CHEMISTRY 107 Test #4 Name _____
SECTION 01 8:00 am - 8:50 am Thursday, November 7, 1996

(1.) Please draw Lewis dot structures for the following compounds. (10 points)

(a) CH_2Cl_2 (b) CO_2 (c) BBr_3 (d) NO_2^+ (e) $GeCl_2$

(f) ClF (g) TeF_4 (h) PCl_3 (i) ICl_2^- (j) ClF_7

Please draw the molecules and ions above to represent their expected shapes. (10 points). Please name these shapes. (10 points) Please indicate the hybridization at the central atom in each instance. (10 points) Please indicate whether or not there is a net dipole; if there is please show its direction. (10 points)

(2.) Please draw all the possible resonance structures for the molecule ozone, O_3. (5 points) What is the average oxygen-oxygen bond order in this species? (5 points) What is the shape of this molecule? (5 points) What is the hybridization around the central oxygen atom? (5 points)

(3.) The oxide ion, O^{2-}, is a good Lewis base; it reacts in a one to one ratio with the Lewis acid NO_2^+. Please draw the Lewis structure of the product (5 points). Please write a simple balanced equation for the reaction (5 points). Please draw all the resonance structures of the product (5 points) and indicate the average bond order. (5 points)

(4.) Please draw the Lewis structure of the NO_2 radical (5 points). Radicals can dimerize, but they can also react with other different radicals. Please draw the Lewis structure of the product of the reaction between NO_2 and the ClO radical (5 points).