

NAME: \_\_\_\_\_

Form 1 (white)

November 26, 2001

QUIZ #4

CHEM 101

- 1) The cyanate ion  $\text{NCO}^-$ , has the least electronegative atom carbon in the center. The very unstable fulminate ion,  $\text{CNO}^-$ , has the nitrogen in the center.
- a) Draw three resonance Lewis dot structures for each ion and assign formal charge to each atom. (Use back if necessary).
- b) On the basis of formal charge and electronegativity circle the resonance structure which is the most reasonable.
- 2) Some new elements have been discovered in my laboratory so I am naming them after myself. Here are the names and some properties of the elements:

New Element	Number of valence electrons	Element always obeys octet rule
Rt = Robertium	4	Yes
Mc = McCreadyium	6	No
Bn = Bowmanium	7	Yes

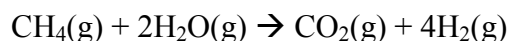
We have also discovered some new molecules. It is your job to determine the Lewis dot structures and geometric structures of these new molecules using the information in the table.

a)  $\text{RtBn}_4$

b)  $\text{McBn}_2$  Hybridization around central atom: \_\_\_\_\_ Shape: \_\_\_\_\_

c)  $\text{McBn}_4$  Hybridization around central atom: \_\_\_\_\_ Shape: \_\_\_\_\_

- 3) Given the bond energy data on the board, calculate the  $\Delta H^\circ_{\text{rxn}}$  for the following reaction.



NAME: \_\_\_\_\_

Form 2 (yellow)

November 26, 2001

QUIZ #4

CHEM 101

- 1) The cyanate ion  $\text{NCO}^-$ , has the least electronegative atom carbon in the center. The very unstable fulminate ion,  $\text{CNO}^-$ , has the nitrogen in the center.
- a) Draw three resonance Lewis dot structures for each ion and assign formal charge to each atom. (Use back if necessary)

- b) On the basis of formal charge and electronegativity circle the resonance structure which is the most reasonable.

- 2) Some new elements have been discovered in my laboratory so I am naming them after one of my favorite singers. Here are the names and some properties of the elements:

New Element	Number of valence electrons	Element always obeys octet rule
El = Elvisium	4	Yes
An = Aaronium	5	No
Py = Presleyium	7	Yes

We have also discovered some new molecules. It is your job to determine the Lewis dot structures and geometric structures of these new molecules using the information in the table.

- a)  $\text{ElPy}_4$

- b)  $\text{AnPy}_3$  Hybridization around central atom: \_\_\_\_\_ Shape: \_\_\_\_\_

- c)  $[\text{AnPy}_4]^-$  Hybridization around central atom: \_\_\_\_\_ Shape: \_\_\_\_\_

- 3) Given the bond energy data on the board, calculate the  $\Delta H^\circ_{\text{rxn}}$  for the following reaction.

