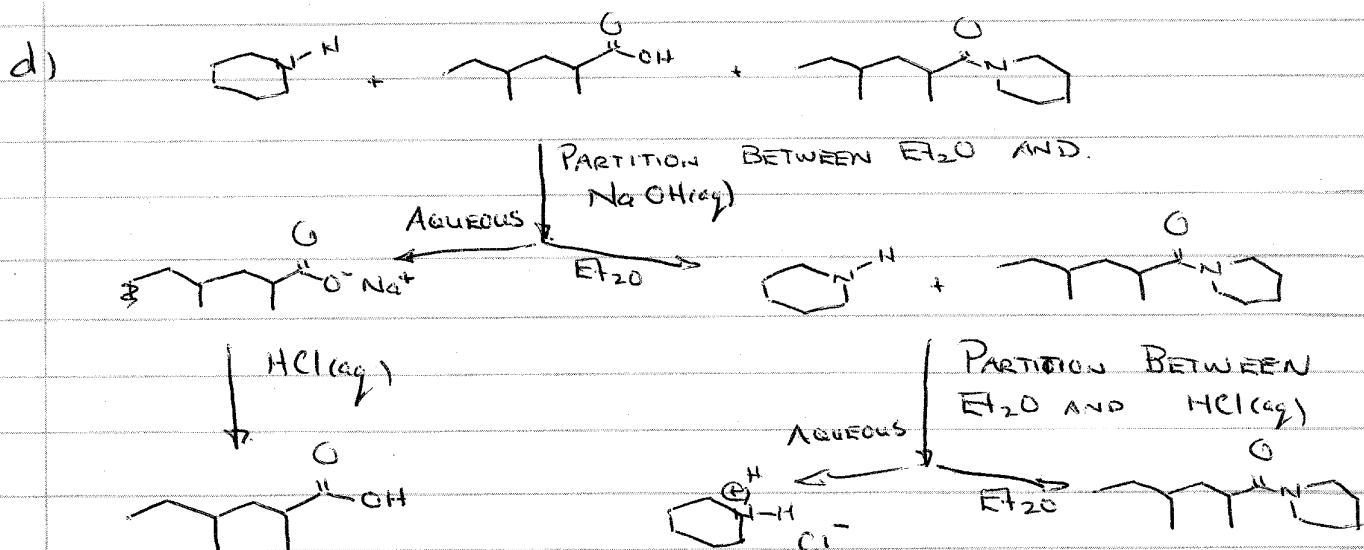
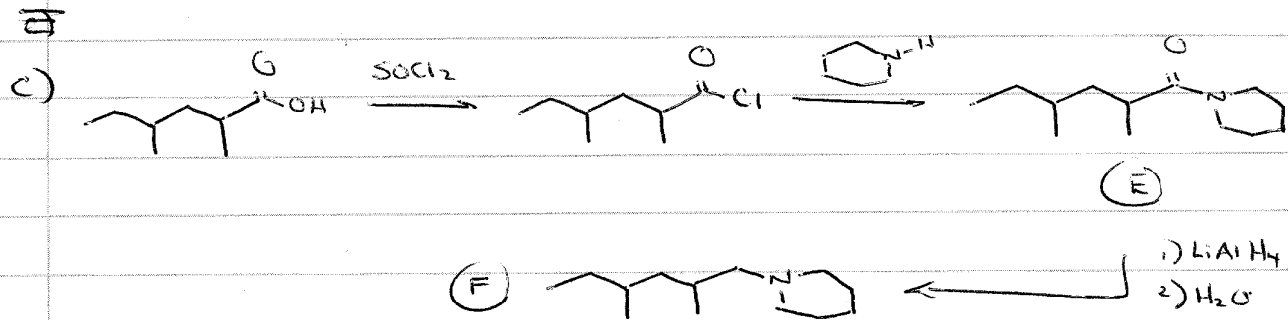
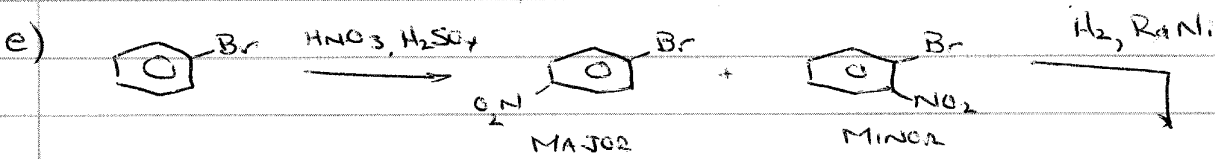
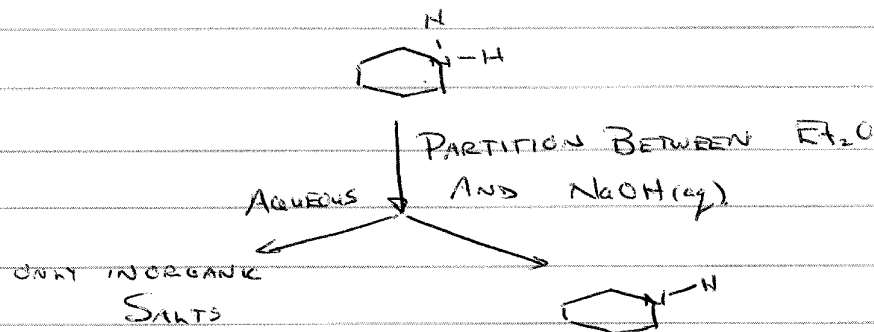


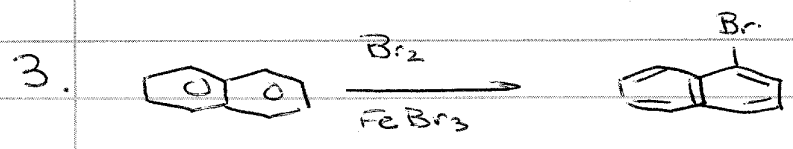
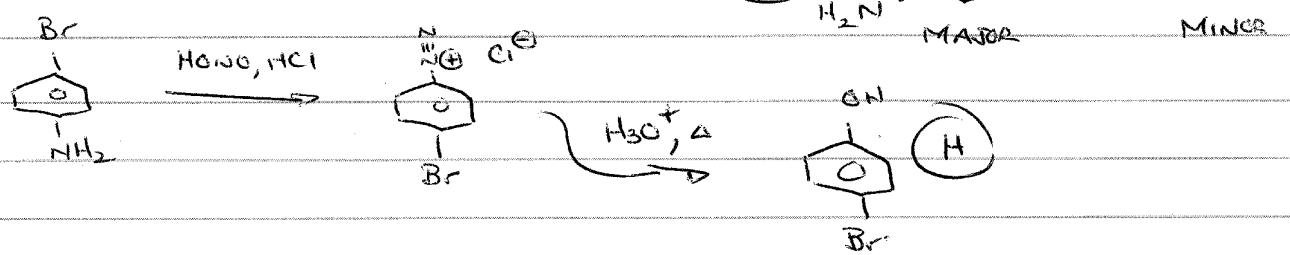
E. MECHANISM, ZAITSEV RULE



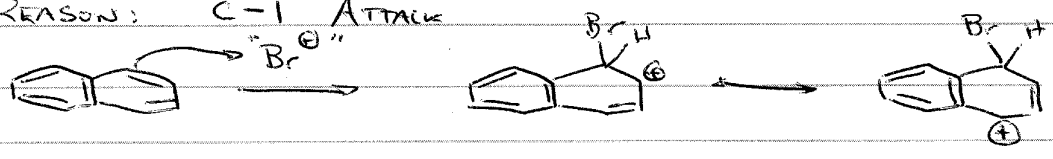
Cont'd



WILL TAKE MAJOR PRODUCT ON:

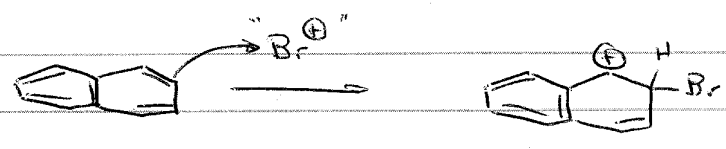


REASON: C-1 ATTACK

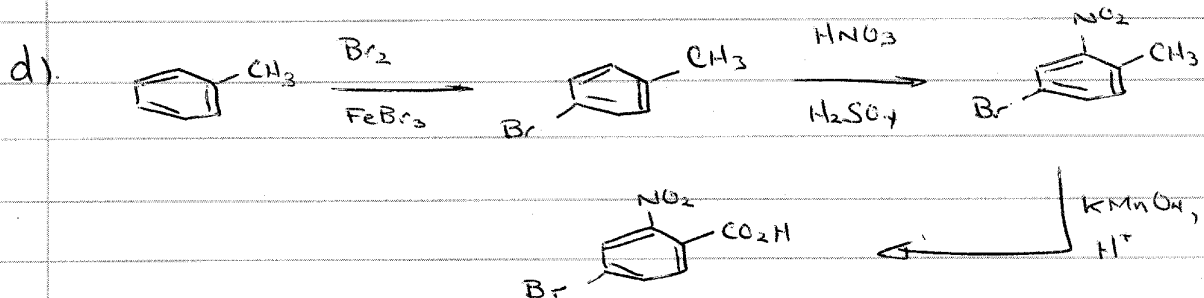
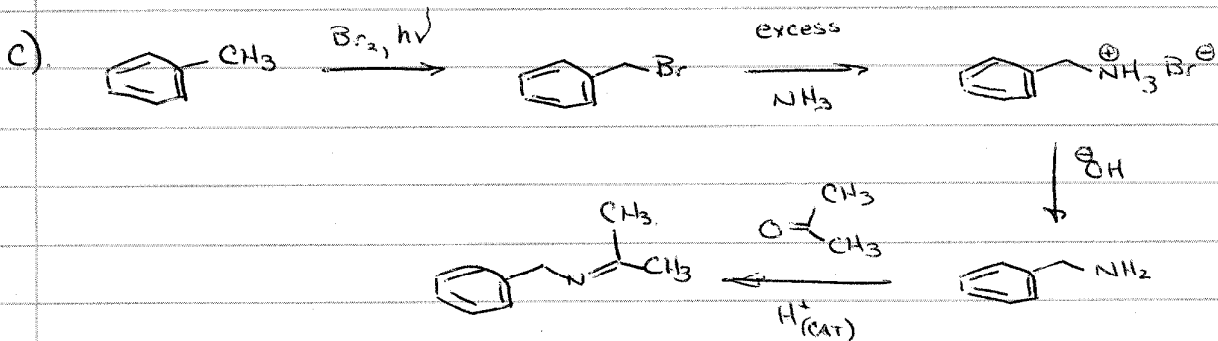
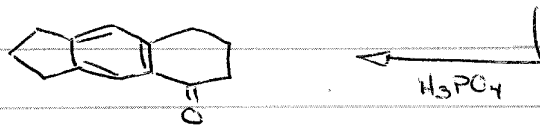
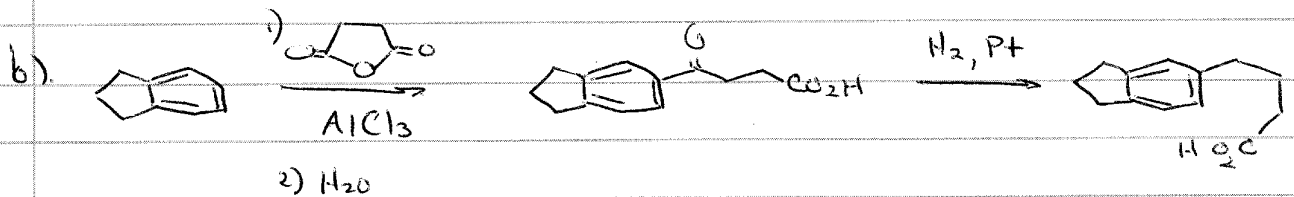
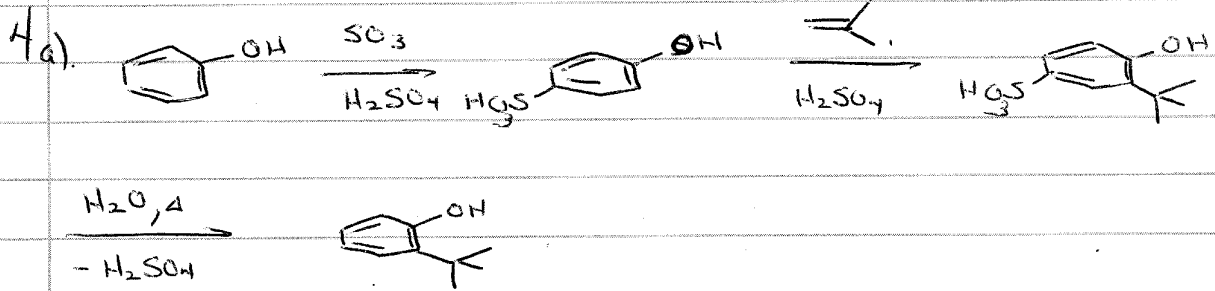


TWO RESONANCE FORMS AVAILABLE BEFORE 2<sup>ND</sup> RING'S AROMATICITY IS DISRUPTED

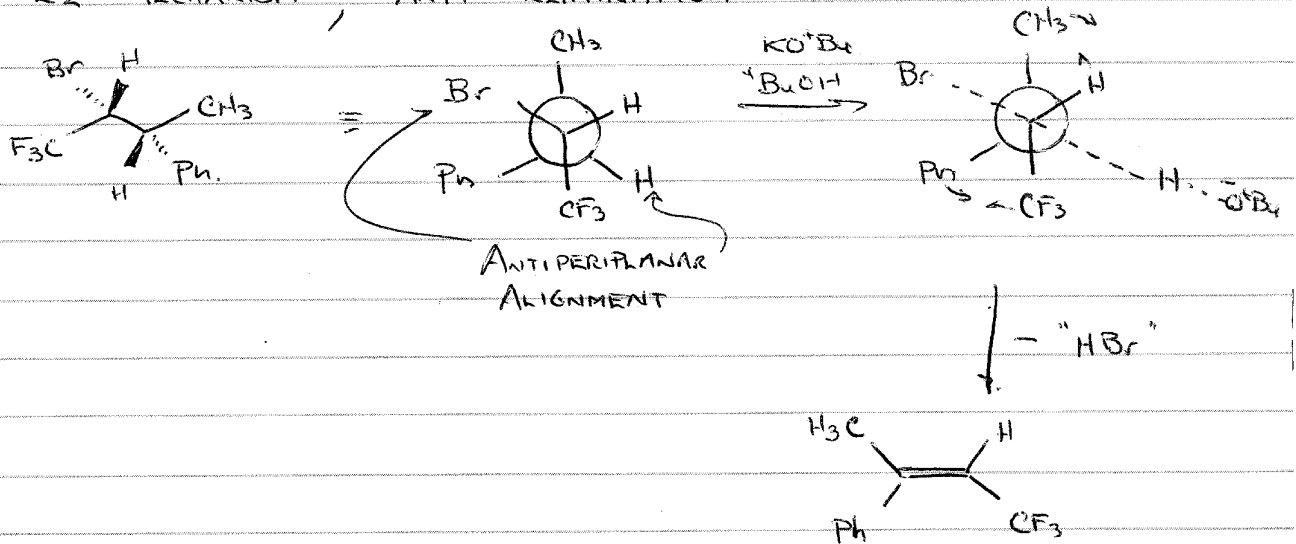
WHILE C-2 ATTACK



NO ADDITIONAL RESONANCE FORMS AVAILABLE BEFORE YOU DISRUPT 2<sup>ND</sup> RING'S AROMATICITY

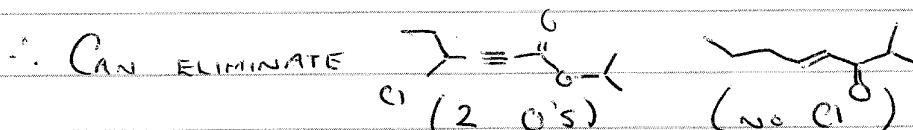


5

E<sub>2</sub> MECHANISM ; ANTI ELIMINATION

|     |    |       |          |         |         |      |
|-----|----|-------|----------|---------|---------|------|
| 6a) | C  | 62.61 | ÷ 12.011 | = 5.213 | ÷ 0.579 | = 9  |
|     | H  | 7.59  | ÷ 1.008  | = 7.530 | ÷ 0.579 | = 13 |
|     | Cl | 20.53 | ÷ 35.453 | = 0.579 | ÷ 0.579 | = 1  |
|     | O  | 9.27  | ÷ 15.999 | = 0.579 | ÷ 0.579 | = 1  |

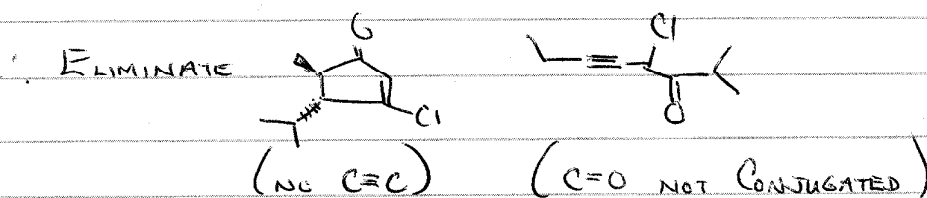
C9H13ClO OR MULTIPLE OF THIS



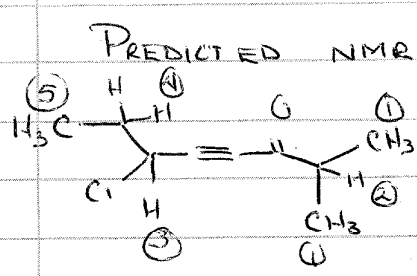
FROM IR DISTINCTIVE FEATURE

$\nu_{\text{MAX}} 2214 \text{ cm}^{-1}$  IS C#C

$\nu_{\text{MAX}} 1680 \text{ cm}^{-1}$  CONJUGATED C=O OF KETONE



ONLY ONE THAT FITS IS CC(Cl)C#CC(=O)C AND THIS IS IT!



- ① A=6,  $\delta_{\text{CALC}} =$   $\delta_{\text{OBS}} = 1.2 \text{ ppm}$   
SHOULD BE d (DOUBLET) OK
- ② A=1,  $\delta_{\text{CALC}} = 2.6 \text{ ppm}$   $\delta_{\text{OBS}} = 2.65 \text{ ppm}$   
SHOULD BE "SEPTET" LOOKS OK
- ③ A=1,  $\delta_{\text{CALC}} = 4.1 + (2.8 - 1.6) = 5.3 \text{ ppm}$   
SHOULD BE t (TRIPLET)  $\delta_{\text{OBS}} = 4.6 \text{ ppm}$   
REASONABLE AGREEMENT
- ④ A=2,  $\delta_{\text{CALC}} = 1.5 + (1.8 - 1.2) = 2.1 \text{ ppm}$   $\delta_{\text{OBS}} = 2.0 \text{ ppm}$   
SHOULD BE q (QUARTET) OK
- ⑤ A=3,  $\delta_{\text{CALC}} = 0.8 \text{ ppm}$   $\delta_{\text{OBS}} = 1.1 \text{ ppm}$   
SHOULD BE t (TRIPLET) OK

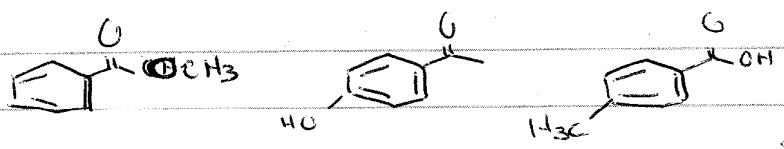
REASONABLY GOOD AGREEMENT

b) C  $69.55 \div 12.011 = 5.791 \div 1.448 = 4$   
 H  $7.30 \div 1.008 = 7.242 \div 1.448 = 5$   
 O  $23.16 \div 15.999 = 1.448 \div 1.448 = 1$



NOW LOOK AT IR

CAN ELIMINATE

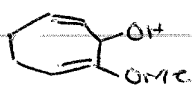


THESE HAVE C=O'S  
IR SHOWS THEM TO BE

TOTALLY ABSENT,

IR'S MAIN CHARACTERISTICS:  $\checkmark_{\text{MAX}} 3350 \text{ cm}^{-1}$  (OH ALCOHOL / PHENOL)  
 $\checkmark_{\text{MAX}} 1600 \text{ \& } 1500 \text{ cm}^{-1}$  (C=C)

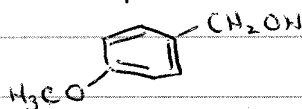
POSSIBILITIES



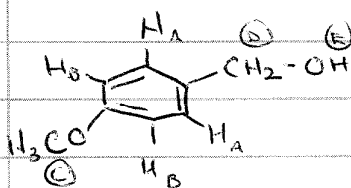
LET'S LOOK AT <sup>1</sup>H NMR

PEAKS AT CA.  $\int$  7 ppm ... AROMATIC COMPOUND!

$\therefore$  MUST BE



LET'S LOOK AT <sup>1</sup>H NMR.



H<sub>A</sub> SCALE 6.8-8.5 ppm  $\int_{OBS} = 7.2$  ppm

A=2, SHOULD BE DOUBLET

LOOKS OK

H<sub>B</sub> SCALE 6.8-8.5 ppm  $\int_{OBS} = 6.8$  ppm

A=2, SHOULD BE DOUBLET OK

H<sub>C</sub> SCALE 3.9 ppm  $\int_{OBS} = 3.85$  ppm

A=3, SHOULD BE SINGLET OK

H<sub>D</sub> SCALE = 2.6 + (3.4-1.2) = 4.8 ppm

$\int_{FOUND} = 4.6$  ppm

A=2, SHOULD BE SINGLET OK

H<sub>E</sub> SCALE = ANYWHERE FROM 0.5 - 5.5 ppm

A=1  $\int_{OBS} = 1.95$  ppm

SHOULD BE SINGLET OK