Name: _____ Date: _____

In-Class Activity: Introduction to Organic

Please hand in this assignment by the end of the class period.

1. Fill in this chart!

Element	Number of Valence Electrons	Lewis Diagram	Number of Unpaired Electrons
Carbon			
Hydrogen			
Nitrogen			
Oxygen			

2. Fill in this chart too! (Do your best – remember carbon is always the central atom.)

Compound	Formula	Lewis Diagram	IMFs
Methane	CH_4		LF DD HB
Dichloromethane	CH_2Cl_2		LF DD HB
Methylamine	CH_3NH_2		LF DD HB
Methanol	CH_3OH		LF DD HB

3. Octane is a non-renewable compound from petroleum which is used in gasoline. Ethanol is also used in gasoline, but it is a renewable resource since it can be manufactured from biomass.
   a. Write a balanced chemical equation for complete combustion of octane, C_8H_{18} (l).

   b. Write a balanced chemical equation for complete combustion of ethanol, C_2H_5OH (l).

4. Boiling point is a measure of the strength of the intermolecular forces in a substance. Use evidence from the data table to explain how intermolecular forces change the boiling point within a family of carbon compounds (e.g. hydrocarbons) and between families (across a row).

Table 3 Boiling Points of Three Families of Carbon Compounds

Hydrocarbon	Boiling point (°C)	Organic halide	Boiling point (°C)	Alcohol	Boiling point (°C)
$CH_4(g)$	−164	$CH_3Cl(g)$	−24	$CH_3OH(l)$	65
$C_2H_6(g)$	−89	$C_2H_5Cl(g)$	12	$C_2H_5OH(l)$	78
$C_3H_8(g)$	−42	$C_3H_7Cl(l)$	47	$C_3H_7OH(l)$	97
$C_4H_{10}(g)$	−0.5	$C_4H_9Cl(l)$	78	$C_4H_9OH(l)$	117