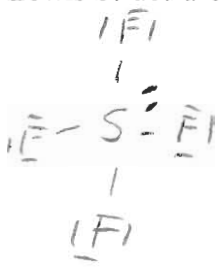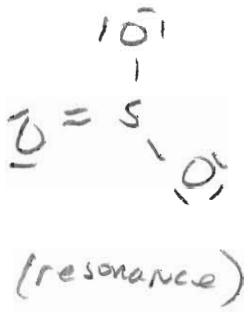SHOW ALL WORK TO RECEIVE CREDIT. DUE WED. APRIL 27TH.

1. (5 Pts) Use the table of bond energies found in your textbook to calculate ΔH for the combustion reaction of isopropyl alcohol. (You must first write out a balanced equation and draw the Lewis structures).

$$2\ H-C-C-C-H\ +\ 9O_2\ \rightarrow\ 6\ O=C=O\ +\ 8\ H-O-H$$

$$(+\ 13218) \qquad (-16932)$$

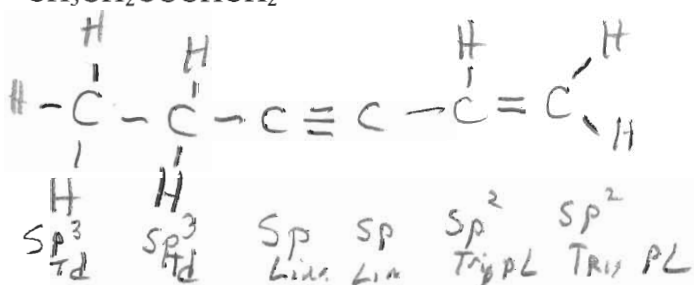$$\frac{-3714\ kJ}{2\ mol\ iso} = \boxed{-18578\ \frac{kJ}{mol}}$$
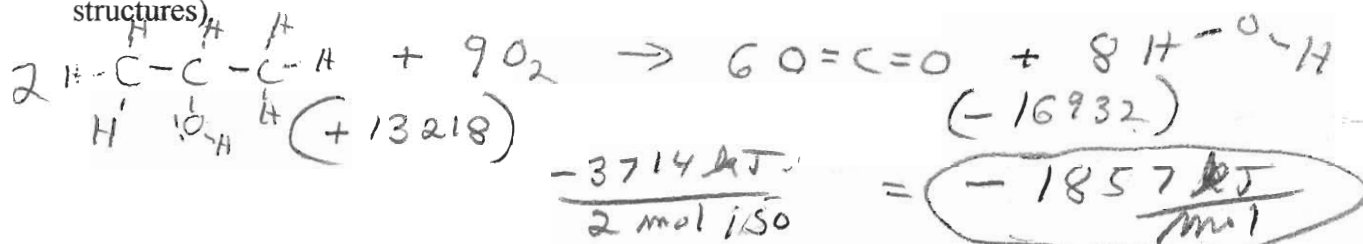
2. (12 Pts) For each of the following determine the number of valence electrons and then write out the Lewis structure and state the electron pair geometry name. Next draw the molecular structure (VSEPR) and state molecular structure name.

a. SF$_4$	Valence electrons 34		b. SO$_3$	Valence electrons 24
Lewis Structrure	Molecular structure (3-D)		Lewis Structrure	Molecular structure (3-D)
(structure drawing)	(structure drawing)		(structure drawing) (resonance)	(structure drawing)
e⁻ pair geometry name: Trig bipy	Molecular geometry name: See saw		e⁻ pair geometry name: Trig Pl.	Molecular geometry name: Trig Pl

3. (3 Pts) Draw the Lewis structure and show all of the resonance structures for carbonate anion.

CO_3^{2-} (resonance structure drawings)
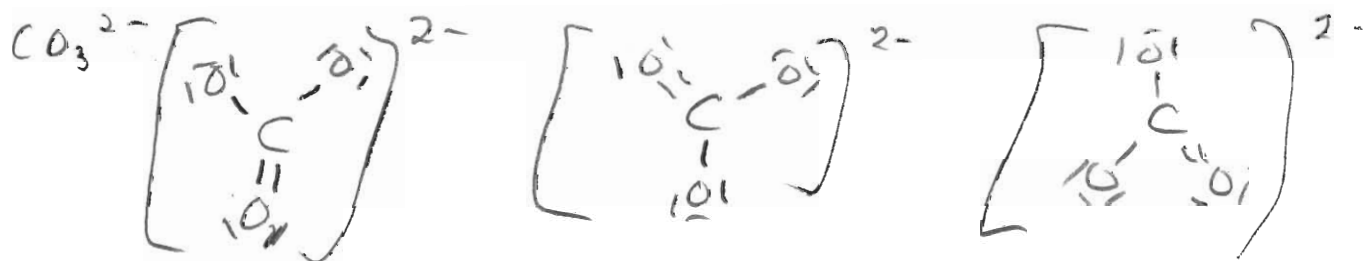
4. (5 Pts) State orbital hybridization for each carbon atom and its molecular geometry or the following structure. (You must first draw the structure showing each bond.)

CH₃CH₂CCCHCH₂

(structure drawing)

sp^3 sp^3 sp sp sp^2 sp^2
Td   Td   Line Lin Trig Pl Trig Pl

$$2 \quad CH_3 CHOH CH_3 \qquad 9 O_2 \longrightarrow$$

			C=O	6 × 2 × 799
C–H	2 × 7 × 411		O–H	8 × 2 × 459
C–C	2 × 2 × 346			
C–O	2 × 1 × 358			— 16932
O–H	2 × 1 × 459			
O₂	9 × 494			
	13218			