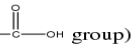
Organic Chemistry: Basic functional groups and nomenclature

Organic Chemistry: The chemistry of compounds containing carbon and hydrogen (and possibly also oxygen, phosphorous, nitrogen, sulfur, or other elements).

Functional groups: A group of atoms that imparts characteristic properties. (Functional groups are how organic compounds are classified).

Examples of functional groups:

$CH_3CH_2CH_2CH_3$	alkane (only C—H single bonds)
$H_2C{=}CH_2$	alkene (contains C=C bond)
$HC{\equiv}CH$	alkyne (contains C≡C bond)
CH_3CH_2OH	alcohol (contains C—OH bond)
CH_3COCH_3	ketone (contains C=O bond)
CH_3COOH	carboxylic acid (contains a  group)

Naming organic compounds:
Use the following prefixes that refer to the number of carbons in a straight chain. Use the ending –ane for alkanes, -ene for alkenes, -yne for alkynes, -anol for alcohols,–anone for ketones, and –anoic acid for carboxylic acid.

1 meth-	6 hex-
2 eth-	7 hept-
3 prop-	8 oct-
4 but-	9 non-
5 pent-	10 dec-

Questions:
1. Name each of the straight-chain organic compounds given in the examples above. Here's the first one: butane.

2. Decide which functional groups are polar and non-polar. Which kinds of intermolecular forces exist for each functional group (assume the substances are pure)?

3. Based on the intermolecular forces that exist, which functional groups do you expect to have the largest boiling points? (Assume you are comparing compounds with similar molar masses).

4. Based on the intermolecular forces that exist, which functional groups do you expect to dissolve easily in water? (In other words, which ones are miscible with water?)