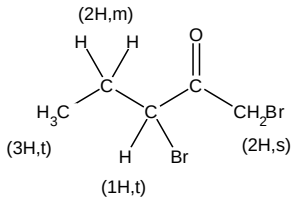
CHEM 30475 - Organic Chemistry Laboratory - Fall 1999
Answer Key - Lab Quiz #2

1. R_f values:
   (a) A = 0.75
   (b) B = 0.60
   (c) C = 0.67
   (d) Unknown = 0.57 - Closest to "B"

2. Column chromatography
   (a) Green dye more polar (sticks to polar column - less soluble in non-polar hexane)
   (b) Mobile phase = hexane
   Stationary phase = silica

3. Mass spectrometry
   296 = parent ion
   295 = parent - H
   281 = parent - CH_3
   169 = parent - I
   155 = parent - CH_2I
   Best structure: CH_3-CH(I)-CH_2I
   (No peak for loss of CH_3CH_2)

4. $C_5H_8OBr_2$
   IR: No C=C or C≡C
   C=O is present
   NMR: (3H,t) → CH_3CH_2
   (1H,t) must be next to CH_2
   (2H,s) must be isolated

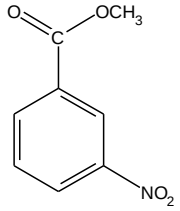


5. IR
   (a) cyclohexane: No major peaks over 3000 cm^{-1}
   (b) cyclohexene: $\nu_{=C-H}$ around 3050 cm^{-1}
   (c) cyclohexanol: ν_{O-H} around 3500 cm^{-1}

6. Reaction Rates
   (a) Second: (2° > 1° for S_N1)
   (b) First: (1° > 2° for S_N2)
   (c) First: (Br^- better leaving group than Cl^-)

7. Major: $CH_3CH_2CH_2CH_2Br$
   Minor: $CH_3CH_2CH{=}CH_2$

8. Nitration lab
   (a)



   (b) NO_2^+
   (c) Deactivating substituent

9. *Didn't do this lab.*