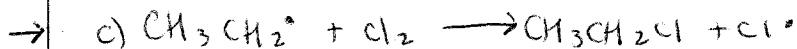
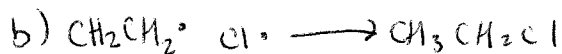
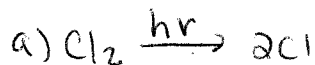


Test I Colonna Chm 202

① Which elementary rxns correspond to propagation step in the formation of chloroethane from ethane + chloride



② Bromination products would be formed when 1,3 hexadiene is treated under allylic bromination conditions

a) 1

b) 2

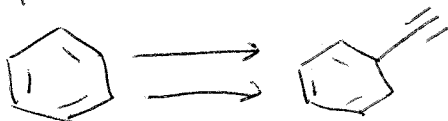
→ c) 3

d) 4



not given

③ Sequence of rxns



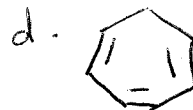
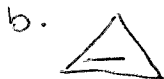
ans: EtBr, FeBr₃ → NBS, Peroxide → Kot-Bu →

Br₂, CH₂Cl₂ → 2x Kot-Bu

d → c → a → e → 2x a

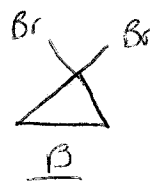
- a. Kot-Bu
- b. HBr, CH₂Cl₂
- c. NBS, Peroxide
- d. EtBr, FeBr₃
- e. Br₂, CH₂Cl₂
- f. Br₂, FeBr₃
- g. ≡: O⁻Na⁺

4. React with strong Base such as NaH?



5. How many signals ¹H-NMR spectrum of (pairs A & B)?

- a) 1 + 1
- b) 1 + 2
- c) 2 + 2
- d) 3 + 1
- e) 3 + 2



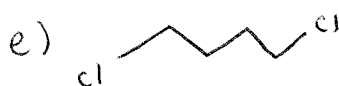
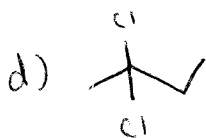
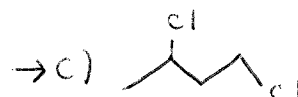
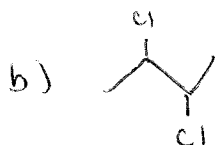
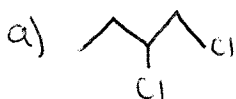
6. ¹H-NMR C₄H₈Cl₂

1.6 ppm (doublet 3H)

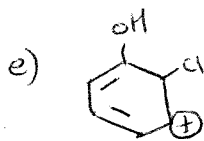
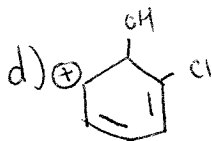
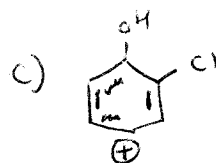
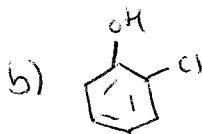
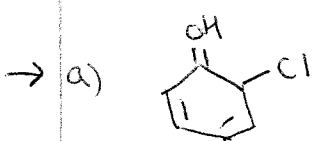
2.1 ppm (multiplet 2H)

3.6 ppm (triplet 2H)

4.2 ppm (multiplet 1H)



7. Most stable Resonance Contributor



8.

¹H NMR?

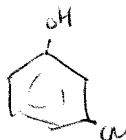
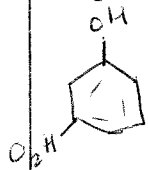
- a) 1.49 ppm (doublet 2H)
 2.00 ppm (multiplet 2H)
 2.20 ppm (quartet 2H)
 3.24 ppm (singlet 3H)

- b) 0.96 ppm (triplet 3H)
 1.33 ppm (sextet 2H)
 1.91 ppm (quintet 2H)
 4.41 ppm (triplet 2H)

- c) 0.9 ppm (doublet 3H)
 1.3 ppm (quintet 2H)
 2.2 ppm (triplet 2H)
 3.24 ppm (triplet 2H)

- d) 1.00 ppm (triplet 3H)
 1.20 ppm (quartet 1H)
 2.00 ppm (quartet 2H)
 3.24 ppm (doublet 3H)

9. Decreasing Acidity?



a) A > B > C > D

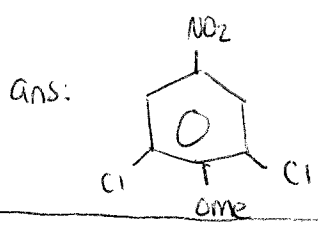
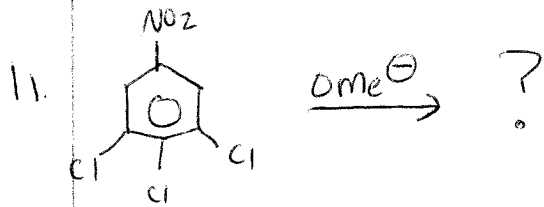
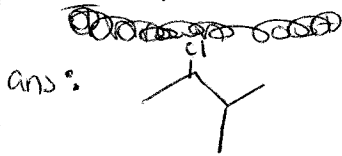
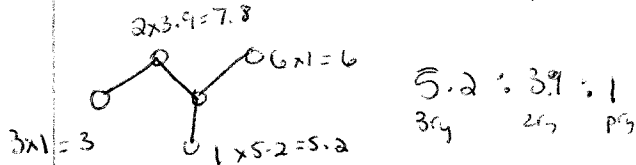
b) C > B > A > D

c) C > A > B > D

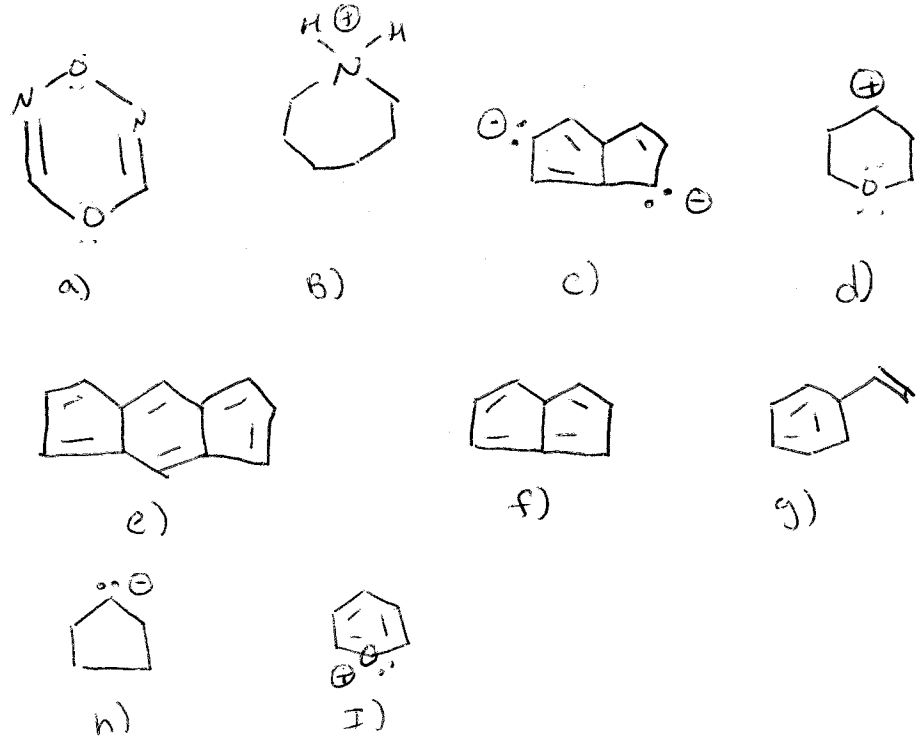
→ d) A > D > B > C

e) D > A > C > B

b) Chlorination of Alkane in presence of light



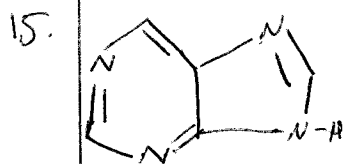
12-14)



12. Aromatic? C D G H I

13. Anti Aromatic? E F

14. Nonaromatic? A B

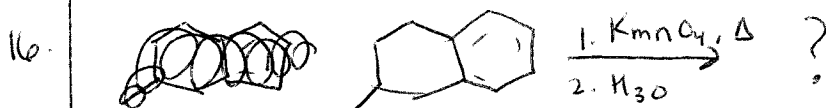


a) 1

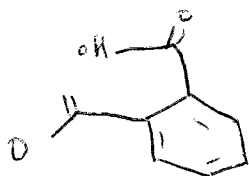
b) 2

c) 3

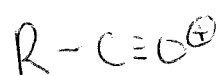
d) 4



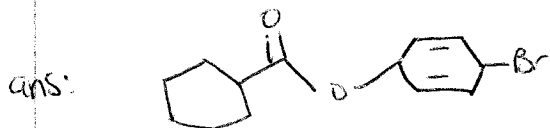
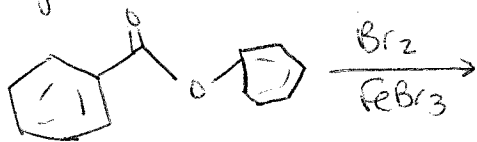
ans:



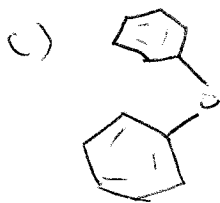
17 Best electrophile



18 Major Product



19. Increasing reactivity toward EAS



a) A < B < C < D

b) B < C < D < A

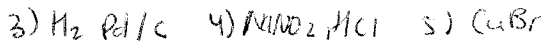
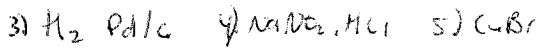
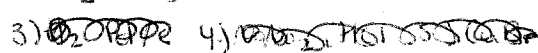
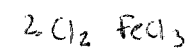
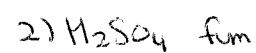
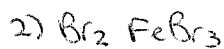
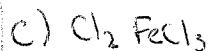
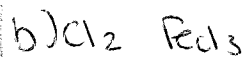
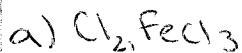
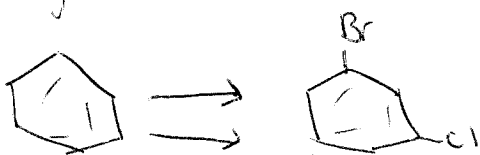
c) C < D > B < A

→ d) D < C < B < A

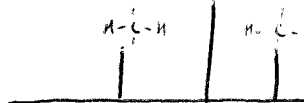
e) B < D < A < C

20

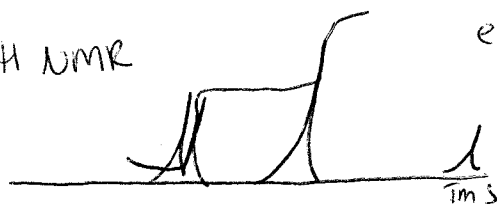
Synthesis:



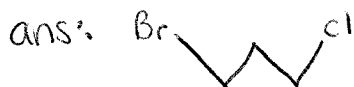
21. $^{13}\text{C NMR}$ $n\text{-C}_4\text{H}_9$ $\text{C}_3\text{H}_6\text{ClBr}$ given MS



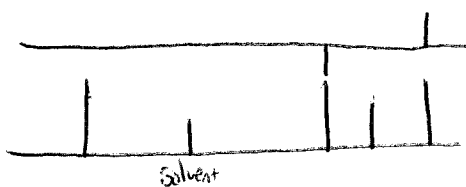
$^1\text{H NMR}$



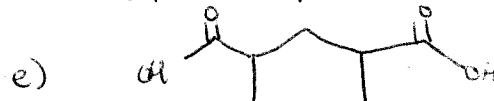
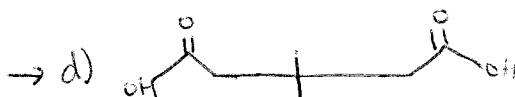
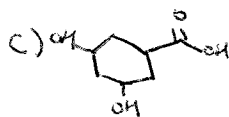
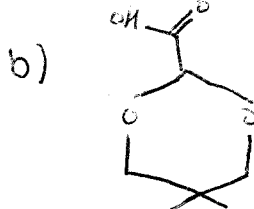
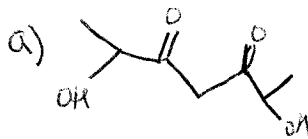
expansion



22. $^{13}\text{C NMR}$ MS - $\text{C}_7\text{H}_{12}\text{O}_4$

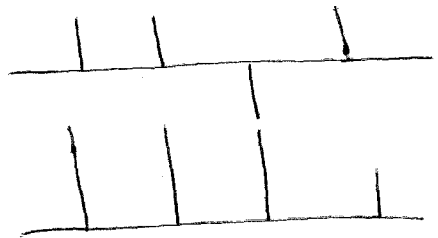


$^1\text{H NMR}$



23. $C_8H_{10}O_2$

^{13}C NMR



1H NMR

