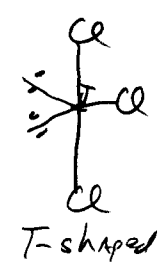
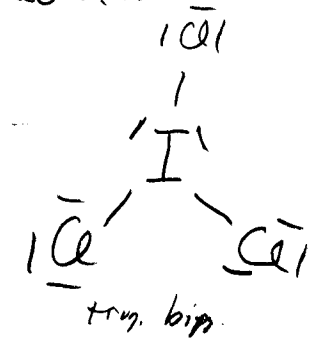
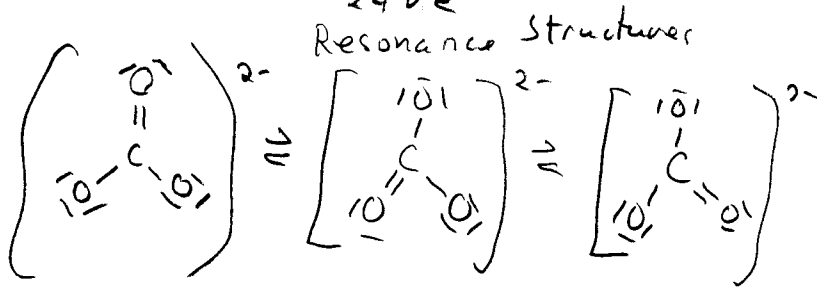


1. (10 Pts) Draw Lewis Structures for each of the following, be sure to include any resonance structures:

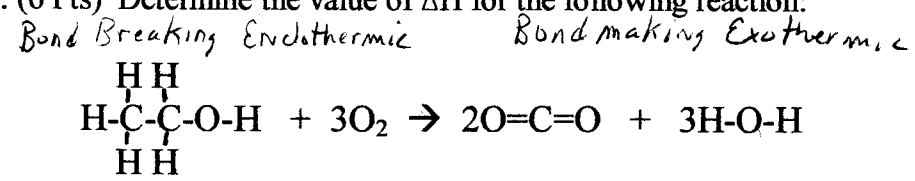
a.  $\text{CO}_3^{2-} \rightarrow$

$$\begin{array}{l} 2 \\ 3 \times 6 = 18 \\ 1 \times 4 = 4 \\ \hline 24 \text{ ve} \end{array}$$

b.  $\text{ICl}_3$  28 v.e.



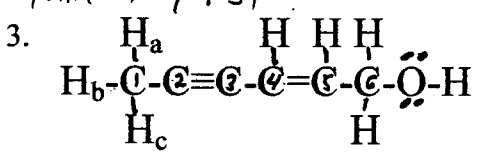
2. (6 Pts) Determine the value of  $\Delta H$  for the following reaction:



(Bond Enthalpies in kJ/mol: H-H 433; C-H 413; C-C 347; C-O 358; O-H 467; O<sub>2</sub> 498; C=O 745)

Breaking		making	
C-H	5 x 413 =	C=O	2 x 2 x 745 =
C-C	1 x 347 =	H-O	3 x 2 x 467 =
C-O	1 x 358 =		
O-H	1 x 467 =		
O <sub>2</sub>	3 x 498 =		
	<u>Total + 4731</u>		<u>total (-) 5782</u>

$$+4731 + -5782 = -1051 \text{ kJ}$$



A. (6 Pts) What is the bond angle of each of the following?

1.  $\text{C}-\text{C}\equiv\text{C}$  180°    2.  $\text{C}-\text{C}=\text{C}$  120°    3.  $\text{C}-\text{C}-\text{O}$  109.5°

B. (3 Pts) What is the hybridization of each of the following?

1.  $\text{C}$  sp<sup>3</sup>    2.  $\text{C}$  sp    3.  $\text{C}$  sp<sup>3</sup>