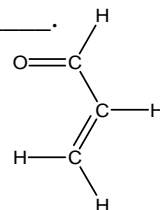


Chem 121
Test 3
Version A

You have 50 minutes to complete this 100 point test. Show all work for full credit. You may use a non-graphing, scientific calculator.

1. (10 pts) Fill in the blank:

- a. NO_2^+ and SCN^{1-} are _____ because they have the same number of _____ electrons.
- b. _____ is the pull towards the nucleus that particular electron experiences in a multi-electron atom. (hint: three words)
- c. _____ helps us to determine what atom carries the partial negative charge in a polar bond.
- d. The energy and frequency of a photon are _____ related to one another.
- e. The entire d-set of orbitals can hold _____ total electrons and the entire f-set of orbitals can hold _____ total electrons. But, each single orbital can only hold two electrons, according to the _____.
(hint: three words)
- f. There are seven _____ bonds and two _____ bonds in the molecule in the right margin.



2. (15 pts) Give the full electron configurations (NOT the Noble Gas) for the following atoms/ions. Indicate the number of valence electrons and determine if the atom/ion is diamagnetic or paramagnetic.

	Electron Configuration	# VE	D or P
Fe^{2+}			
Se			
Cl^{1-}			
Sr			
Cu			

3. (4 pts) Circle the atom with the largest ionization energy.
 - a. Ge or S
 - b. Al or P

7. (10 pts) Write all the possible valid sets of quantum numbers for $n = 5$.

8. (40 pts) Draw the Lewis Dot Structures for the following molecules/ions. For each structure, give the following: (i) AXE Notation, (ii) molecular geometry, (iii) polar/nonpolar, and (iv) hybridization.

