Chemistry 1500, Dr. Hunter

Summer 2008

Exam # 2 (Individual Part (This Exam has no Group Part))

Name: Answers
Last name **First** name

Student Number (your social security number): _____

Signature: _____

The individual portion of this exam has this title page plus four pages of questions. Please make sure you have all pages. Place your name (last name first) and your student number (or your Social Security number, as you prefer) in the spaces above and sign on the line. *Initial each page of the exam in the top right hand corner* so that if your exam pages get separated I can match them to you.

To obtain maximum credit for each question, show your work in detail. Partial credit for questions will not be assigned if no work is shown. **Indeed, no credit will be granted if complete work is not shown *even for correct answers*.** Feel free to use pictures/diagrams to illustrate your text answers and/or to use short text explanations to explain your drawings if your pictures are ambiguous. If you have to make assumptions, etc., to complete any answers, write me a short note stating and/or explaining your assumptions and testing them to the degree possible.

On the first question on this exam (i.e., pages 2 & 3), you are given a choice about which 5 out of the 6 parts to answer. On this question, be sure that you circle the part numbers of those parts you want me to grade. [Note: If you do not clearly indicate your choice, I will count only the first 5 parts towards the grade.]

You have 50 minutes for this exam. The one hundred points for this exam correspond to 1/4th of the points for this course.

Grade /100 (individual)

1 (50 points total, each part is worth a maximum of 10 points). Answer five (5) of the six (6) parts of this question (i.e., on pages 2 & 3, below). Indicate the 5 parts you want me to grade by circling their part numbers.

a. For ^{105}Rh, give the total number of protons, neutrons, and electrons and then the number of valence electrons and core electrons. Show your work.

^{105}Rh AN=45

105-45=60

total number of neutrons = 60

total number of protons = 45

total number of electrons = 45

number of valence electrons = 9

number of core electrons = 36

b. Clearly describe what an **Isotope** is and give an example of a pair of isotopes.

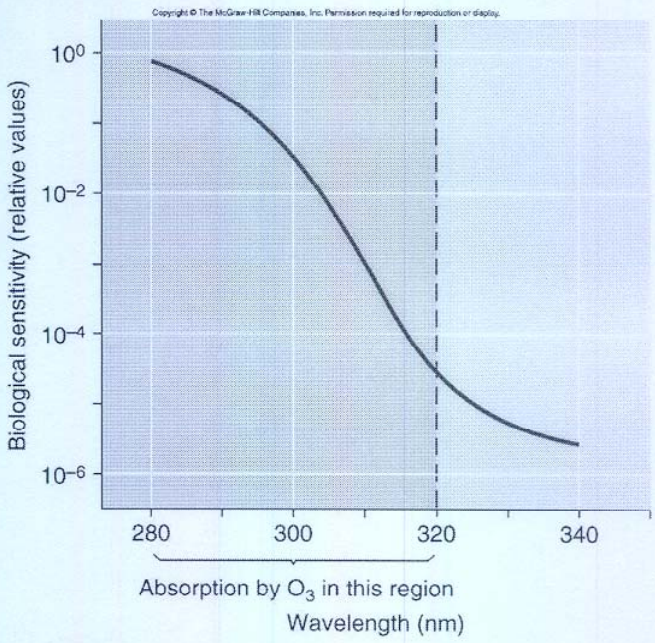
c. Clearly describe what an **Allotrope** is and give an example of a pair of allotropes.

d. Give a clear description of the **Wave-Particle Duality** including how it is related to the two earlier theories.

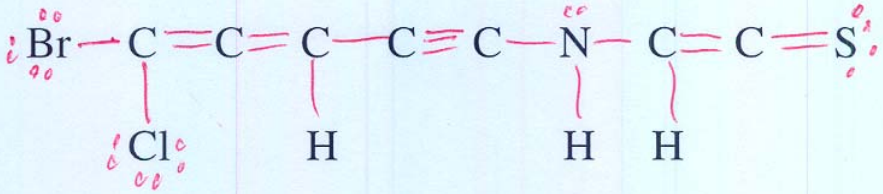
e. Clearly describe what the **Black Body Radiation** is including how it is related to the nature of light.

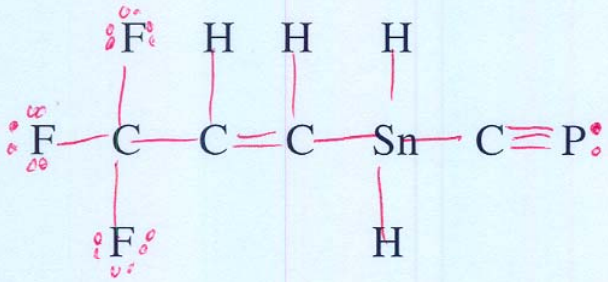
f. Clearly describe the nature of the **Ozone Layer** including what it does and what has been happening to it.

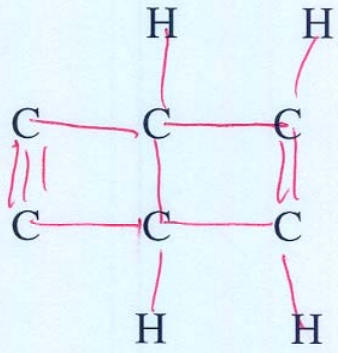
2 (25 points total). Fully and clearly explain the origin and scientific importance of the following graphic from the text.



3 (25 points total). For each of the following molecules, draw the Lewis structure and check if your Lewis structure is correct.







etc