Names: _____ Sec._____

Olfaction: Chemical Communication
Part IV

(Turn in one form per group with everyone's name included.)

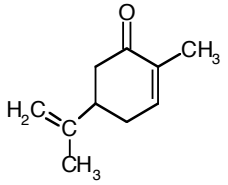
Your group is to analyze the functions, compare them with the smell categories and report whether or not there is a correlation between any type of the smell categories and a particular function.

1. Using the completed table from ***Part III***, identify any correlations between a particular chemical function and a particular smell among your samples. *(There are two distinct correlations.)*

2. Consult: *http://chemconnections.org/organic/chem226/Labs/Smell/Smell-Stereochem.html*

a) Define: *Stereoisomer*

b) Check out a molecular model kit from the stockroom. Make a model that looks **exactly** like compound O-6 and another that looks **exactly** like O-11. Check with Dr. R. that your models are correct. The spatial arrangements at one of the carbon atoms are not exactly the same in each model. Circle the carbon atom in the structure below that is different. It is the key to the differences in their smell.



Consult *http://chemconnections.org/organic/chem226/Labs/Smell/ChemComm.html*
Using your models, compare them to the Web models and identify the molecule that smells like caraway. (**Left** or **right** on the computer screen. Circle one.)

3. Consult *http://chemconnections.org/organic/chem226/Labs/Smell/ChemComm.html*

Part A) Read "Love Molecules". Draw Kekulé, condensed and line structures of the pheromone that is found in the urine of the female of the species from the puzzle. Circle and name any function(s) in the molecule by name.

Kekulé	Condensed	Line

Function(s): _____

4. a) Define: *Pheromone*

b) Name three types of pheromones other than sex pheromones.

1.)	2.)	3.)

5. Consult *http://chemconnections.org/organic/chem226/Labs/Smell/ChemComm.html*
The compound imaged in the upper left Title Box of the Web page is *cantharidin*. Using the *Merck Index* or other resource find as much information that you can. What information can possibly indicate how toxic this compound may be to a 100 lb human? If so, how? What uses are listed for the compound? (In the past, *cantharidin* was reportedly put into coed's drinks at college parties on occasion.)

6. Provide two scientific reasons why someone might invest in Pherin Pharmaceuticals or the Erox Corporation, and two why they might not. What would you do?

7. INDIVIDUAL ASSIGNMENT: Refer to the five molecular models that are electronic images on the Web page: #one, trail pheromone of *Myrmica rubra*, a common Northern European ant, #two, honey bee queen pheromone, #three, sea anemone alarm pheromone, #four, water mold sex attractant, and #5 aggregation pheromone of the cheese mite *Tyrophagus putrescentiae*. Draw Kekulé, condensed and line structures for the five on-line molecules, and refer to the physcial models in the lab for #s 6-10. You can physically handle models six thru ten, but do not change the atoms or break bonds. In your **line drawings only**, circle any and all sp^3 carbon atoms that have four different groups attached to the carbon in each of the ten molecules. After completing the structures provide a molecular formula for each and name the function(s) present in each compound. *You may confer with your group before you turn in the form, but only after you have independently completed your own.*

Name _____ Section_____

Chem 226/ Fall 2008

Chemical Communication

(Individual Assignment: Everyone is turn in a form.)

#	Kekulé	Condensed	Line

#	Molecular Formula	Function(s)

Bonus questions: 1. Who was Kekulé? 2. Why is he famous? 3. What is the cause of revisionist historians questioning his veracity?