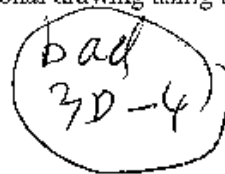
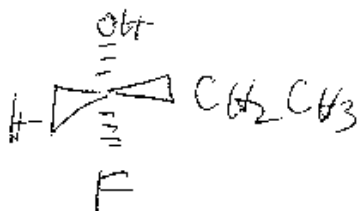
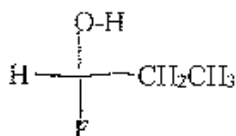


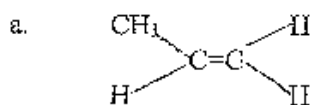
Sign Name key Print Name _____

Please show work on all questions for partial credit even on questions which do not specify. (25 pts)

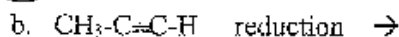
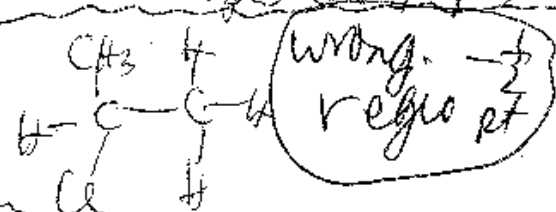
1. Given the following Fisher projection formula, draw a corresponding 3 dimensional drawing using the line, dash wedge drawing. (8 pts)



2. Given the following reactions, what is the an expected organic product? (3 pts each, 9 pts)

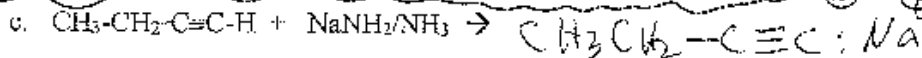
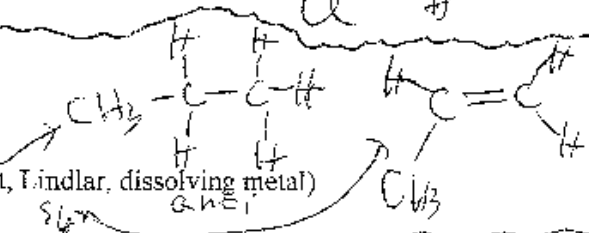


"mark"

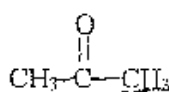


give at least one reduction product

(possible reduction agents are: H_2/Pt , Lindlar, dissolving metal)



3. For the following a molecular ion peak would occur at the mass/charge ratio of 58 Show work. (8 pt)



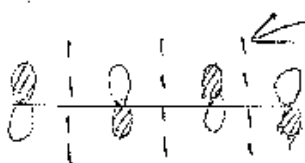
3 C 6 H 1 O

$$3(12) + 6(1) + 16 = 58$$

mass spectra

Charge = 1 almost always for MS

Extra Credit: For a 1,3-butadiene molecule, what is the combination of the p orbitals for the highest energy molecular orbital? Complete the p orbital atomic orbitals to make a molecular orbitals by shading in the p orbitals correctly to show the sign of the p-orbital lobes. (2 pts)

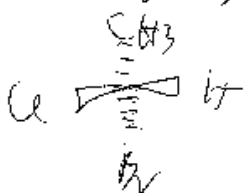
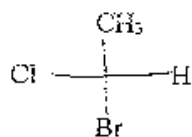


highest # of possible nodes

Sign Name Key Print Name _____

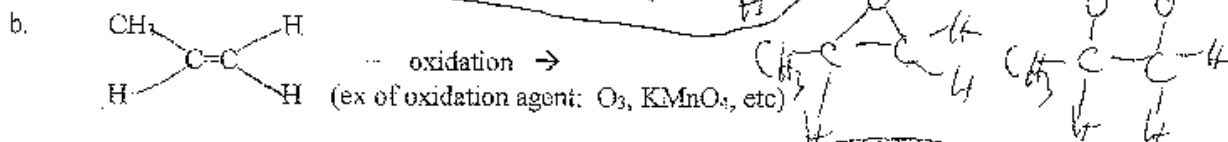
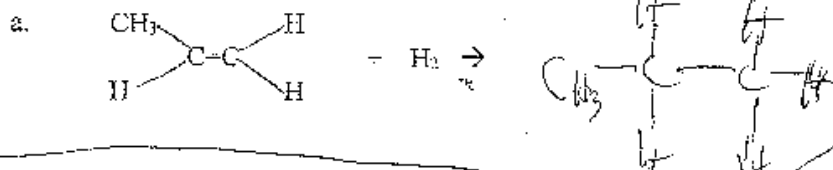
Please show work on all questions for partial credit even on questions which do not specify. (25 pts) Green

1. Given the following Fisher projection formula, draw a corresponding 3 dimensional drawing using the line, dash wedge drawing. (8 pts)

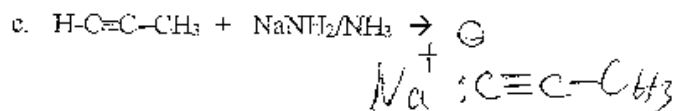
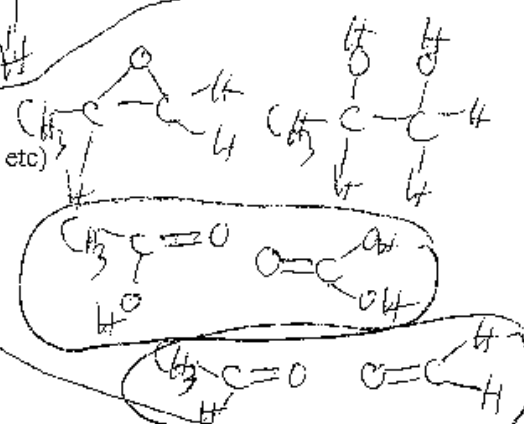


bad
 3D -4

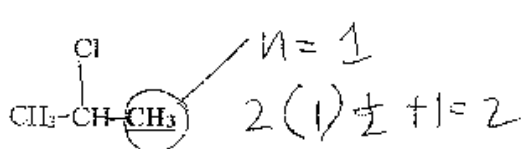
2. Given the following reactions, what is the an expected organic product? (3 pts each, 9 pts)



give at least one oxidation product

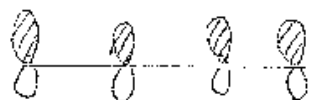


3. For the following molecule, for a proton NMR spectrum, what is the coupling for the bold underlined proton shown? (equation is $2nI + 1$ & $I = 1/2$ for proton) Show work. (8 pts)



gave $n = 3$
 like 13C
 -2 pt

Extra Credit: For a 1,3-butadiene molecule, what is the combination of the p orbitals for the lowest energy molecular orbital? Complete the p orbital atomic orbitals to make a molecular orbitals by shading in the p orbitals correctly to show the sign of the p orbital lobes. (2 pts)



lowest # nodes = zero nodes