## **Section 3A Review**

Name:

Part 1: Given the formulas for the compound, write the name. Given the name of the compound, write the formula.

1) ammonium chloride	NH <sub>4</sub> Cl	6) SO <sub>2</sub>	sulfur dioxide
2) disulfur pentaoxide	$S_2O_5$	7) SrO	strontium oxide
3) phosphorus trihydride	PH <sub>3</sub>	8) CoCO <sub>3</sub>	cobalt (II) carbonate
4) barium iodide	$BaI_2$	9) Cl <sub>2</sub> O <sub>7</sub>	dichlorine heptaoxide
5) carbon tetrafluoride	CF <sub>4</sub>	10) SeBr <sub>2</sub>	selenium dibromide

Part 2: For each of the following;

a) Draw the Lewis diagram for the following compounds.

b) Determine whether the molecule is polar, nonpolar or ionic

c) Then, draw the molecule in it's proper shape using the structural drawing method.

4) sulfur difluoride 1) nitrogen trihydride 3.98 F - 2.58 S 1.40 poler bends bent poler molecule SOF 3.44 N - 2.1 H 1.34 polar bonds pyramidal polar molecule S-F 5) phosphorous trihydride 2) carbon tetrachloride en 3.16 Cl -2.55 C o.61 polar bonds tetrahadral HOPOH 219 P -21 H 0 -21 H 09 non polar bonchs H Pyramidal yramidal Nonpolar molecule CI nonpolar molecule  $c_1$  cartum chloride  $c_1$   $c_2$   $c_2$   $c_1$   $c_2$   $c_1$   $c_2$   $c_2$  2.1 H .45 nonpolar bond 2.585 3) CH<sub>2</sub>S -2.585 -2.55C 0.03 nonpoier bond thyonal planar Nonpolar molecule

Part 3: Draw structural diagrams for the following alkanes. In addition, draw at least 1 isomer for each structure.



Part 4: Answer the following questions.1) What is the difference between an ionic and covalent compound in terms of:a) what creates the bonds between two atoms?

In an ionic bond, the bond is caused by opposite charges being attracted to one another. In a covalent bond, the sharing of electrons causes the bond.

b) the elements that can be involved in each type of bond?

Ionic bonds have to have a metal or a group in them. Covalent bonds are between two nonmetals or a metalloid and a nonmetal.

c) the naming structure for each kind of compound?

Ionic compounds name the positive ion first, then the negative ion with an -ide ending. Sometimes there is a roman numeral. Covalent compounds have prefixes before each element to tell how many of that element are present.

2) What affect does increasing the length of a carbon chain in an alkane (number of carbons) have on the boiling point of the substance?

The more carbons on the chain of an alkane, the higher the boiling point.

3) How do branches affect the boiling point of isomers of a compound?

The more branches on the hydrocarbon, the lower the isomers boiling point.



4) What is the relationship between a substance's boiling point and the intermolecular forces in the substance?

The higher a substances boiling point the more intermolecular forces it has. The intermolecular forces are the "glue" that holds liquids together, and the stronger the "glue", the higher a temperature will be needed to boil it (turn it into a gas).

5a) What is the relationship between the viscosity of a substance and the number of carbon atoms?

The more carbon atoms, the higher the viscosity.

b) How do the intermolecular forces change with viscosity and density?

The more intermolecular forces, the more the liquid is held together. That usually increases the density and the viscosity.

6) How are the substances of crude oil separated in a refinery?

In a refinery, a process called fractional distillation is used, where the liquid is boiled and the material is separated out at different condensation points that have different temperatures in a tower.