Thermochemical equations – combustion reactions stoichiometry – determining ΔH and naming organic molecules.
Revision 1

1) a) Write a balanced chemical equation for the complete combustion of butane(C_4H_{10}).


   b) Calculate the ΔH for the reaction represented by the equation above if 0.580 grams of pure butane generated 28.9 kJ of heat energy.

   c) Using the answer to b) above, calculate the mass of carbon dioxide produced if an unknown mass of butane delivered 3100 kJ of energy.

2) Propane gas undergoes incomplete combustion in a limited amount of oxygen gas to produce gaseous products.
   a) Write a balanced chemical equation for the combustion reaction.

   b) If 120.0 g of pure propane generated 6.05×10^3 kJ of heat energy, find the ΔH for the equation for the combustion reaction above.

   c) What mass of water is produced from the reaction represented by the equation above if 6.60 kJ of energy is produced?

3) Name the following compounds and draw their structural formula.
   a) $CH_3CH_2CH_2NH_2$

   b) $CH_3CH_2CH_2CHOHCOOH$

   c) $CHCl_2CH_2CHCHCH_3$

   d) $CH_3CHOHCH_2NH_2$

   e) $CH_3CHCHCH_2NH_2$

Name the following molecules

f)

g)

h)
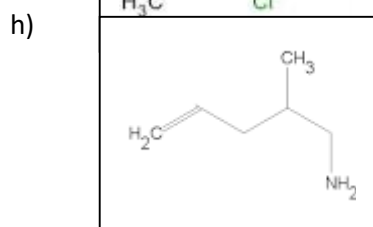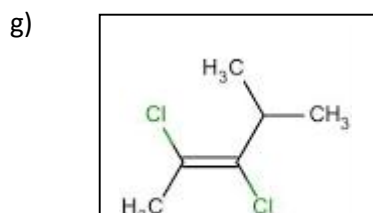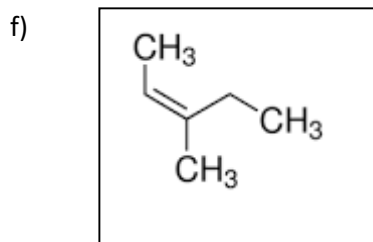
4) Identify compound X and Y

$$X \xrightarrow[H^+]{K_2Cr_2O_7} Y \xrightarrow[H^+]{K_2Cr_2O_7} \text{pentanoic acid}$$
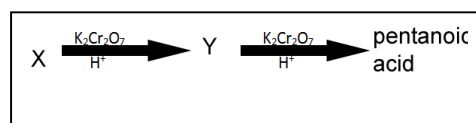
5) Draw a fully labelled electroplating cell to coat an iron spoon with copper.
   a) Label the, anode, cathode, polarity of electrode, electrolyte and direction of positive ion flow.
   b) Write the half equations for the reactions occurring at each electrode.

   c) If a current of 1.12A was delivered over 2.51 hours calculate the mass of copper deposited on the spoon.