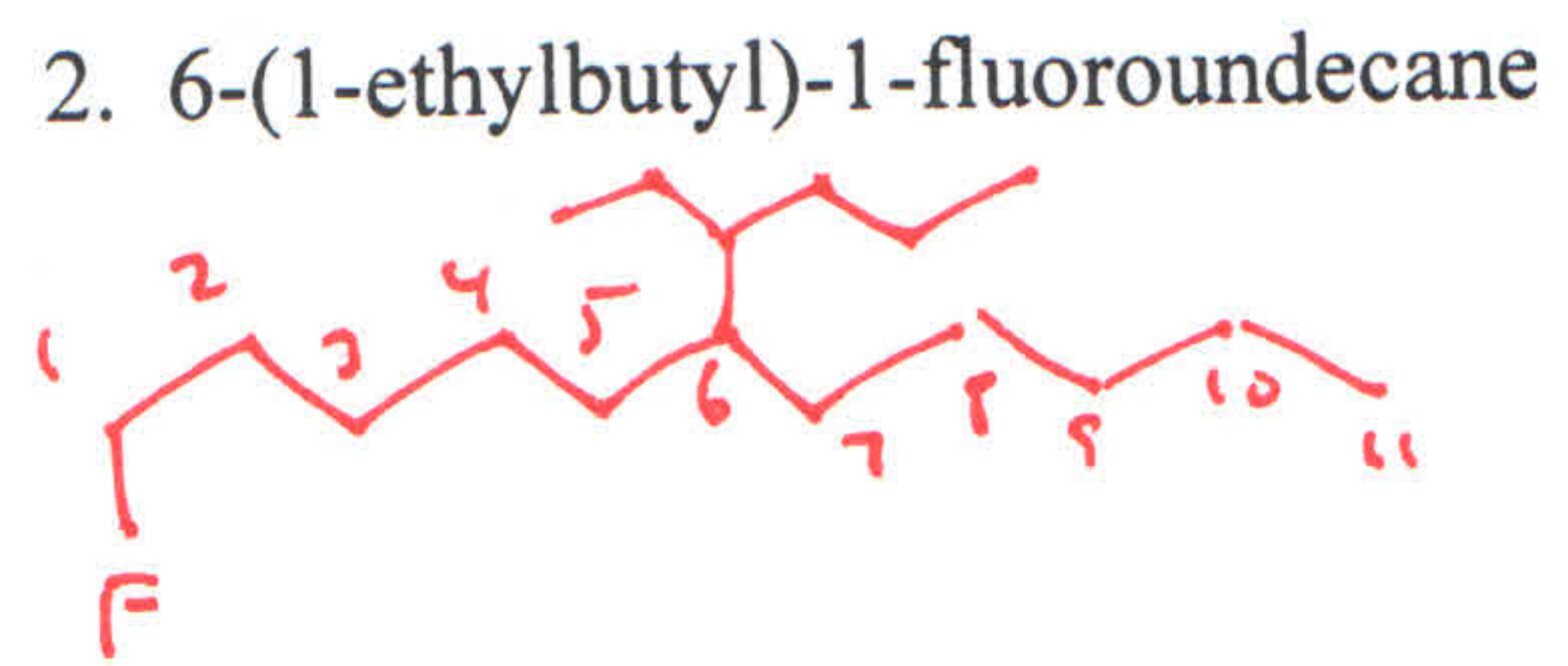
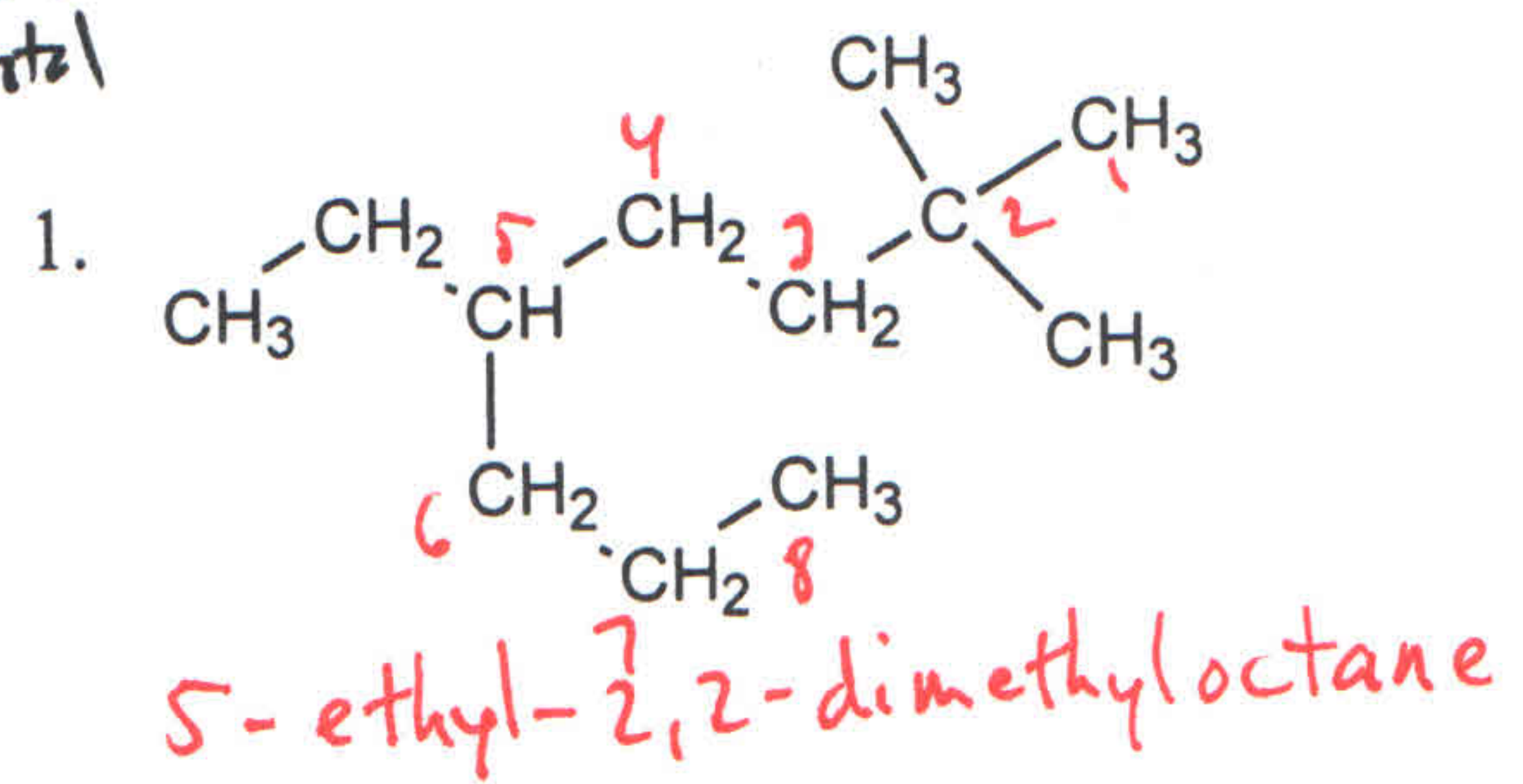
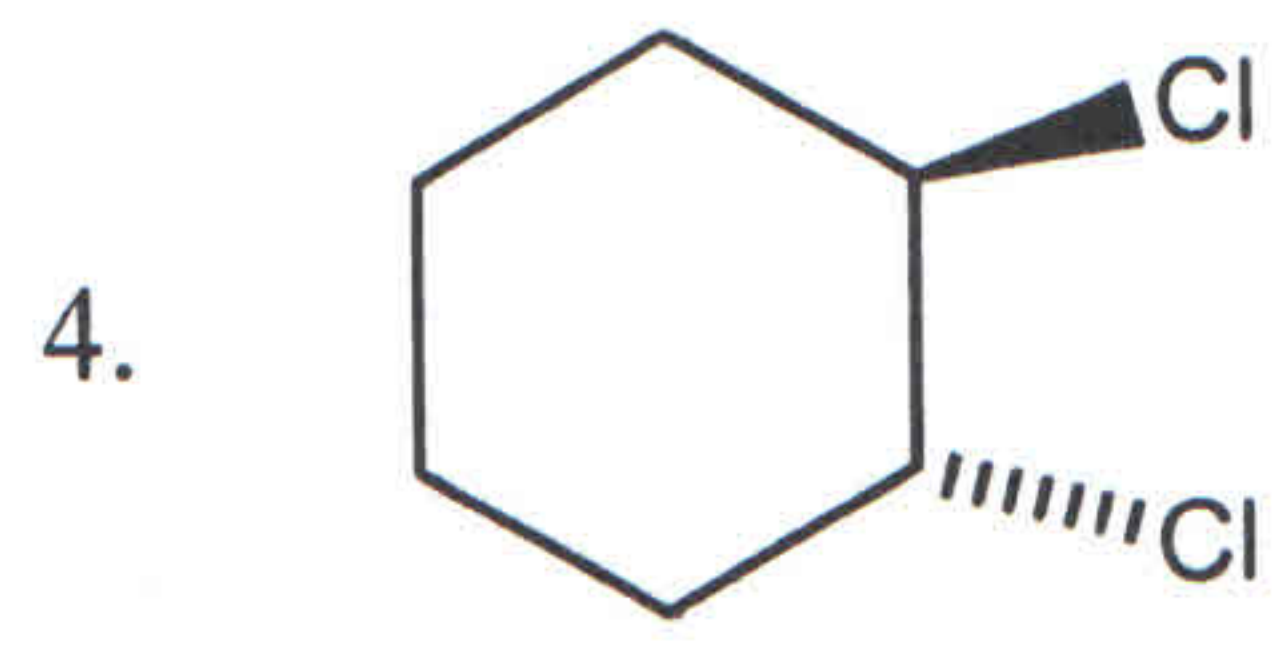
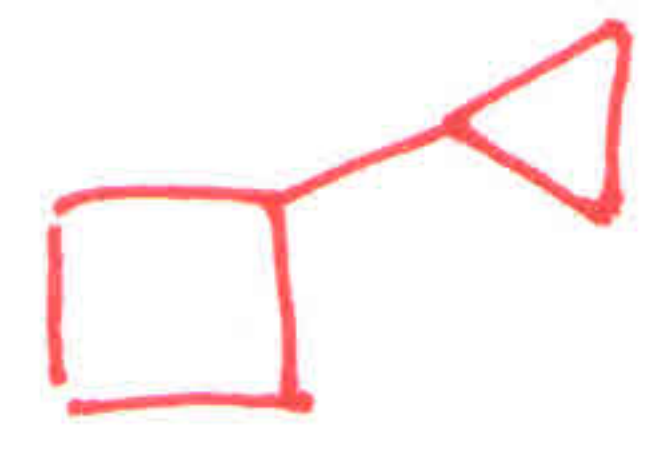


I. Write the IUPAC name for each structure. Draw the complete structure (Lewis, Kekule, Condensed, or Line Angle) for each name.

5 pts each  
 20 pts total

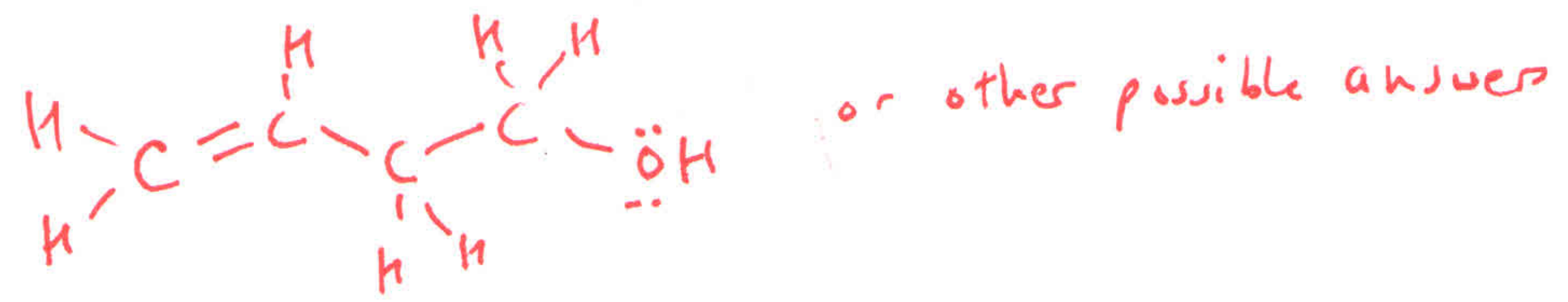


3. cyclopropylcyclobutane



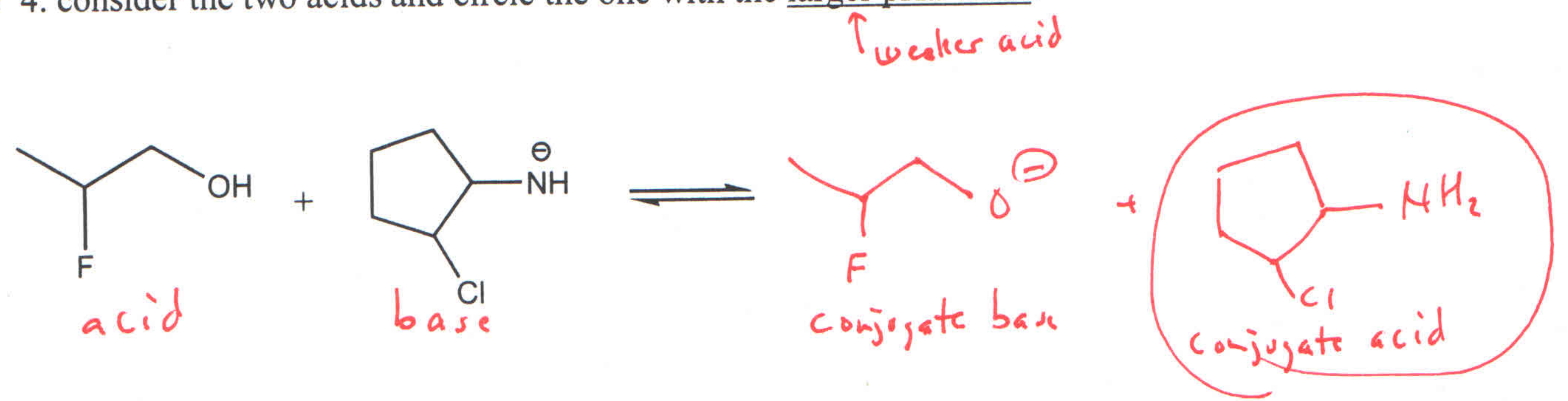
trans-1,2-dichlorocyclohexane

6 pts II. Draw a stable Lewis/Kekule structure for the formula C<sub>4</sub>H<sub>8</sub>O. Show all atoms, bonds, and lone pairs.

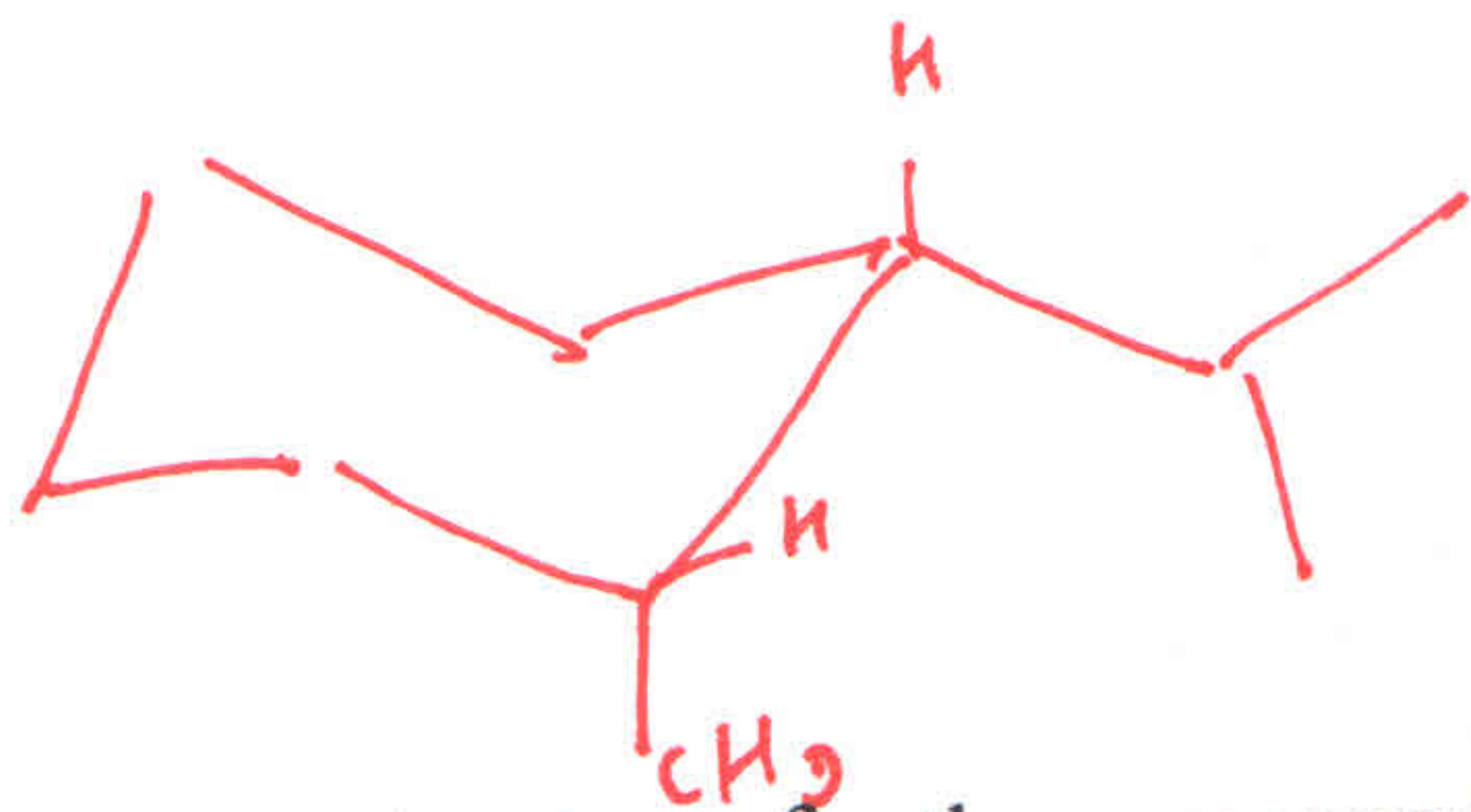


11 pts total

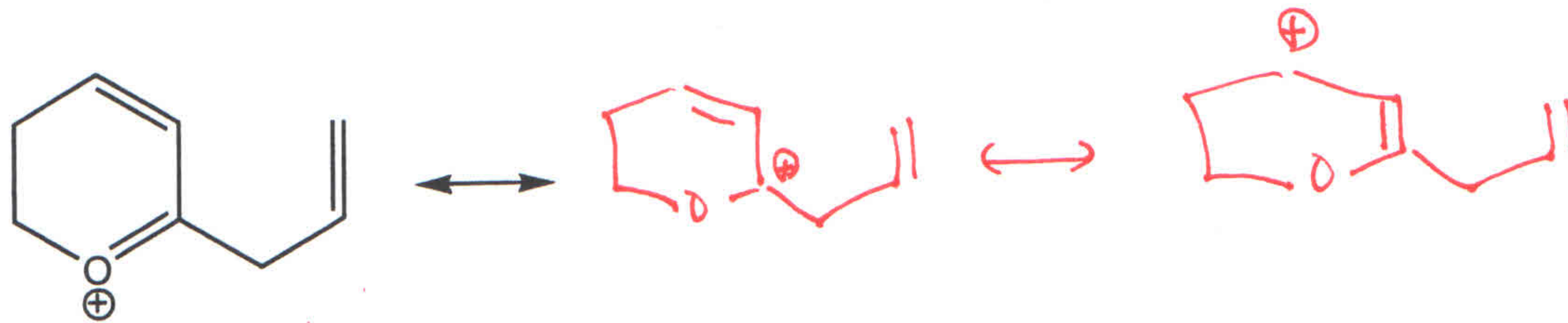
- III. Consider the reaction of the acid with the base below.  
 (2) 1. label the reactants as the acid and the base appropriately based on the expected reaction  
 (4) 2. draw the structures of the expected products  
 (2) 3. label the products as the conjugate acid and conjugate base appropriately  
 (3) 4. consider the two acids and circle the one with the larger pKa value.



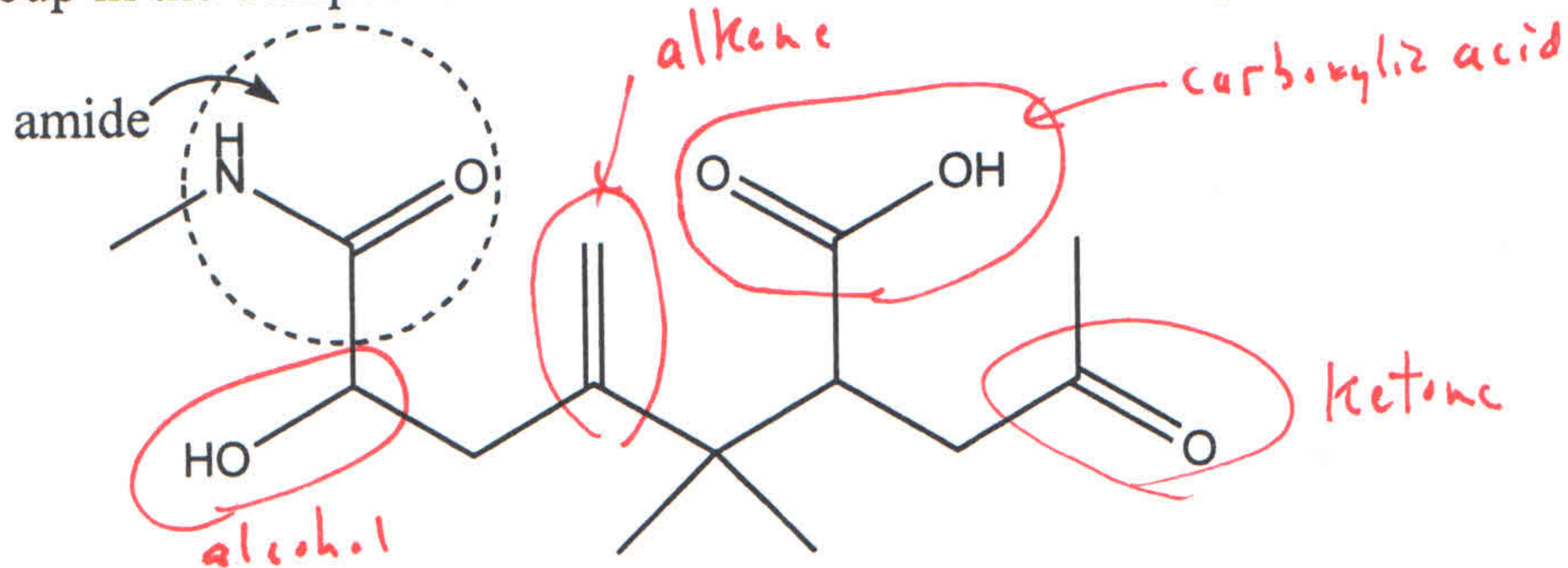
6 pts IV. Draw the most stable chair conformation of cis-1-isopropyl-2-methylcyclohexane



6 pts V. Draw all significant resonance structures for the compound shown.



8 pts VI. Circle each functional group in the compound below and label the class of compound for it. One is done for you as an example.

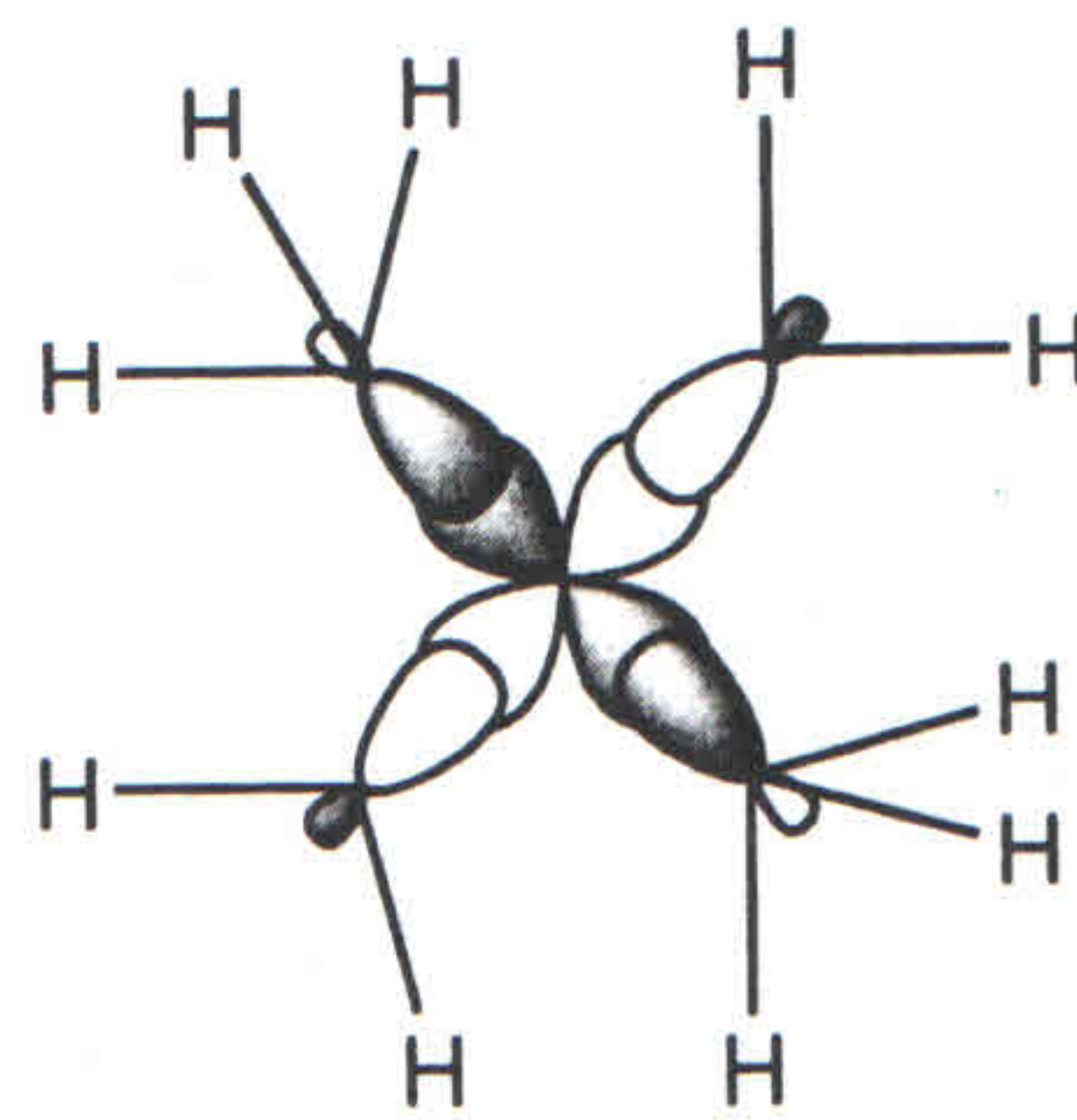
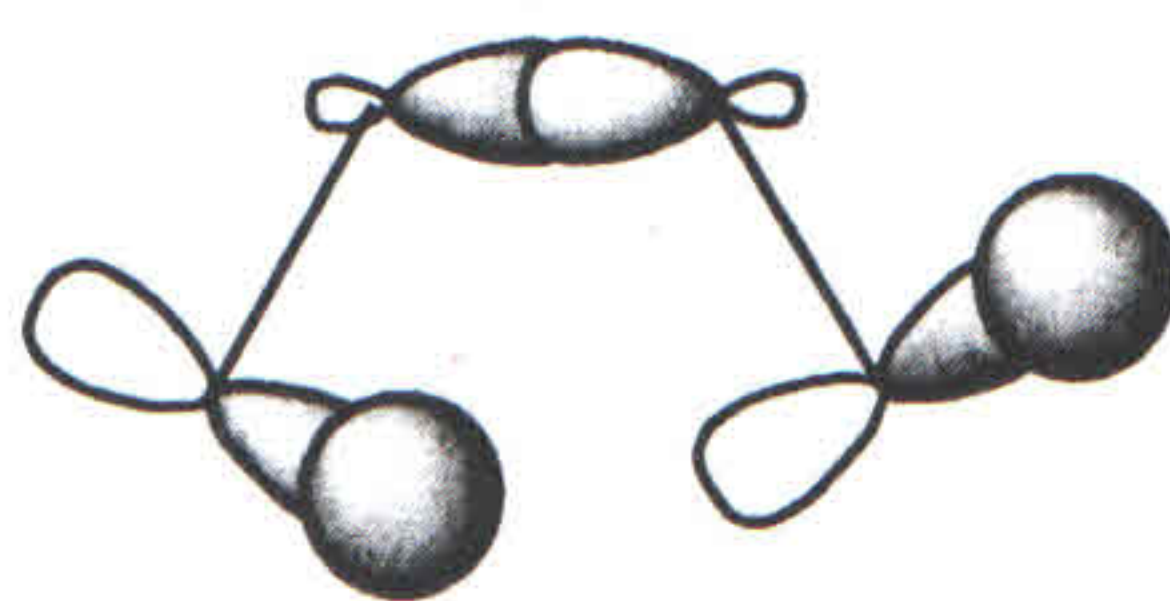
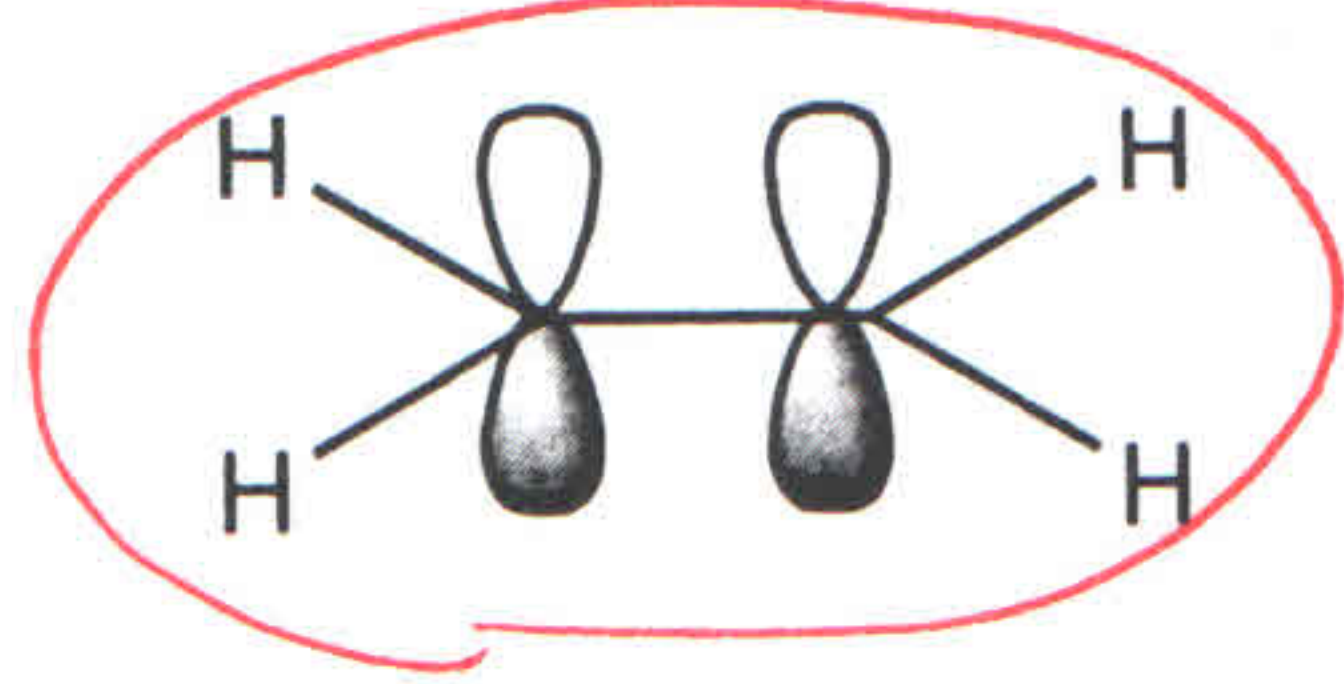
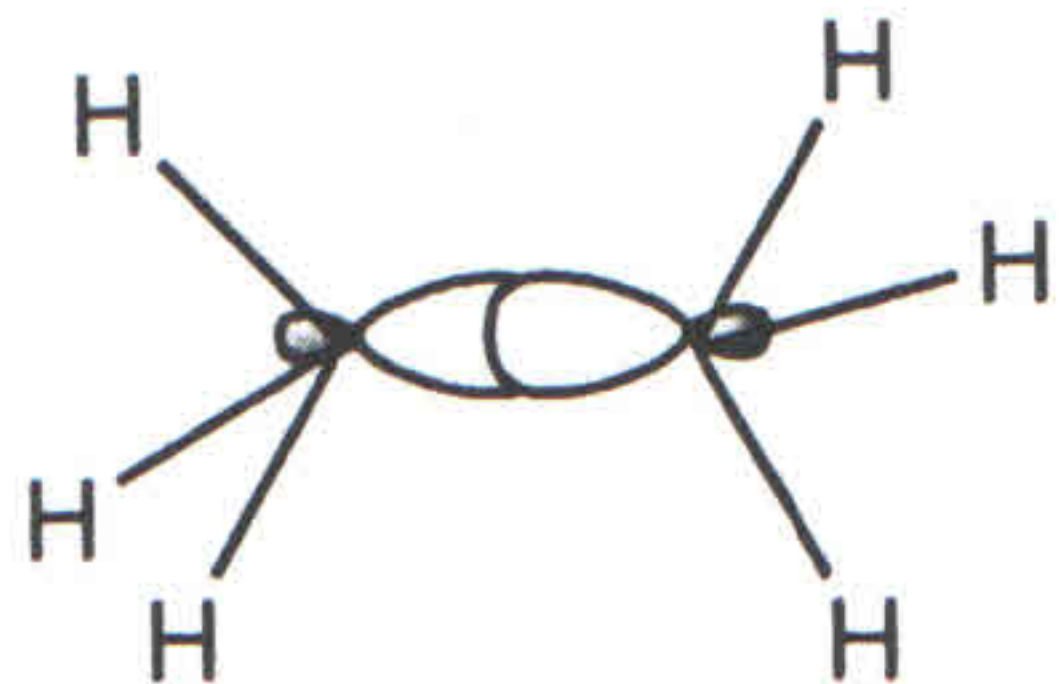


5 pts each  
50 pts total

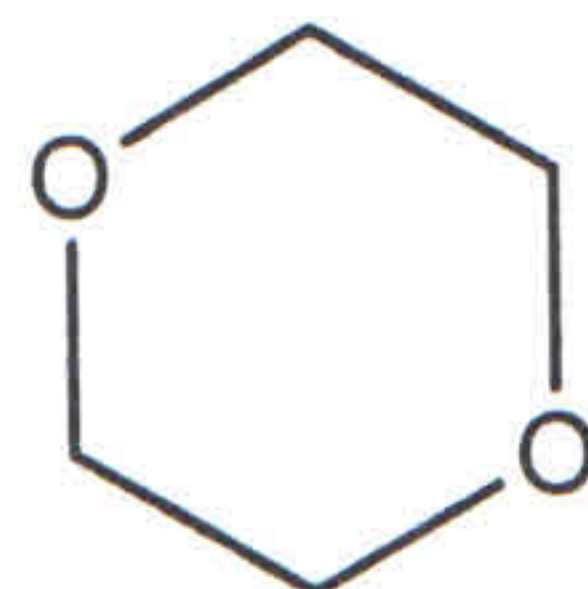
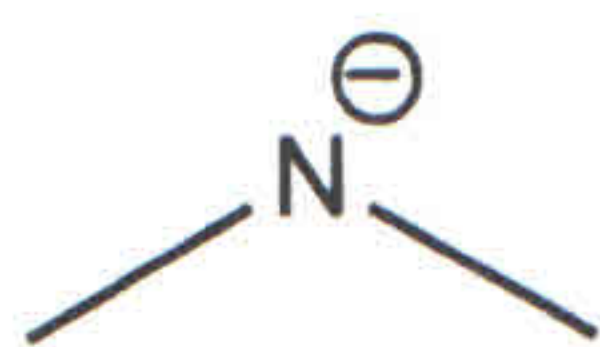
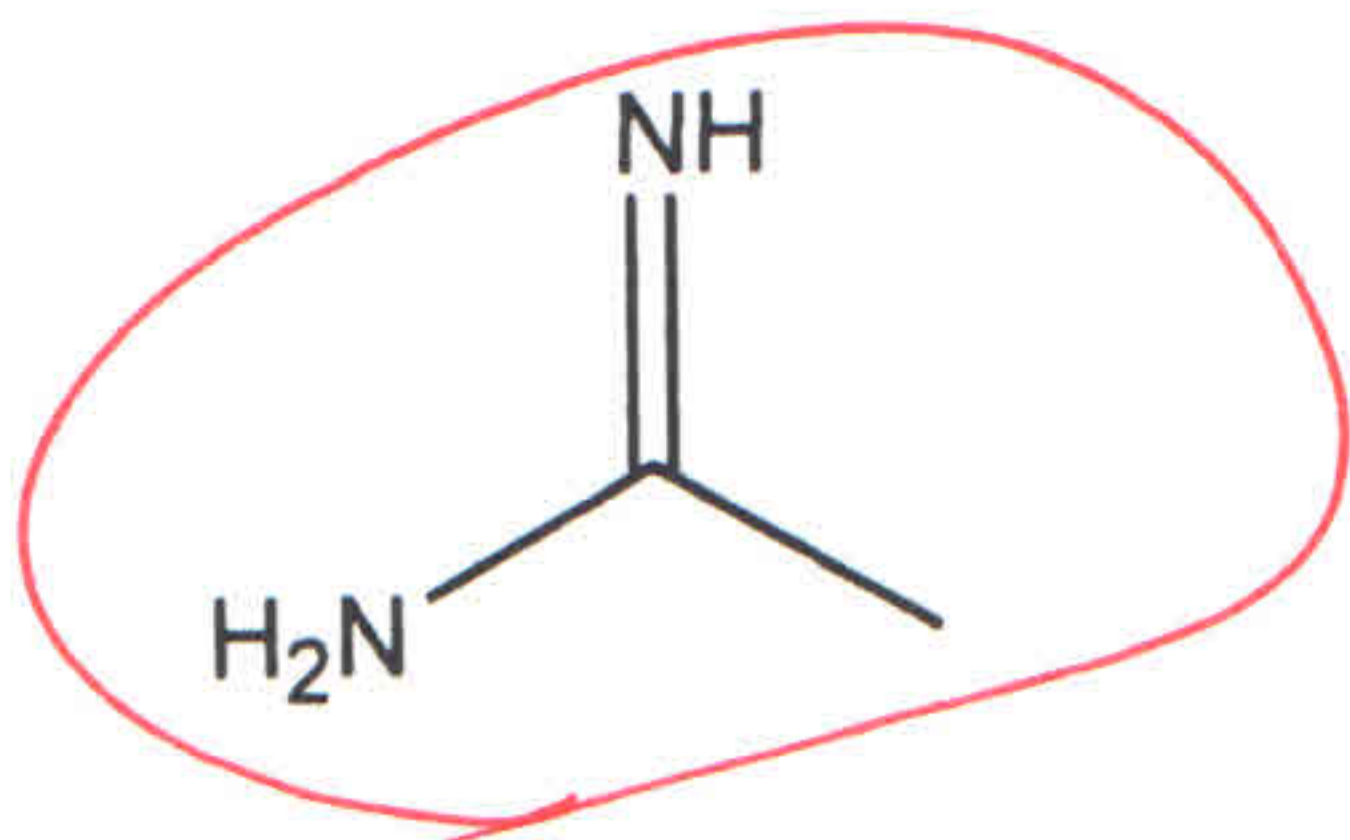
VII. Answer each of the following. Where choices are given, circle the best answer.

1. In the compound used above in problem VI, how many carbons are  $sp^3$  hybridized primary carbons?

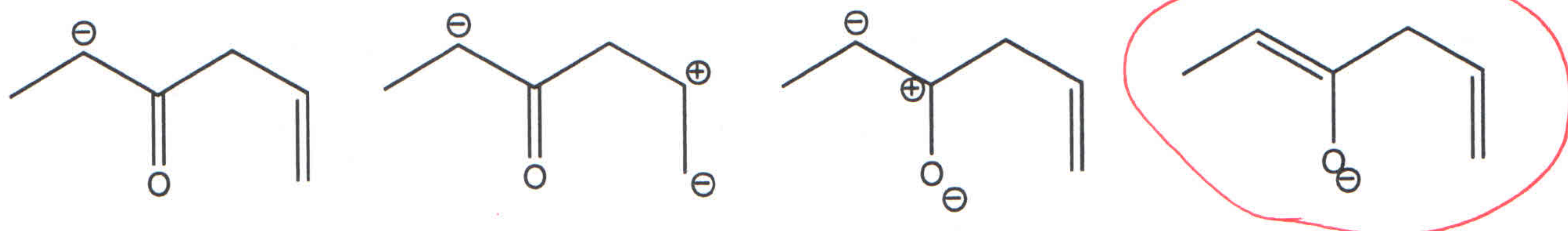
2. Circle the orbital interaction that includes/represents a pi bond.



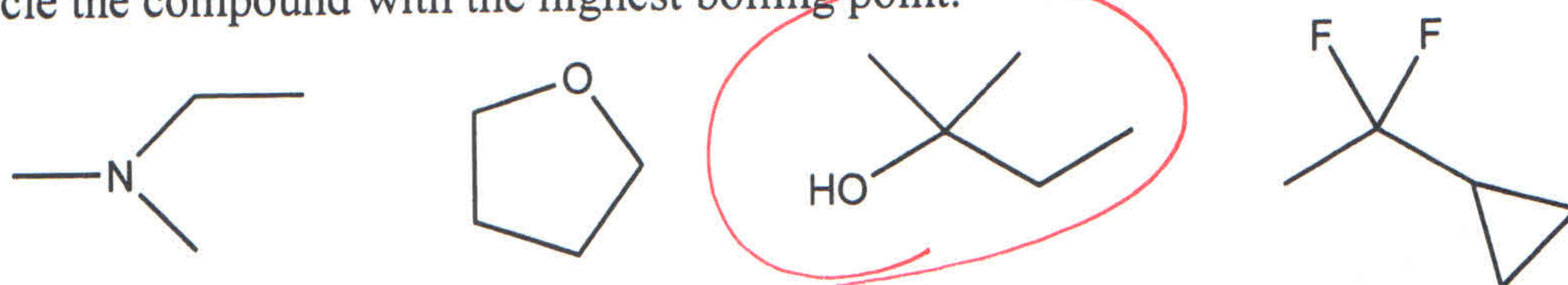
3. Circle the strongest acid.



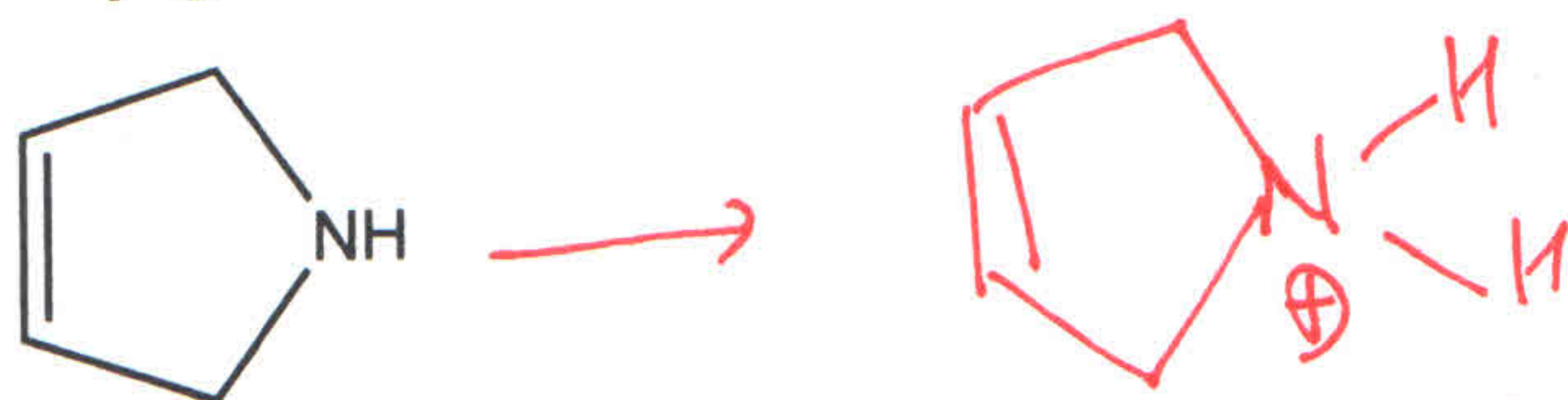
4. Consider the resonance structures shown. Circle the major contributor.



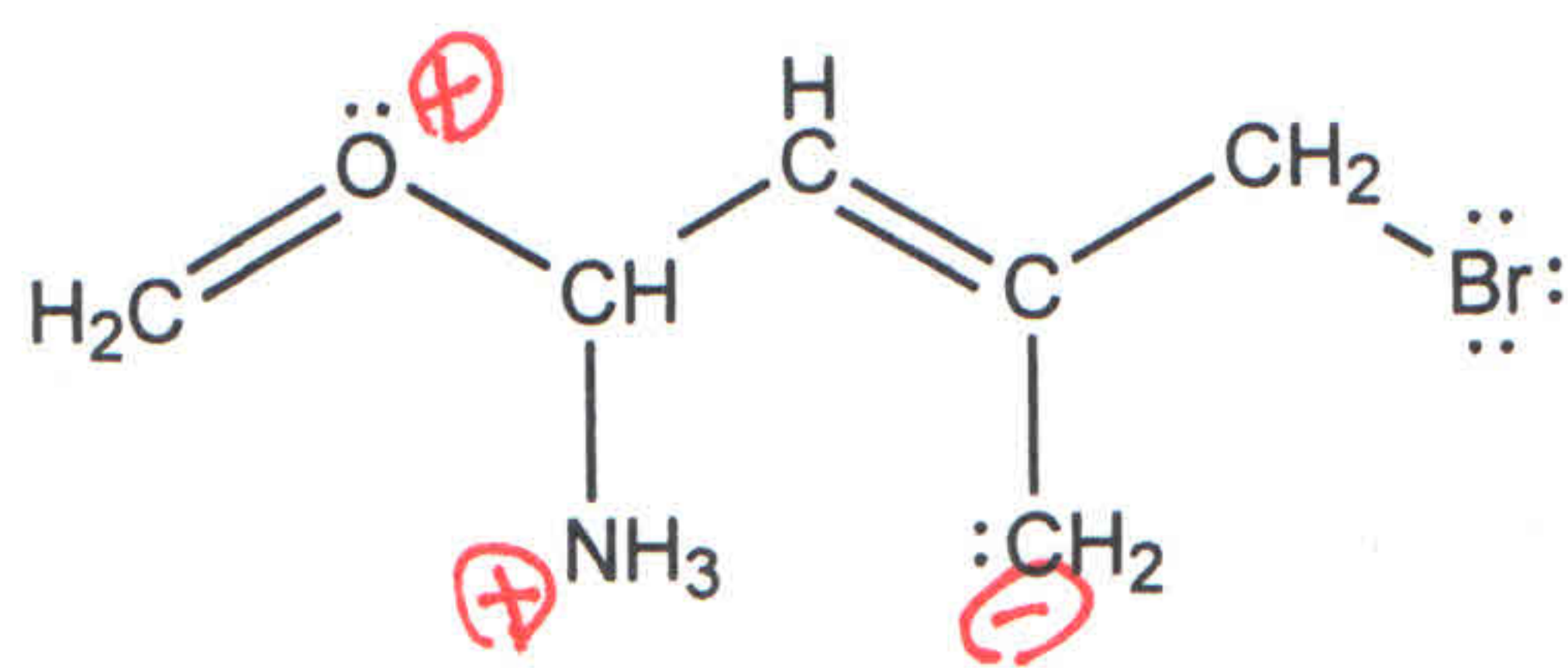
5. Circle the compound with the highest boiling point.



6. Draw the conjugate acid of the base shown.

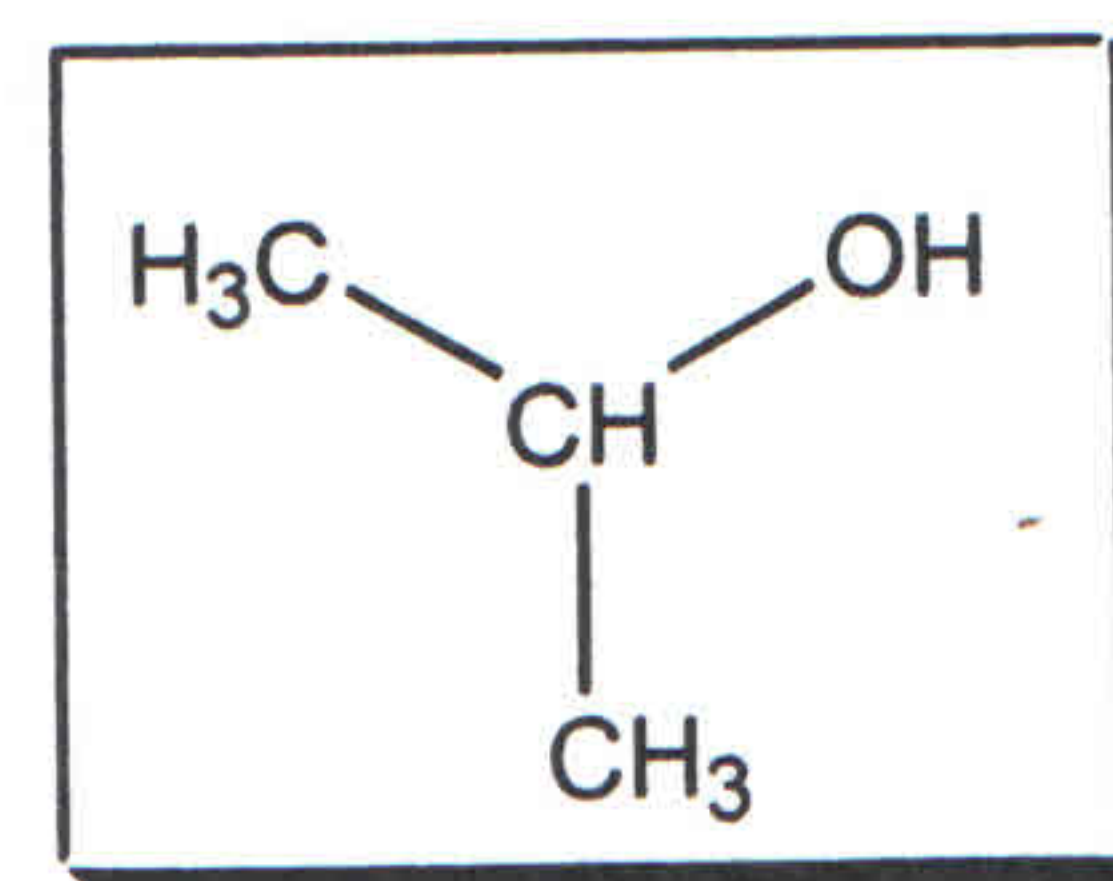


7. In the compound shown, all atoms and lone pairs are present but formal charges are missing. Write the proper formal charges clearly with the atoms they belong on.

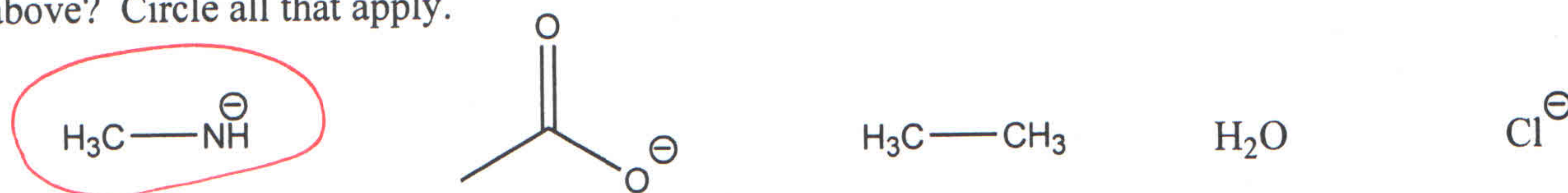


8. Consider the acid shown. Circle the best estimate for the pKa of this acid.

-5      2      16      35      50



9. Which base will readily deprotonate (react with to form a majority of products) the acid shown in #8 above? Circle all that apply.



10. Circle the most stable conformation of 3-methylpentane.

