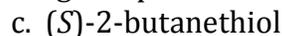
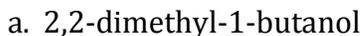


Nomenclature and Structure of Alcohols

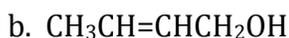
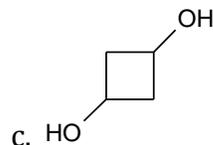
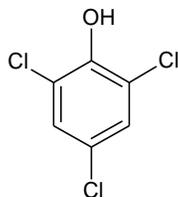
1. Name each of the following alcohols:



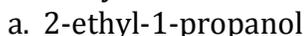
2. Write a structural formula for each of the following compounds:



3. Name each of the following compounds:



4. Explain why each of the following names is unsatisfactory, and give a correct name:

Properties of Alcohols

5. Classify the alcohols in #2 as primary, secondary, or tertiary.

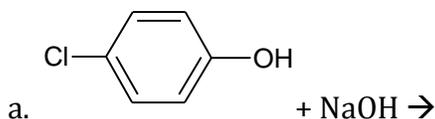
6. Arrange the following compounds in order of increasing solubility in water and briefly explain why you have arranged them in such an order: ethanol; ethyl chloride; 1-hexanol

Acid-Base Reactions of Alcohols and Thiols

7. Ethers, $\text{R}\ddot{\text{O}}\text{R}$, are Lewis bases. Write an equation that shows how an ether might react with H^+ .

8. Determine which of the following is more acidic: cyclohexanol or 2-chlorocyclohexanol. Explain why you believe it so.

9. Illustrate each of the following reactions:



Acid-Catalyzed Dehydration of Alcohols

10. Show the structures of all possible acid-catalyzed dehydration products of the following: If more than one alkene is possible, predict which one will be formed in the largest amount.

a. 1-methylcyclopentanol

b. 2-butanol

11. Draw the reaction energy diagram for the dehydration of *t*-butyl alcohol (Refer to slide #20). Include all steps in your diagram.

Alkyl Halides from Alcohols

12. Although the reaction shown on slide #24 occurs faster than that of slide #25, the yield of product is lower. The yield of *t*-butyl chloride is only 80%, whereas the yield of *n*-butyl chloride is nearly 100%. What by-product is formed in the reaction of slide #24, and by what mechanism is it formed? Why is a similar product not formed in the reaction of slide #25?

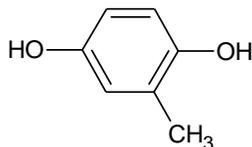
Synthesis and Reactions of Alcohols

13. Write an equation for the following reaction: 1-pentanol + CrO₃, H⁺ (Jones Reagent)

14. Write an equation for the following two-step synthesis: 1-chlorobutane to butanal

15. What product do you expect from the oxidation of cholesterol (slide #32) with Jones Reagent?

16. Draw the structure of the quinone expected from the oxidation of



17. Dimethyl disulfide, CH₃S-SCH₃, found in the vaginal secretion of female hamsters, acts as a sexual attractant for the male hamster. Write an equation for its synthesis from methanethiol.