



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

total number of neutrons =

total number of protons =

total number of electrons =

number of valence electrons =

number of core electrons =

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

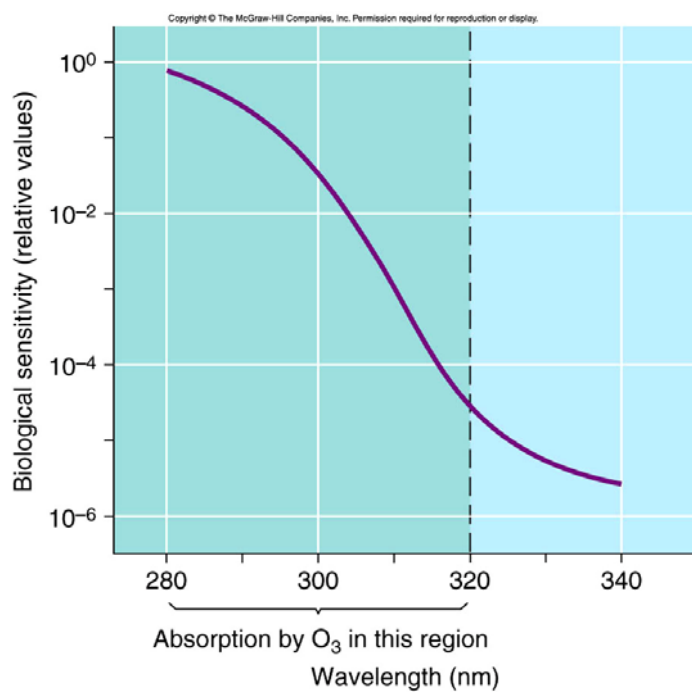
c. Clearly describe what an **Allotrope** is and give an example of a pair of allotropes.

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.

