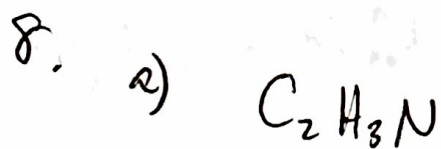
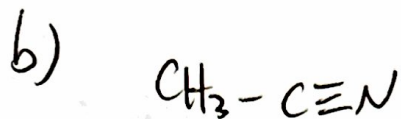


Chapter 3



$$sp^3 C-H = 2950 \text{ cm}^{-1}$$



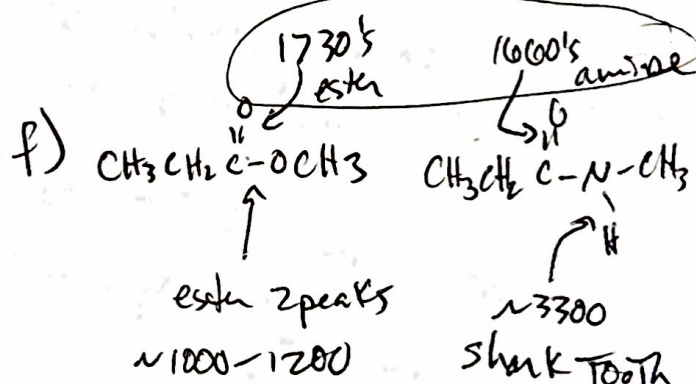
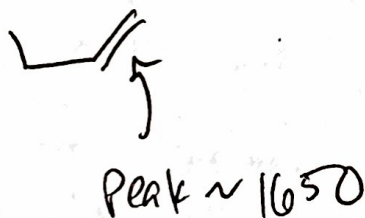
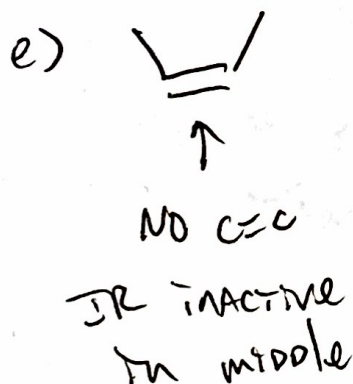
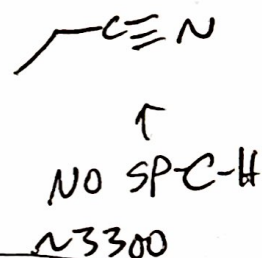
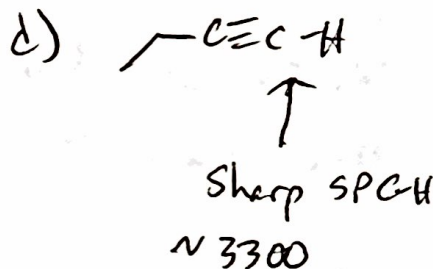
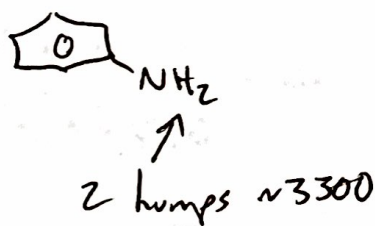
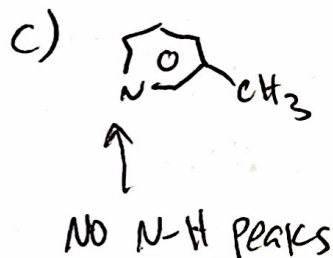
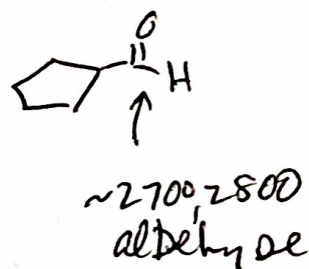
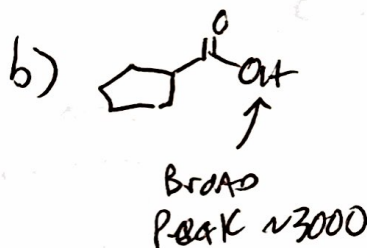
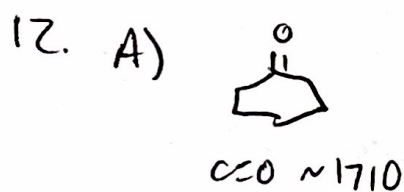
$$C \equiv N = 2254 \text{ cm}^{-1}$$

$$ODD m^+ = N$$

9. a) 3 b) 2 c) 2 d) 4 e) 4 f) 2 g) 0

10. a) Br b) Cl c) S d) N e) I

11. $\text{CH}_3\text{COCH}_3 = \text{acetone (A)}$ $\text{CH}_3\text{COOCH}_2\text{CH}_3 = \text{ethyl acetate (B)}$



13. a) OH strong Broad $\sim 3300 \rightarrow C=O \sim 1720$
 $\downarrow$ 2700+2800 + NO OH peak
 aldehyde
- b) OH st., Broad $\sim 3300 \rightarrow \begin{array}{c} O \\ || \\ C \end{array} \sim 1710 + \text{NO OH peak}$
- c) OH st., Broad $\sim 3300 \rightarrow \begin{array}{c} O \\ || \\ C \end{array} \sim 1710$
 OH Broad ~ 3000
 + NO alcohol ~ 3300
- d) OH st., Broad $\sim 3300 \rightarrow \text{NO OH} \quad C=C \sim 1650$
- e) NO NH_2
 2 Peaks $\sim 3300 \rightarrow \begin{array}{c} NH_2 \\ | \\ \text{---} \end{array}$
 2 humps ~ 3300
- f) $C \equiv C$ sp C-H
 ~ 2300 sharp $\sim 3300 \rightarrow \text{NO } C \equiv C \sim 2300$
 NO sharp ~ 3300

14. a) missing $C=O$ peak. would be strong around 1720.
 These peaks are not at 2700/2800.
- b) 73 is odd so consider N containing.
 that might be an N-H peak. Thinking
 2° amine. $\begin{array}{c} H \\ | \\ R - N - R \end{array}$