

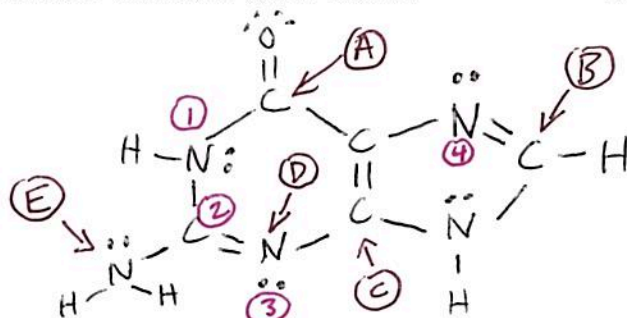
More FUN With Molecular Geometry

For the following molecules, provide the following information:

1. Draw a proper Lewis structure
2. Indicate the molecular arrangement of all of the e⁻ pairs
3. Draw the molecular geometry and name it
4. Indicate bond angles
5. Indicate the hybridization of any central atoms
6. Indicate whether the molecule is polar or non-polar, show where partial charges are and draw a polarity arrow. (use this δ^- , this δ^+ , & this \vec{x})

- | | |
|----------------------------|------------------------------|
| a) ClF_2^- | b) ClF_4^- |
| c) ClF_3 | d) ClF_5 |
| e) BeH_2 | f) $\text{AsO}(\text{OH})_3$ |
| g) BF_4^- | h) AsF_5 |
| i) TeF_4 | j) I_3^- |
| k) $\text{F}_3\text{S-SF}$ | l) TeCl_6 |

2. Refer to the structure below to answer the following questions. This molecule is GUANINE, which is one of the 4 amino acids that make up the nitrogen base sequence of our DNA. Remember this stuff from Bio???



- a) Give the approximate values for the indicated lettered bond angles. (a-e)
- b) Give the hybridization of the numbered central atoms. (1-4)
- c) Which are the most polar bonds in the entire molecule?
- d) In total, how many sigma bonds (σ) and how many pi (π) bonds are in this structure?

3. Explain each of the following observations in terms of what we have learned while studying bonding and molecular geometry.

- a) Molecules of AsF_3 are polar whereas molecules of AsF_5 are non-polar.
- b) The N-O bonds in the NO_2^- ion are equal in length, whereas they are unequal in HNO_2 .
- c) For sulfur, the fluorides SF_2 , SF_4 , and SF_6 are known to exist, whereas for oxygen only OF_2 is known to exist.

Good Luck! Ask me for help if necessary!

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