Name: Period (circle one): 6 7 Date:

- 1. (10 pts) Draw the correct Lewis structure for acetone, C₃H₆O, in which 2 CH₃ groups and one O are bonded to a central C atom. Then, draw the orbital overlap that results for each of the following bonds by naming and drawing the atomic or hybrid orbitals that each atom contributes to the bond and then naming the type of bond(s) formed (e.g., pi or sigma).
 - a. Lewis structure

b. Carbon-carbon orbital overlap(s)

c. Carbon-oxygen orbital overlap(s)

2. (10 pts) Draw the correct Lewis structure for the following compounds. Include resonance structures if appropriate. For the compound in 1a calculate the formal charge on each atom. For the compound in 1c calculate the oxidation number of each atom.

a. SiH₄ c. BrF₃

3. (10 pts) The central atom X in a certain molecule has five electron domains, at least one of which is a bond to an outer atom Z. Using the information, draw as many different molecular geometries as are possible for this molecule. Non-bonded pairs need only be drawn on the central atom.

Then, for each of the geometries you have drawn, record the VSEPR molecular geometry, bond angle(s) as appropriate (note the effects of lone pairs!) and hybridization of the central atom. Lastly, state whether the molecule is polar or nonpolar.

Drawing	Molecular Geometry	Bond Angle(s)	Hybridization	P/NP
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