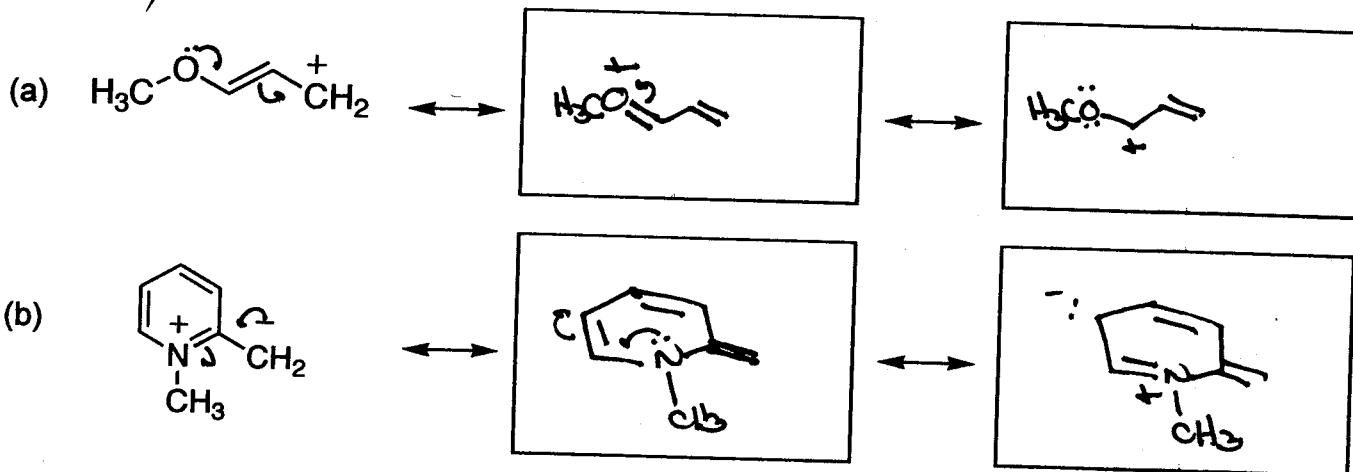


Test 2 (104 points)

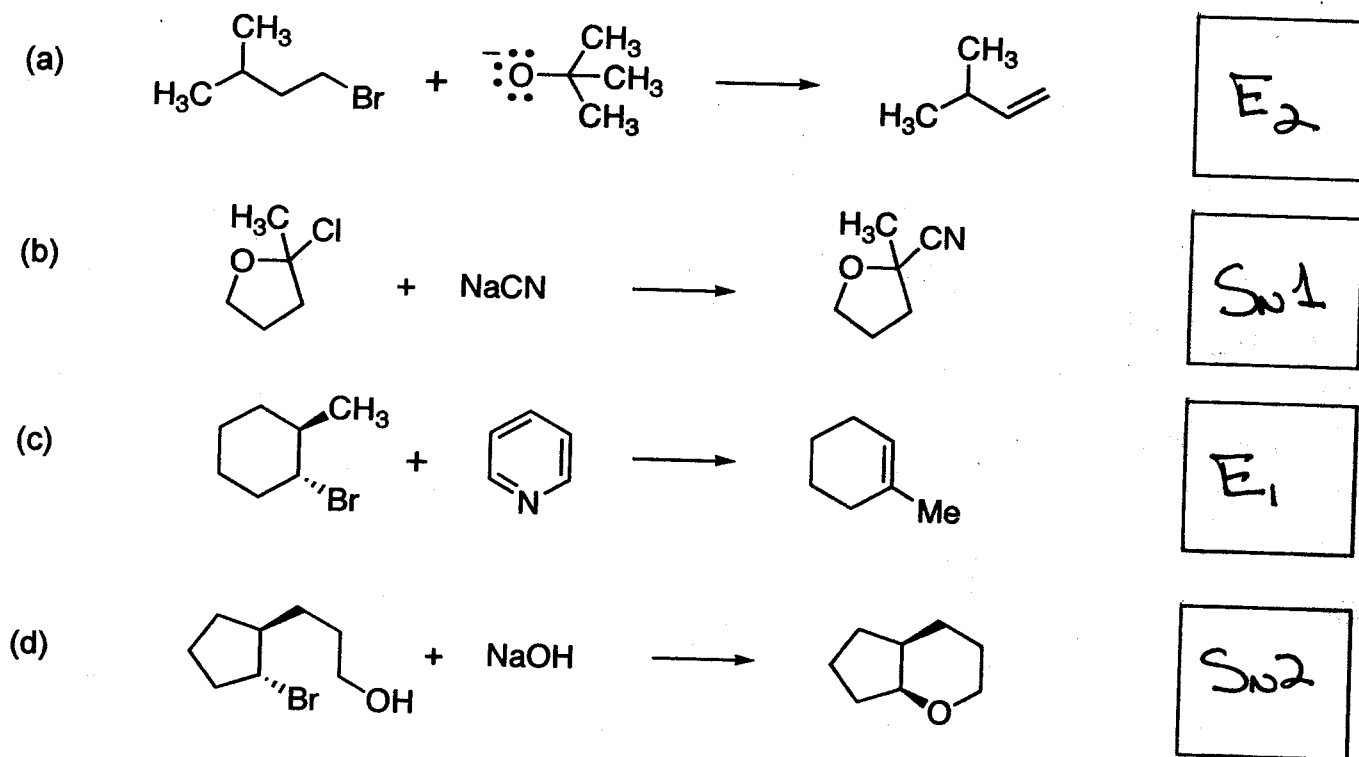
1. Draw two resonance structures for the each of the following compounds. (12 points)

Nancy



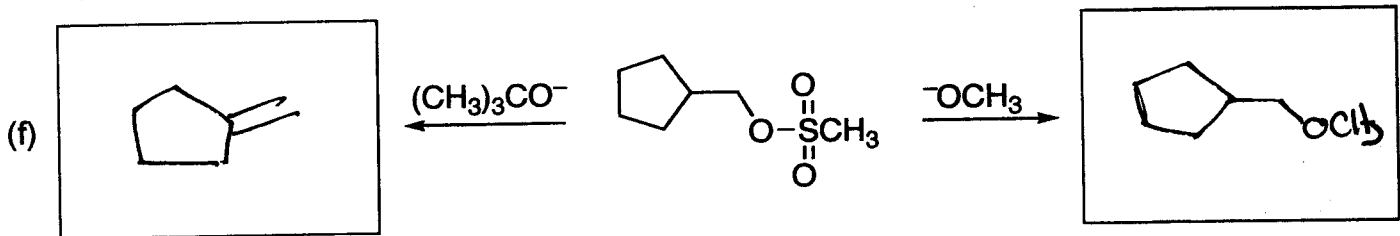
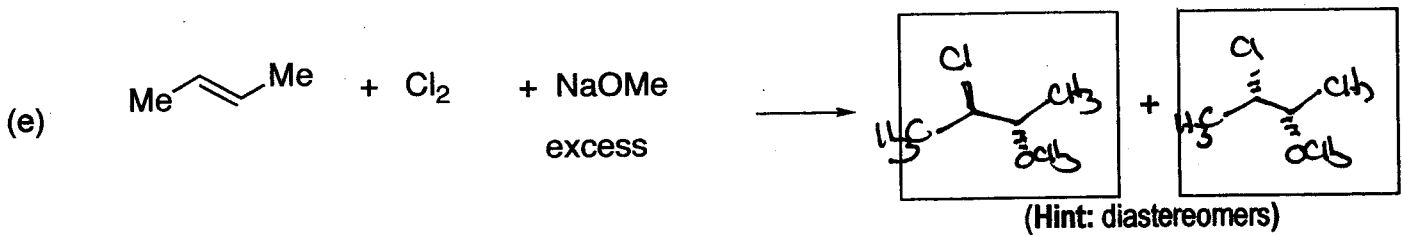
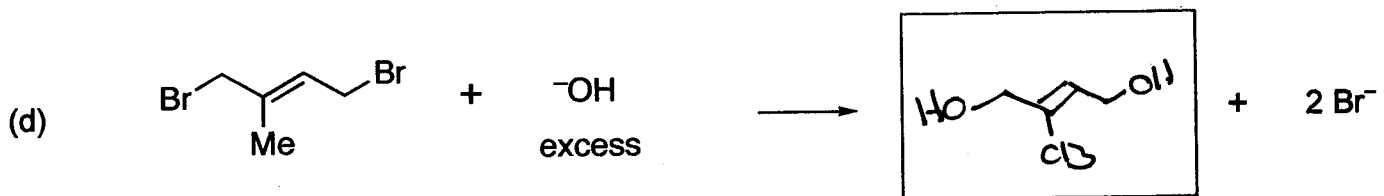
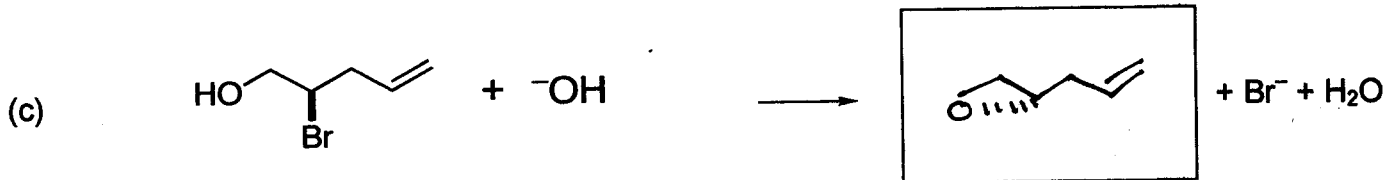
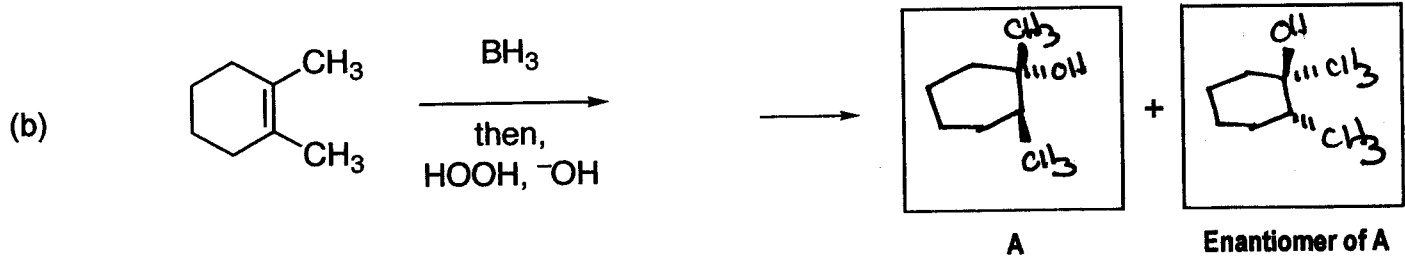
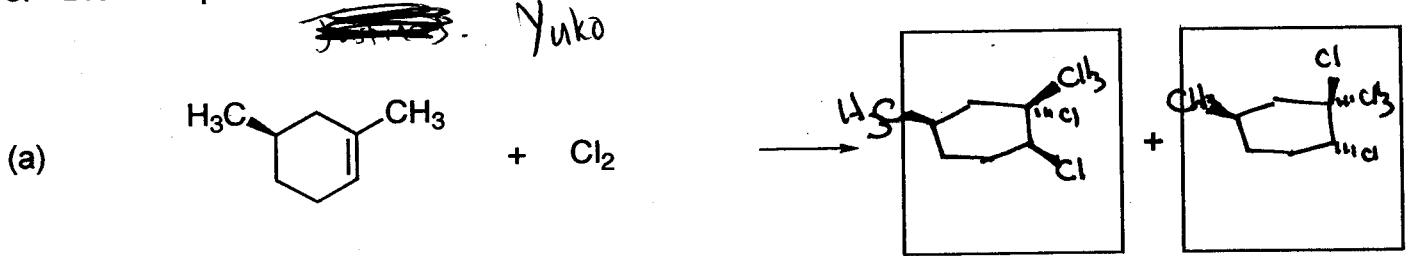
2. By which mechanism does each of the following reactions proceed (E1, E2, S_N1, S_N2)? (12 points)

Nancy



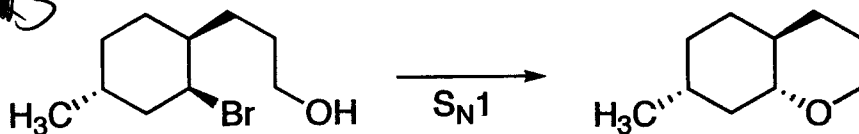
Pink

3. Draw the products of the following reactions; be sure to show stereochemistry. (30 points)



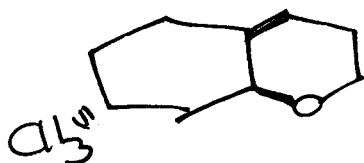
~~Justin~~
Pink4. The following S_N1 reaction gives selectively one diastereomer.

Justin S

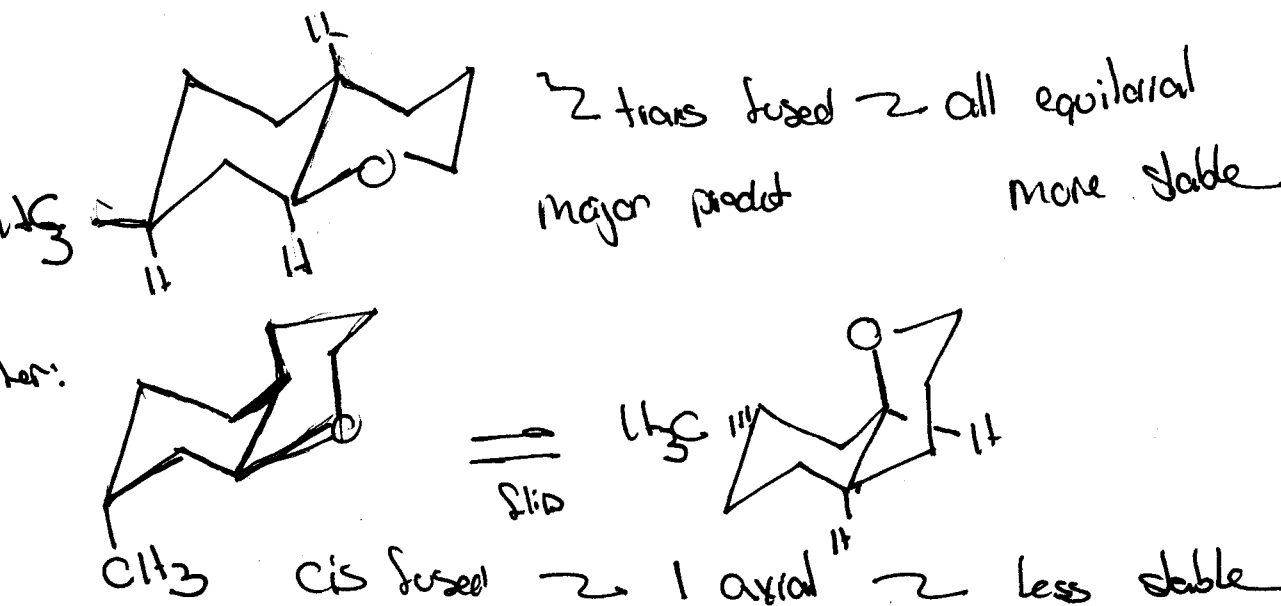


major product

a. What is the other diastereomer that could have been formed? (3 points)

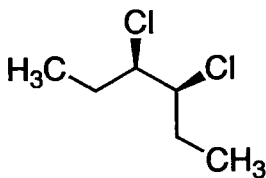


b. Use chair structures to explain why one diastereomer is formed selectively. (7 points)

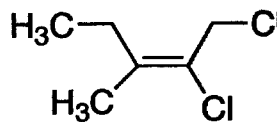


5. Give IUPAC names for the following compounds, including stereochemistry. (8 points)

Justin S



(a)

meso-3,4-dichlorohexane

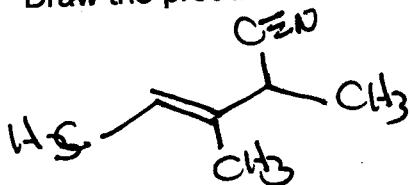
(b)

(E)-1,2-dichloro-3-methyl-2-pentene

~~_____~~
Pink

6. A researcher in Prof. Bode's research group, Dr. Wanda Be, is reacting sodium cyanide with (Z)-4-chloro-3-methyl-2-butene in acetone as a solvent. She is in a hurry to leave for the weekend but her reaction is not finished. *Thruus*

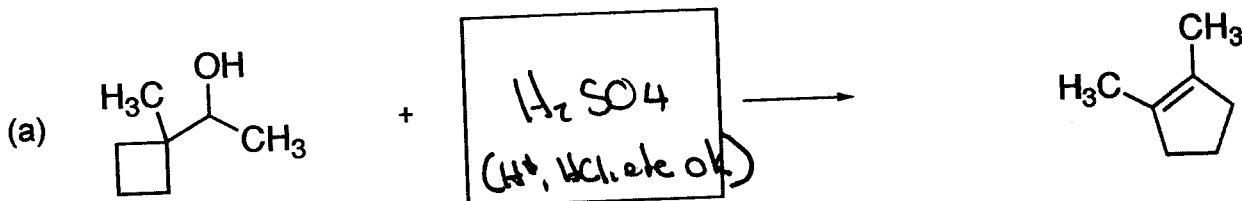
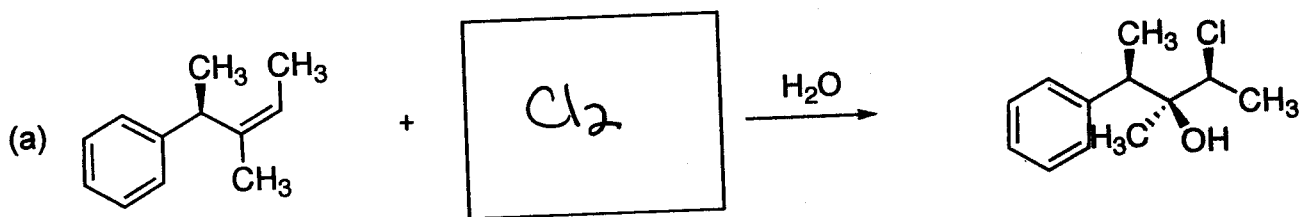
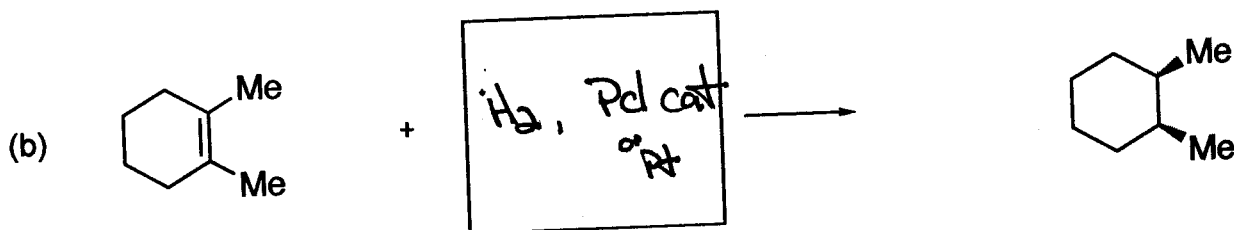
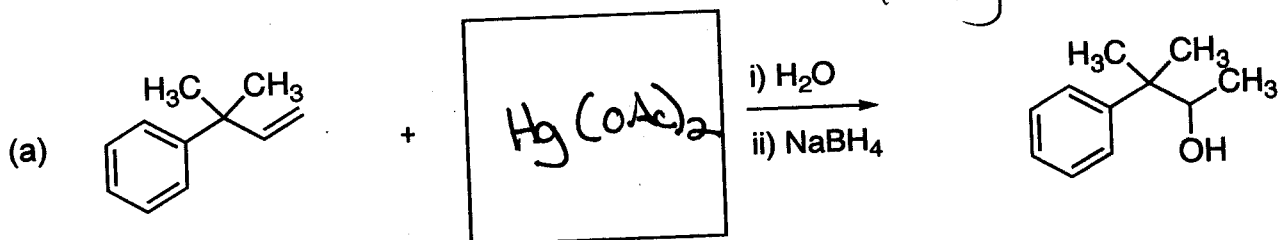
a. Draw the product of her reaction. (3 points)



b. Will adding more sodium cyanide make her reaction go faster? (3 points)

Yes because it is an S_N2 reaction.

7. Fill in the necessary reagents to achieve the following transformations. (12 points)



8. Propose multi-step synthesis of the following compounds from the given starting materials. You may use any reagents or reactions covered in this class. Each one can be prepared in two steps, however any chemically logical sequence is acceptable. (14 points)

