**Problem Set 12-2: Organic Chemistry**

1. Draw the structure
   1. Propanal
   2. Propanoic acid
   3. Propanol
   4. Proanamine
   5. Propanamide
   6. Dipropyl ether
   7. Propylpropanoate
   8. Propanone
2. Are any of the obove isomers?
3. Rank from acidic to basic:
   1. Methanol
   2. Methanoic acid
   3. Methanamine
   4. Methanal
4. Why is ethanoic acid considered an acid? (i.e. what is the definition of an acid?)
5. Which of the 12 functional groups are soluble in water?
6. Give 3 factors that determine solubility in water.
7. Rank in terms of boiling point and justify using intermolecular forces.
   1. Ethane
   2. Ethanol
   3. Ethenone
   4. Ethanoic acid
   5. 1- Chloroethane
8. Why are alkene boiling points slightly less than the corresponding alkane?
9. Which 4 functional groups are capable of hydrogen bonding when pure?
10. Which additional functional groups are capable of forming hydrogen bonding with the hydrogen atom of a water molecule?
11. Explain why methypropanoate has a lower boiling point compared to butanoic acid.
12. What are some uses of esters?