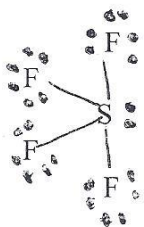


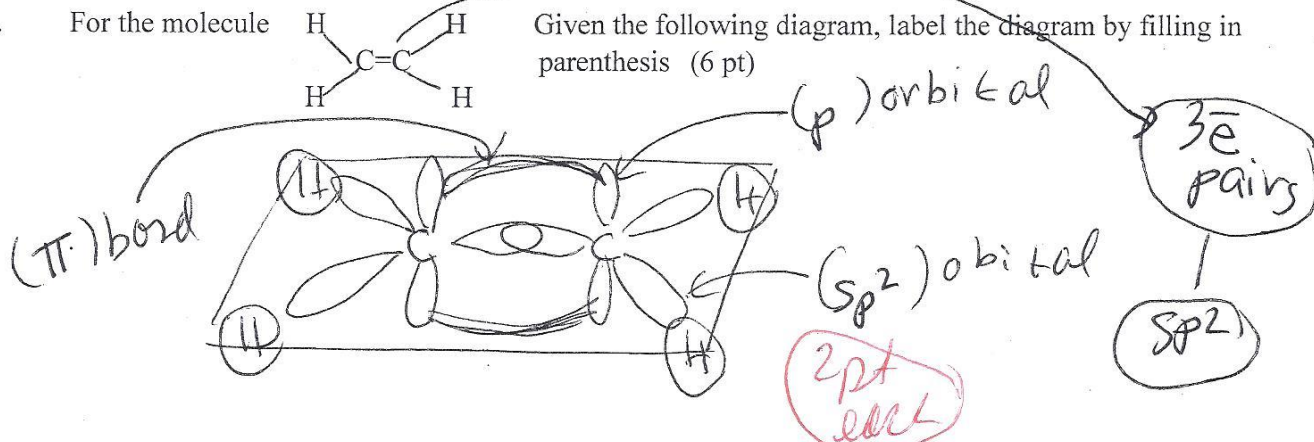
Name Key Name _____
 Sign _____ Print (bc can't read signature) BA = bad attempt
 Please **show work on all questions** for full credit & partial credit. (20 total pts).

1. For the molecule whose correct Lewis Dot structure is shown below, answer the following about the central S atom. (8 pts total)

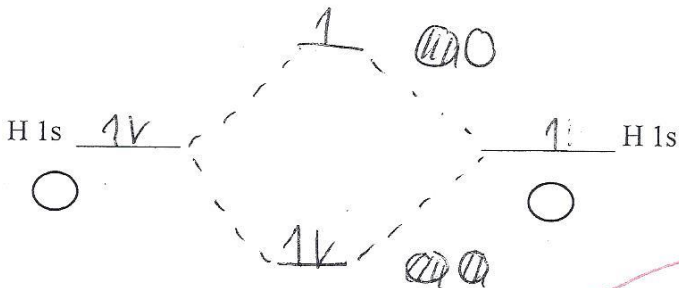


of VSEPR electron pairs (or domains) 5 (2pt) # of lone pairs 1 (1pt)
 geometry of electron pairs trigonal bipyramidal (1pt) geometry molecule see saw (2pt)
 Hybridization sp³d (2pt) NA = not attempt

2. For the molecule C=C Given the following diagram, label the diagram by filling in parenthesis (6 pt)



3. a. For the molecule H_2^{-1} , draw the MO diagram from the AO lines I have drawn to complete the MO diagram for the molecule (4 pts)



graded consistent with above
BA - 2
-3 - BA - 1/2

b. Fill in your MO diagram with the correct number of electrons. (3 pt)

Extra Credit: c. For the above question, what is the bond order 1/2 [bond order = $\frac{1}{2} * \{ \# \text{ bonding electrons} - \# \text{ antibonding electrons} \}$ (show work) (1 pt) $\frac{1}{2}(2-1) = \frac{1}{2}$

d. Based on the bond order given above, the H_2^{-1} molecule is a (stable) or (unstable) (circle one) molecule (1 pt)

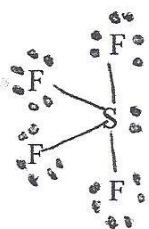
e. Is the molecule (if it is stable enough to exist) [(paramagnetic) or (diamagnetic)] (circle one) (1 pt)

Name _____ Name _____

Sign _____ Print (bc can't read signature)

Please **show work on all questions** for full credit & partial credit. (20 total pts).

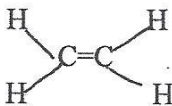
1. For the molecule whose correct Lewis Dot structure is shown below, answer the following about the central S atom. (8 pts total)

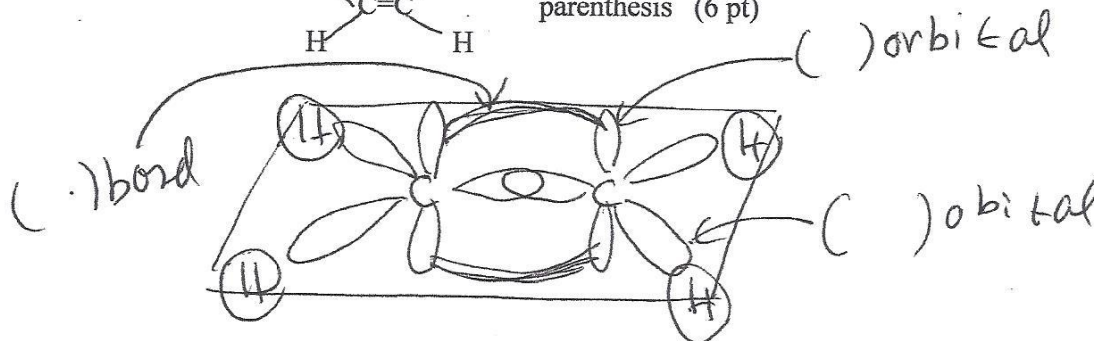


of VSEPR electron pairs (or domains) _____ (2pt) # of lone pairs _____ (1pt)

geometry of electron pairs _____ (1pt) geometry molecule _____ (2pt)

Hybridization _____ (2 pt)

2. For the molecule  Given the following diagram, label the diagram by filling in parenthesis (6 pt)



3. a. For the molecule H_2^{-1} , draw the MO diagram from the AO lines I have drawn to complete the MO diagram for the molecule (4 pts)

H 1s _____ H 1s



- b. Fill in your MO diagram with the correct number of electrons. (3 pt)

Extra Credit: c. For the above question, what is the bond order _____ [bond order = $\frac{1}{2} \times \{ \# \text{ bonding electrons} - \# \text{ antibonding electrons} \}$ (show work) (1 pt)

- d. Based on the bond order given above, the H_2^{-1} molecule is a [(stable) or (unstable)] (circle one) molecule (1 pt)

- e. Is the molecule (if it is stable enough to exist) [(paramagnetic) or (diamagnetic)] (circle one) (1 pt)