited, a leaking propane (C_3H_8) barbeque cylinder can react with oxygen in the air and explode, producing carbon dioxide gas and water vapour ($H_2O_{(g)}$).

g) A sodium hydroxide solution reacts violently with a hydrochloric acid solution to produce water and aqueous sodium chloride.

2. Write word equations for the following reactions: K/U
   (a) Acetic acid (vinegar) and sodium hydrogen carbonate (baking soda) react to form water, carbon dioxide, and sodium acetate.
   (b) Aluminum metal reacts with oxygen from the air to form a protective coating called aluminum oxide.
   (c) Water and carbon dioxide are produced when propane burns in oxygen.
3. Some barbecues cook food by burning charcoal. (Charcoal is mostly carbon.) The chemical equation for this reaction is
   $C(s) + O_2(g) \rightarrow CO_2(g)$ K/U T/I
   (a) Write the word equation, including an energy term, for this reaction.
   (b) Write the state of each substance in the reaction.
   (c) What evidence suggests that a chemical change is taking place?
   (d) What would you expect to see when this reaction is complete?
4. Consider the reaction in Figure 5:
   $AgNO_3(aq) + NaCl(aq) \rightarrow AgCl(s) + NaNO_3(aq)$ K/U
   (a) Name the reactants and products in this reaction.
   (b) Name the chemicals that are dissolved in water.
   (c) Name the white solid.
   (d) What physical property do both reactants have in common?