Chemistry 112 Name:_____
Practice

Exam 2

Show all work. Draw diagrams correctly

1. Draw the VSEPR structures labeling angles correctly. Correctly show wedges and hash marks. VSEPR structure must be correct to receive credit. State the molecular geometry.

Formula	VSEPR Drawing	Molecular geometry
BrI_4^{1-}		
SCl_2		
$HClO_3$		

Formula	VSEPR Drawing	Molecular geometry
$SeBr_6$		
SO_2		
GaF_3		

2. For the molecule given, draw all of the resonance structures, assign formal charges in each structure, and indicate which structure is most significant and why.

Structures $SSiP^{1-}$
Label which structure is most important

Formal charges on each atom in each structure:

Reason for most important structure (one sentence).

3. For the following molecules or ions draw the box diagrams as shown in class. Label all orbitals showing relative energy of each. State the type of hybridization. Draw the contour diagram for each labeling correctly all angles and orbitals. Contour diagram must be drawn correctly to receive credit. Draw it large. Show all electrons. State the **shape** of the molecule or ion.

A. HC_2F

Box Diagram

Contour Diagram

B. C_2H_2BrI
Box Diagram

Contour Diagram

C. SiP^{1-}

Box Diagram (both atoms)

Contour Diagram (both atoms)

D. PBr_5
Box Diagram

Contour Diagram

E. ICl_2^{1-}

Box Diagram

Contour Diagram

4. Draw the molecular orbital energy diagram for: Cl_2 (weak s-p interaction)
Label all energy levels (atomic and molecular). Give the electron configuration, bond order and state the magnetic properties

Electron configuration
Bond order (show calculation)
Magnetic properties:

5. For the following two molecules contrast their bond order, bond length, and bond strength. Draw molecular orbital diagrams for each.

Molecules to contrast	C_2 (large s-p interaction)	C_2^{1+}
Bond order (Show work)		
Bond length (Label longer/shorter)		
Bond strength (Label stronger/weaker)		

Reason for bond strength:

Reason for bond length:

Molecular orbital diagrams: