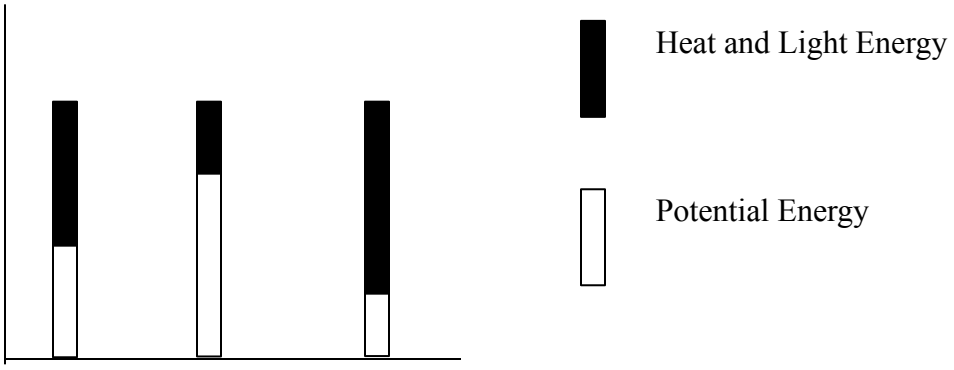
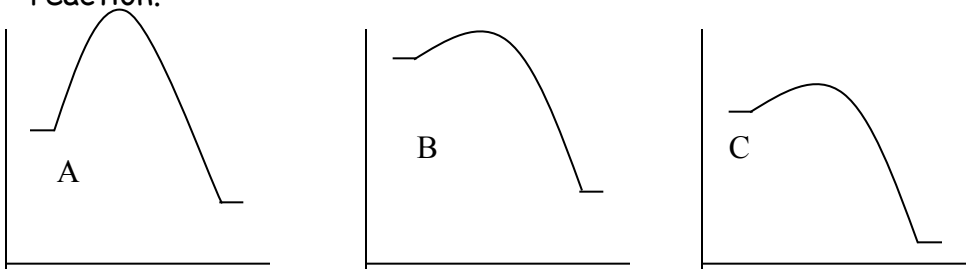
Potential Energy and Chemical Reactions

1) The formation of water from hydrogen and oxygen is a very exothermic reaction. Put the following groups of molecules (or atoms) over the appropriate bar in the following potential energy diagram.
   a. 2 H_2, O_2
   b. 4 H, 2 O
   c. 2 H_2O



2) Use the potential energy diagrams to rank the following reactions from greatest to least according to the energy released by each reaction.



3) Draw a potential energy diagram for the combustion of methane gas and oxygen into carbon dioxide and water.

4) Draw a potential energy diagram for the synthesis of glue from milk and vinegar. Note: this reaction requires the milk to be constantly heated.

5) HCl reacts with $CaCO_3$ to form $CaCl_2$ and H_2O and CO_2. Almost no heat energy is absorbed or released by this reaction. That being said, draw a potential energy diagram for the reaction.

6) Which kind of chemical bond has the most chemical potential energy a strong covalent bond or a weak covalent bond? Explain.