AP Chem	Name:	
Take Home Exam Ch 6 – 9, 25	I have neither given nor received aid on this exam,	
(35 pts)	except from my group; list names if applicable:	
	Period: 5 6 7 November 8, 2004	

For problems involving calculations, <u>no credit will be given if work is not shown</u>. Use the atomic masses on the laminated Periodic Table provided. Use the values of the constants listed below for calculations. $E_n = \frac{-2.178 \text{ x } 10^{-18}}{n^2}$ joule $h = 6.63 \text{ x } 10^{-34} \text{ J s}$ $c = 3.0 \text{ x } 10^8 \text{ m s}^{-1}$

- (8 pts) An electron is excited from the n = 1 ground state to the n = 3 state in a hydrogen atom. Read the statements below. In the space provided, write "TRUE" if applicable; if false, correct the statement(s) to make them true.
 - a. It takes more energy to ionize the electron from n = 3 than from the ground state.
 - b. The electron is farther from the nucleus on average in the n = 3 state than in the n = 1 state.
 - c. The wavelength of light emitted if the electron drops from n = 3 to n = 2 will be shorter than the wavelength of light emitted if the electron falls from n = 3 to n = 1.
 - d. The frequency of light emitted when the electron returns to the ground state from n = 3 will be the same as the frequency of light absorbed to go from n = 1 to n = 3.
- (9 pts) The electron affinities of the elements from aluminum to argon are -44, -120, -74, -200, -385, and 0 kJ/mol, respectively. For each set of elements below, provide a brief explanation (1-2 sentences) in terms of atomic structure of the differences in electron affinity
 - a. Aluminum and silicon
 - b. Silicon and phosphorus
 - c. Chlorine and argon

- 3. (9 pts) Two different compounds have the formula XeF_2Cl_2 .
 - a. (4 pts) In the space below, draw Lewis structures for these two compounds

- b. (1 pt) Name the electron-pair geometry these compounds share:
- c. (1 pt) Name the molecular geometry these compounds share:
- d. (1 pt) Name the type of hybridization employed by the central atom in these compounds:
- e. (2 pts) Describe what property could be used to distinguish these two compounds experimentally.
- 4. (9 pts) Draw and name all of the isomers of C_4H_6 . Draw and name one isomer in each box below. All boxes need not be used, attach more paper if necessary.

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