

CHEMISTRY 123-01

Exercise #5

November 20, 2007

LEWIS STRUCTURES, FORMAL CHARGES AND RESONANCE

I. Draw the complete Lewis structures of the following:

1. The tetrafluoroborate anion, BF_4^- .

2. Dinitrogen difluoride, N_2F_2 .

3. The selenate anion, SeO_4^{2-} .

4. Sulfur Tetrafluoride, SF_4 .

5. Xenon Tetrafluoride, XeF_4 .

6. Boron Tribromide, BBr_3 .

7. Phosphorous acid, H_3PO_3 .

8. Perbromate Anion, BrO_4^- .

9. Hydrogen cyanide, HCN .

II. For each of the following species, draw three acceptable resonance structures and rank them.

1. The azide anion, N_3^- (the three N-atoms are linearly arranged).

2. The thiocyanate anion, NCS^- .

3. Dinitrogen oxide, N_2O (Linear arrangement of the three atoms).

4. The formate anion, HCOO^- (Carbon is central, the H and the two O- atoms are attached to it).