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Analyze the bonding in a molecule of 2-hydroxyethanal.

- a) Use the top right corner of the page to draw a Lewis structure of HCOCH_2OH as on p.226 sample problem 1 step 1.
- b) For each of the three atoms: carbon 1, carbon 2, and the hydroxyl's oxygen, use VSEPR theory and the shapes table, Table 2. VSEPR Theory Common Three-Dimensional Structures on p.209,
- count and label the "regions of electron density" including single bonds, double bonds, and lone pairs as 1.
 - refer that information to the shapes table to predict **the shape of the molecule** (or orientation of bonding) around the atom,
 - use the arrangement of bonds and electron pairs or the shape of the molecule around the atom to **predict the type of hybridization** (sp^3 , sp^2 , or sp) in the orbitals that produces this structure.
 - use "**before and after**" **energy level diagrams** to illustrate the hybridization of orbitals
 - **draw the atoms** with their hybridized orbitals (oriented in a way that is consistent with VSEPR). Label the orbitals.

	C1	C2	-O-
Regions of electron density			
Shape of molecule around atom			
Type of hybridization			
Energy level diagram before hybridization			
Energy level diagram after hybridization			

name

Drawing of atom ($n=2$ only)			
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c) Draw the molecule using the three dimensional notation as on p.226 sample problem 1 step 2.

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d) Draw the molecule in such a way as to illustrate the overlapping of orbitals as on p.236 fig 13b.

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e) Identify sigma and pi bonds in the drawing of the molecule in part d). What ideas did you use in making your decision?

f) What types of intermolecular forces would exist in a sample of this pure substance?	g) How well would this molecule dissolve in water? Why?
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