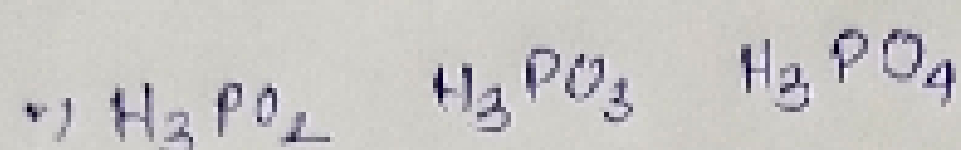
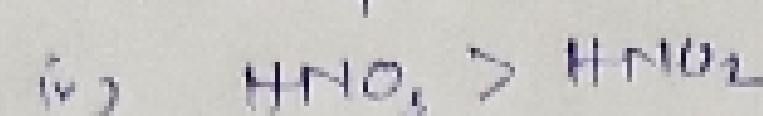


: Acidic Strength :

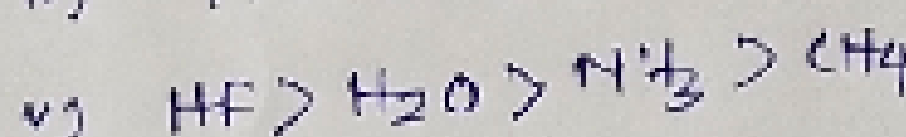
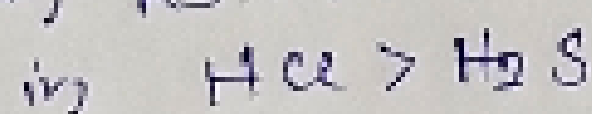
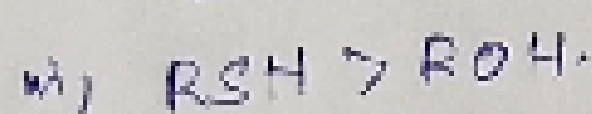
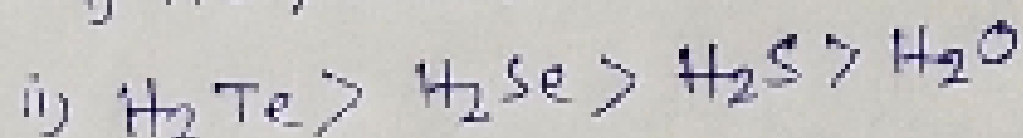
(4)

Oxyacid:



[more is the +ve oxidation state of central atom stronger is the acid].

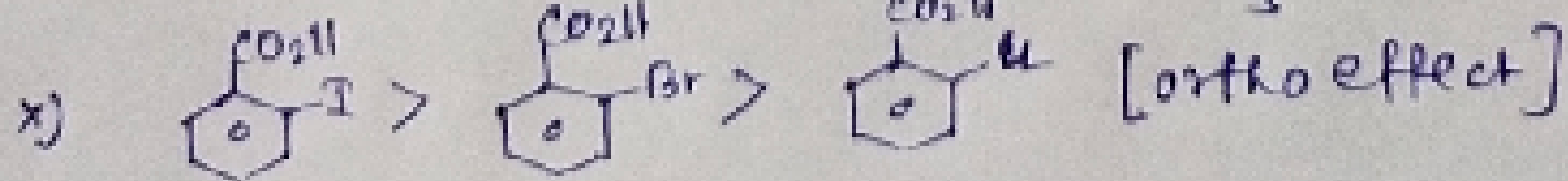
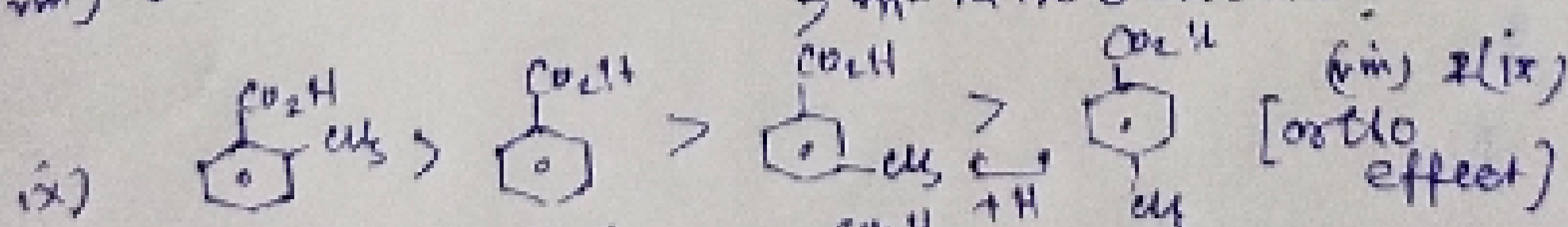
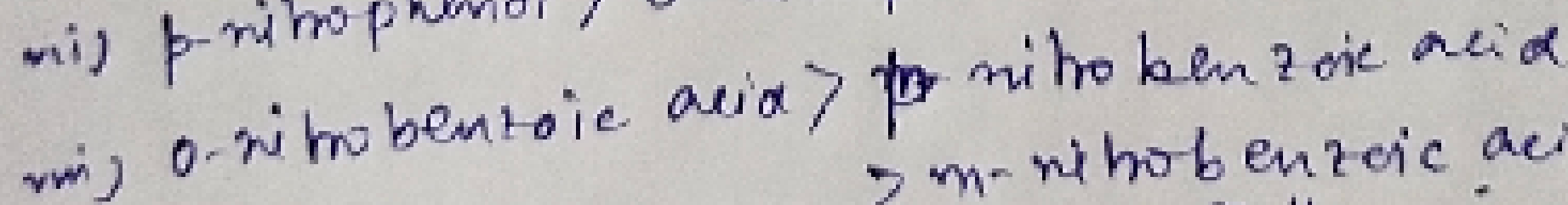
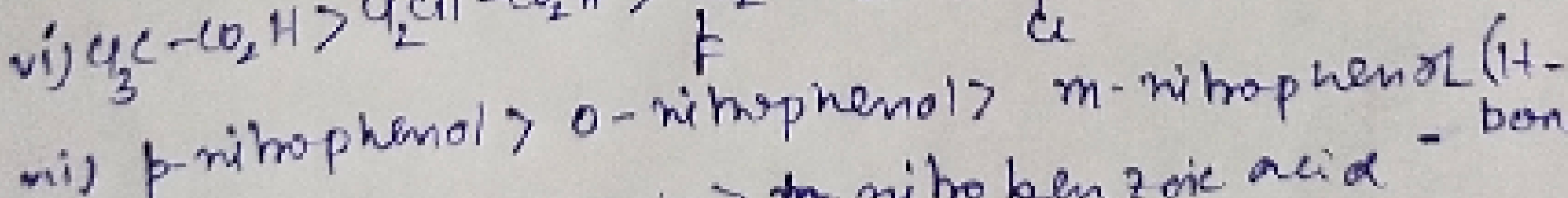
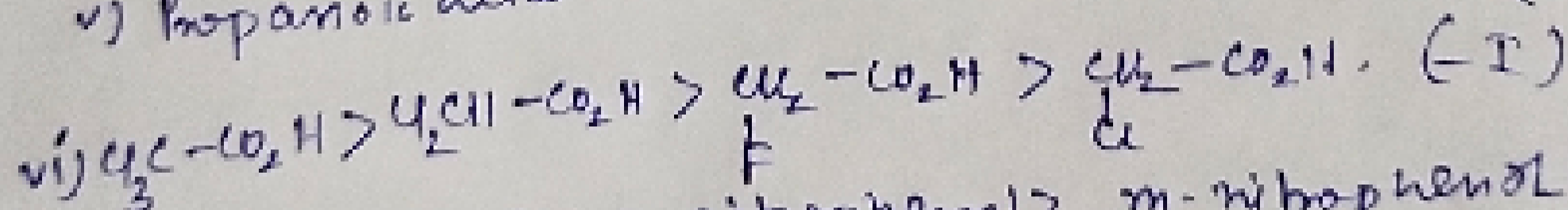
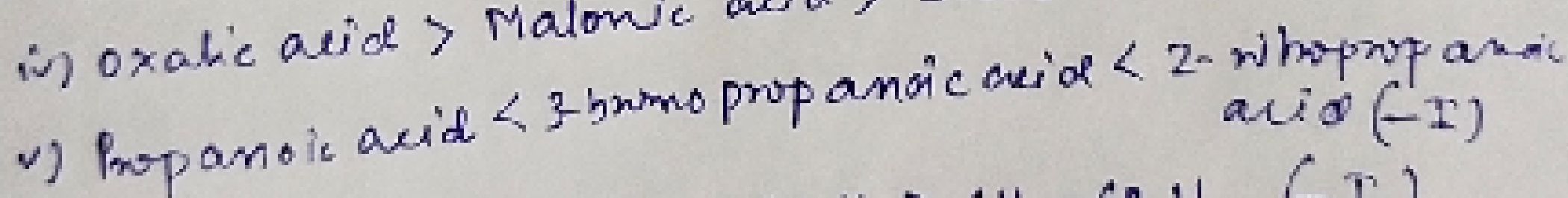
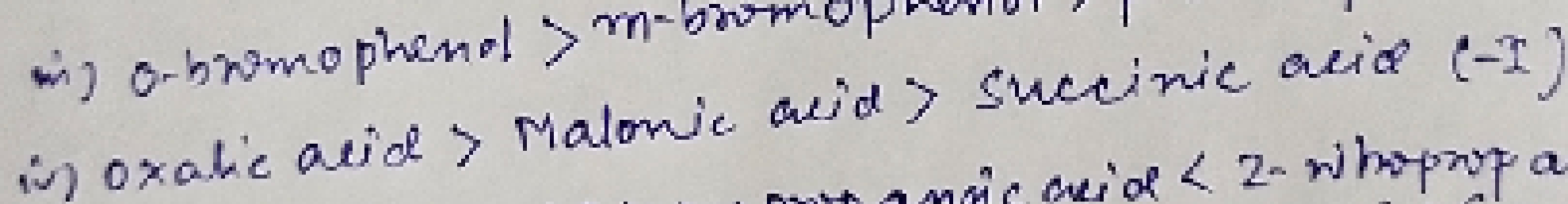
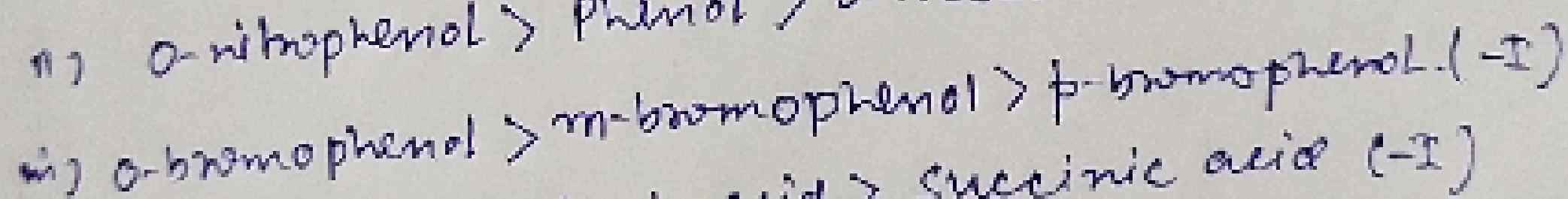
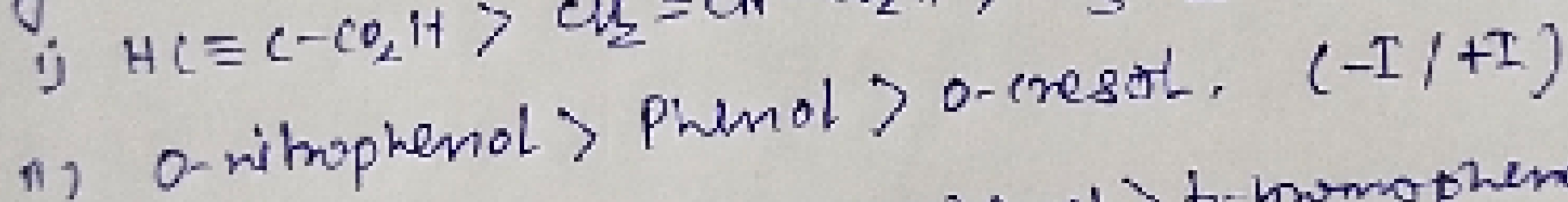
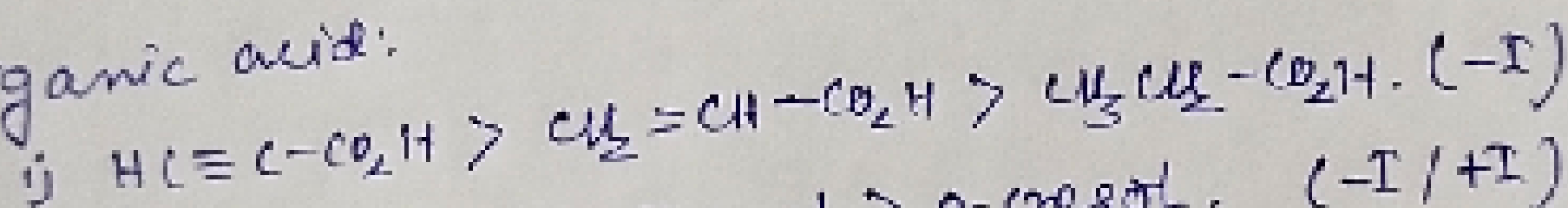
Hydra acid:



[i), ii), (iii) size factor dominating]

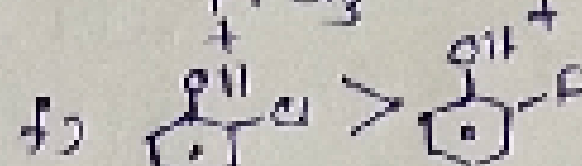
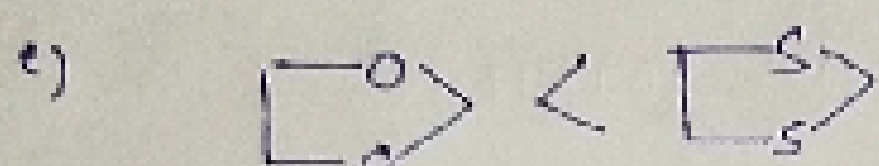
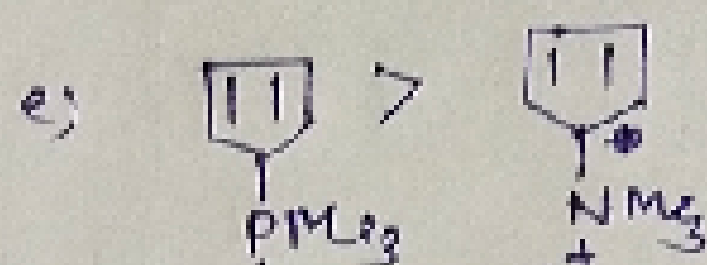
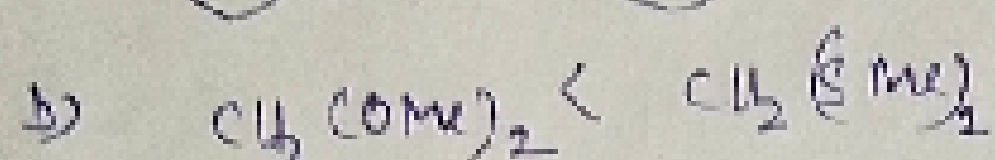
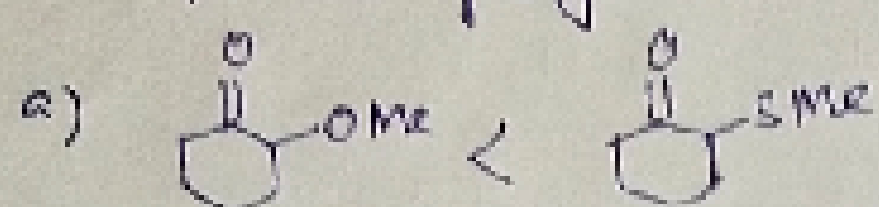
[iv & v) en dominating]

Organic acid:

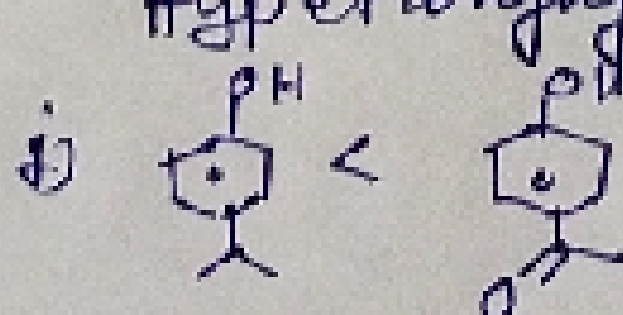
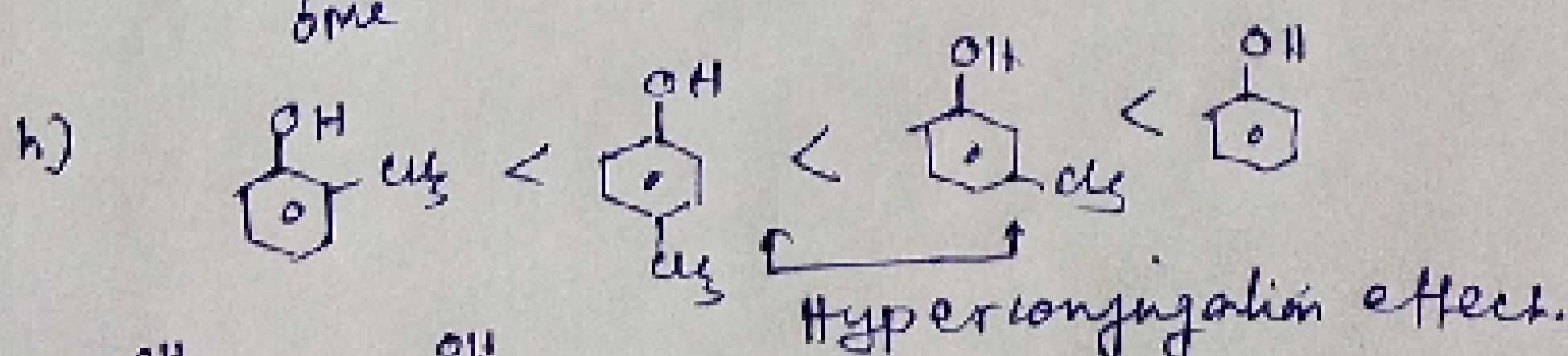
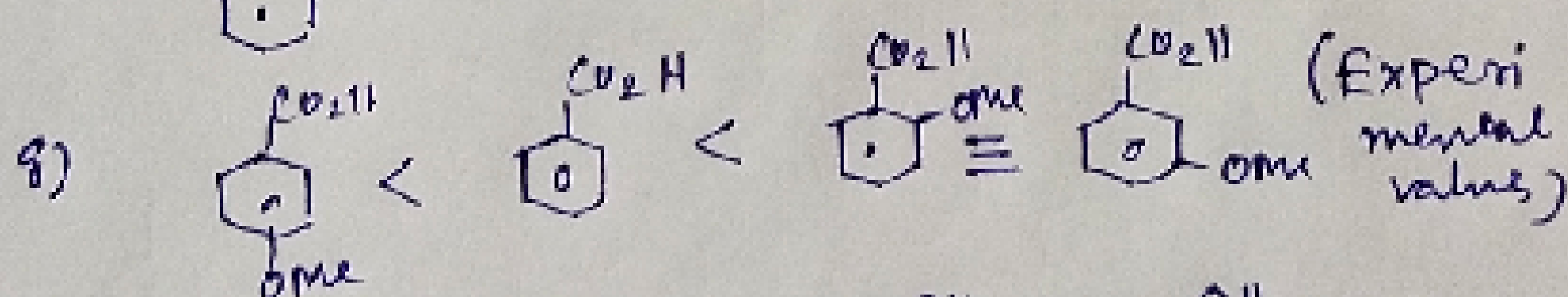
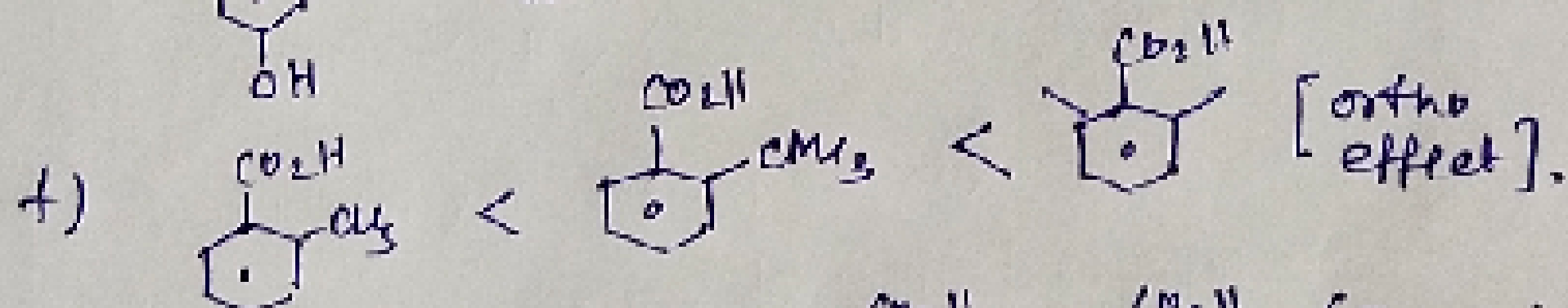
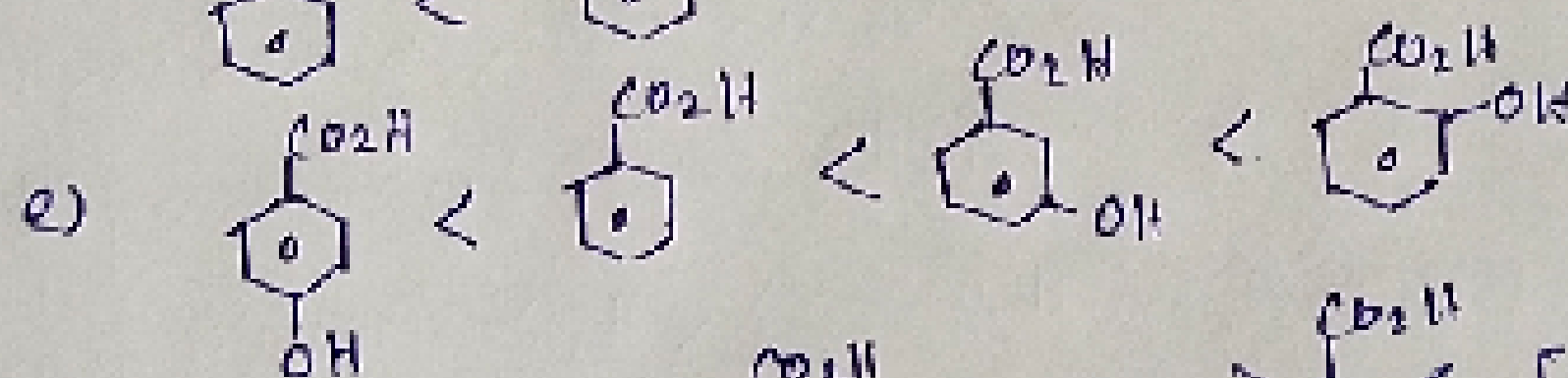
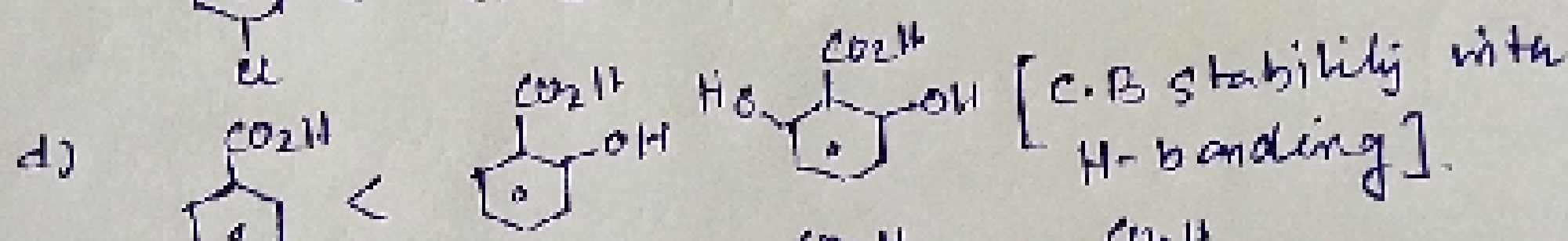
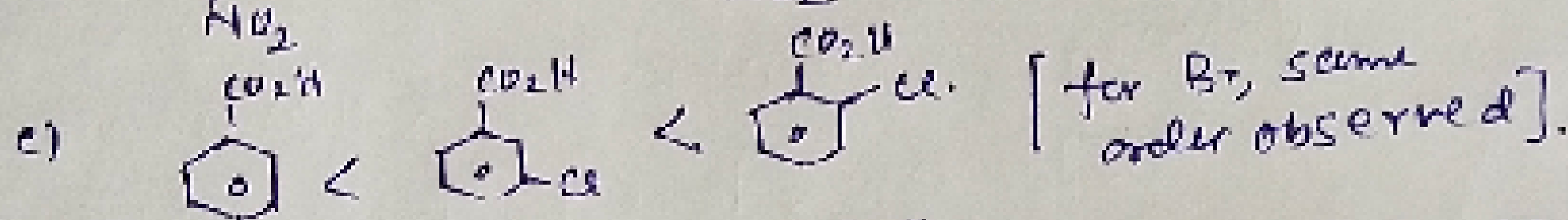
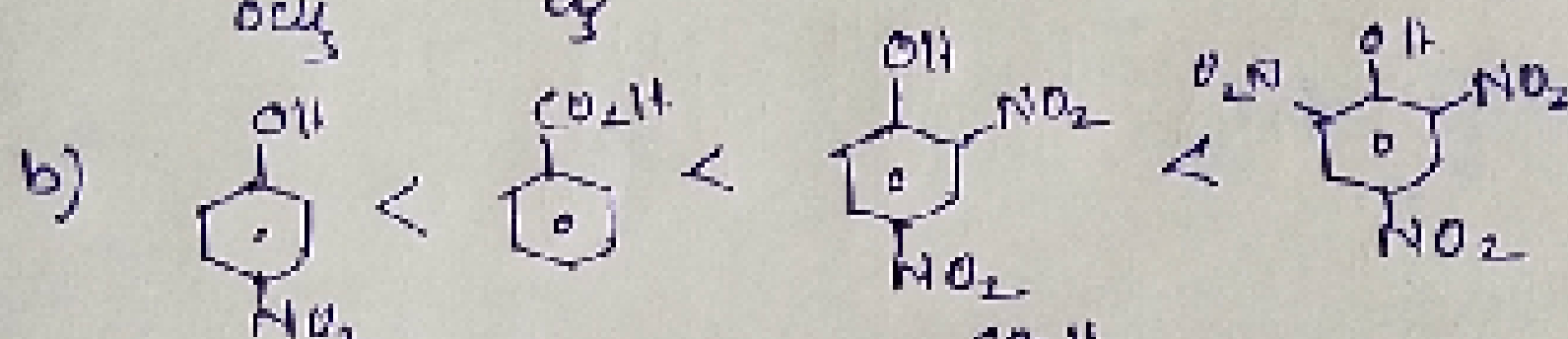
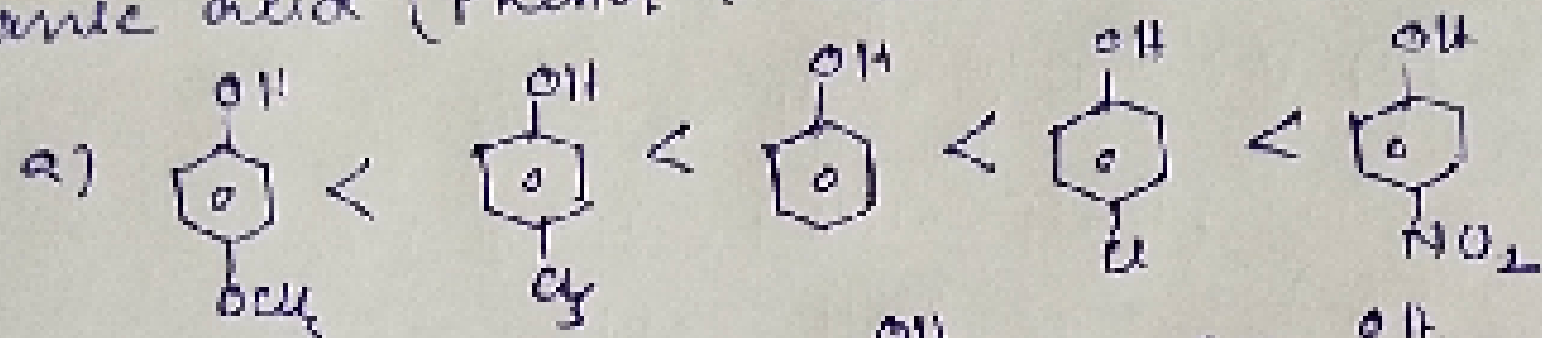


Acidic strength due to d-orbital resonance for conjugate base.

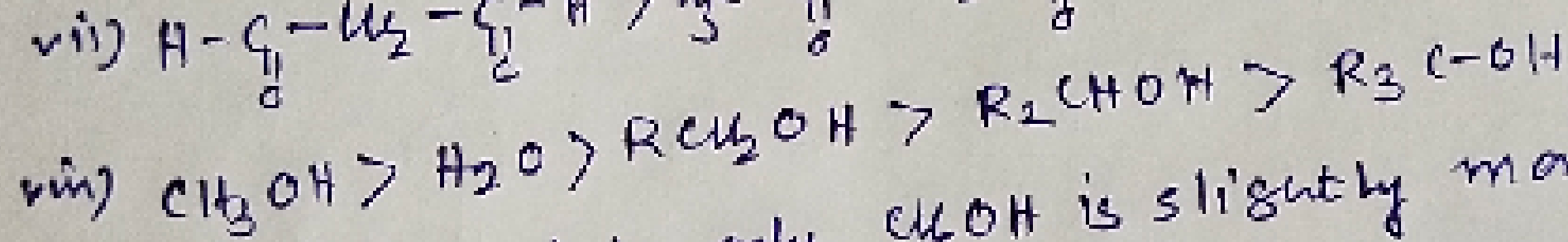
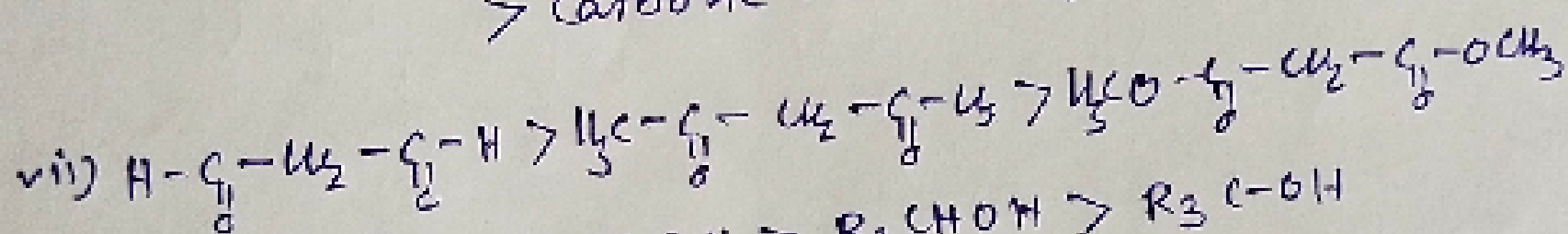
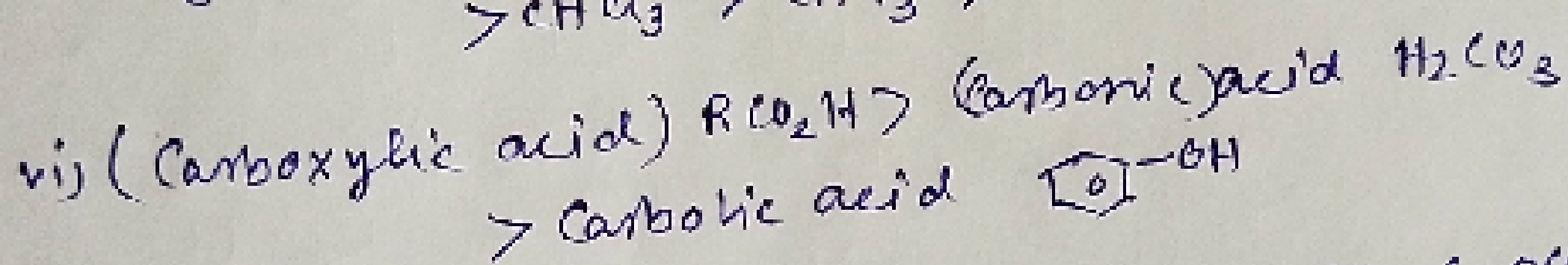
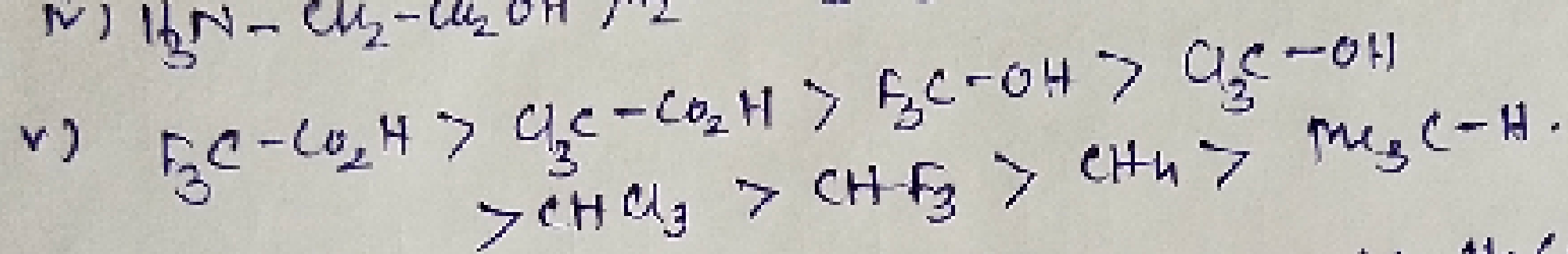
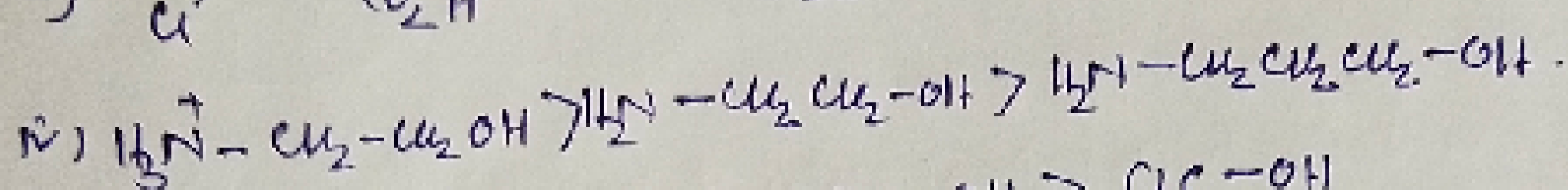
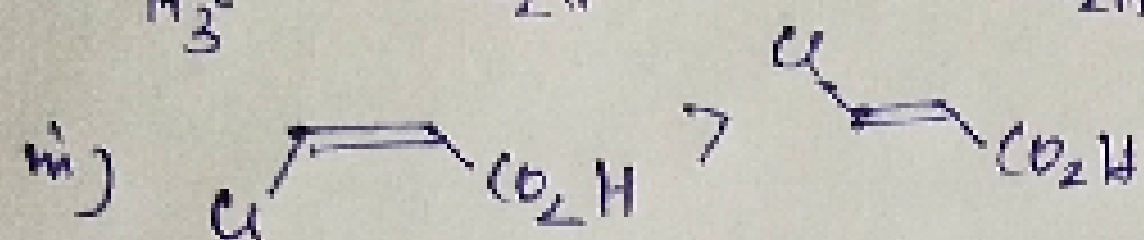
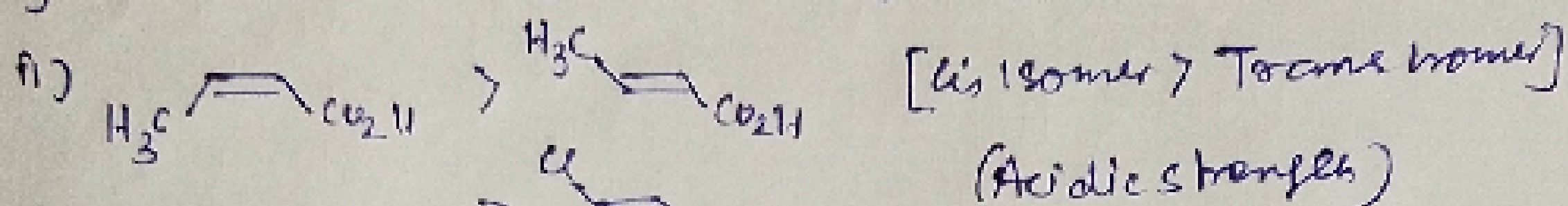
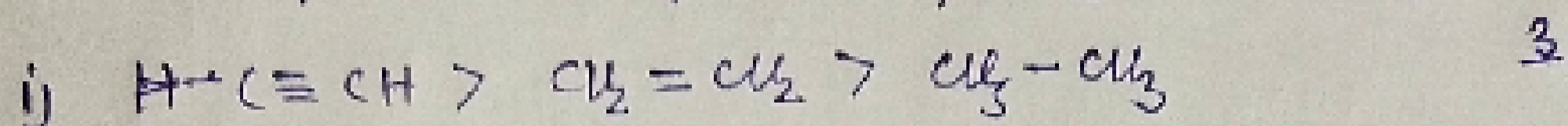
2



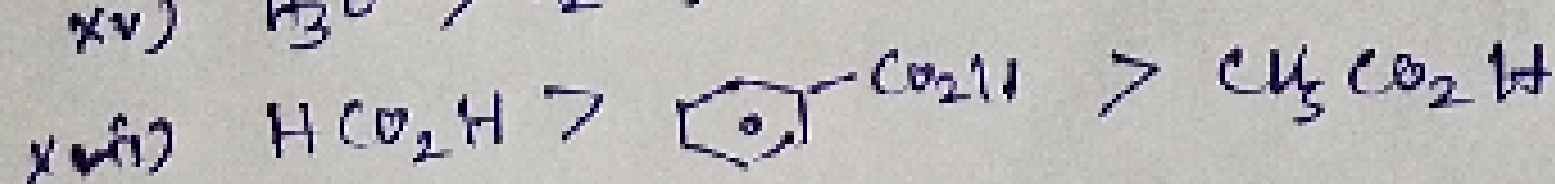
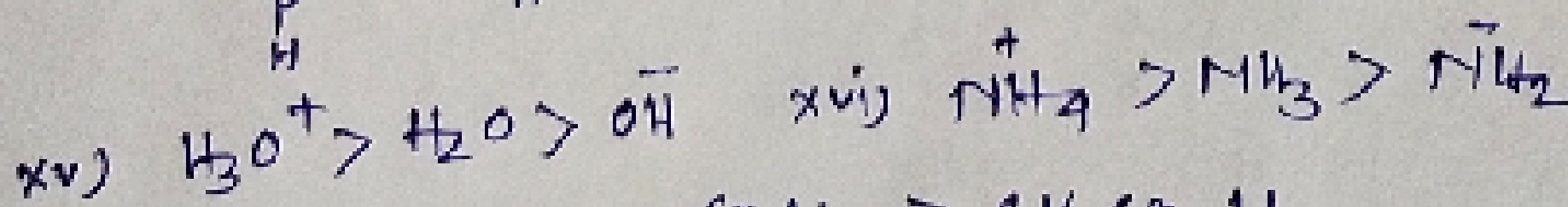
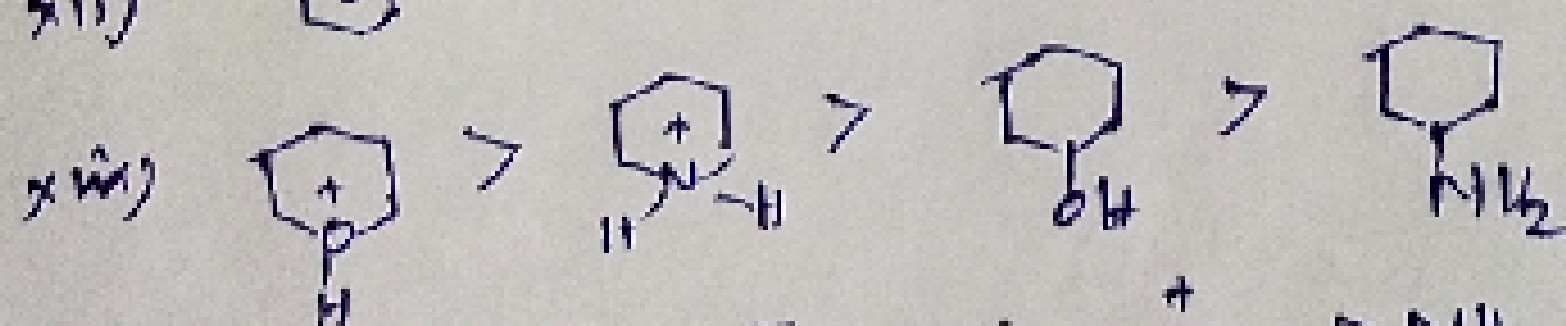
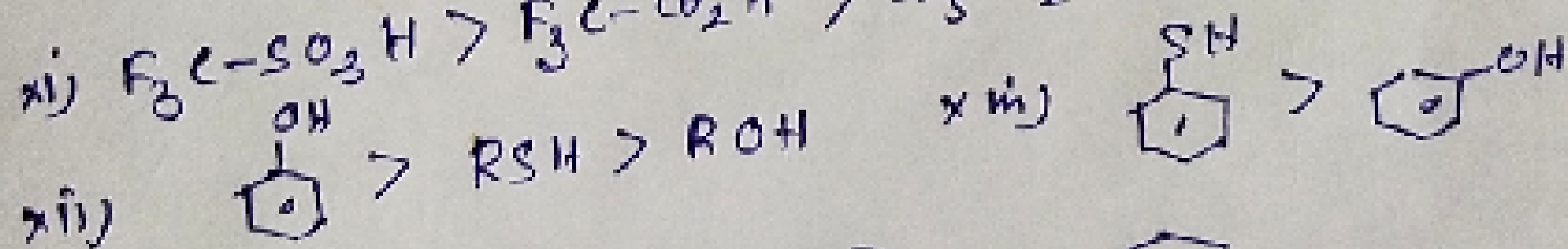
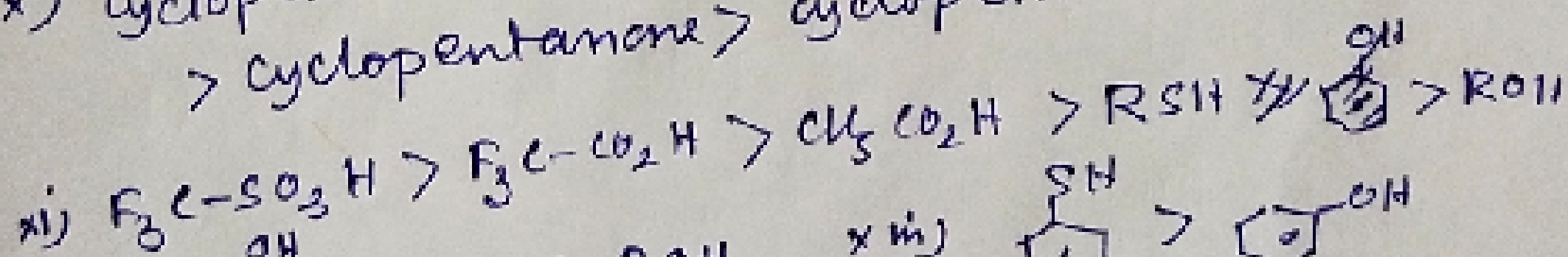
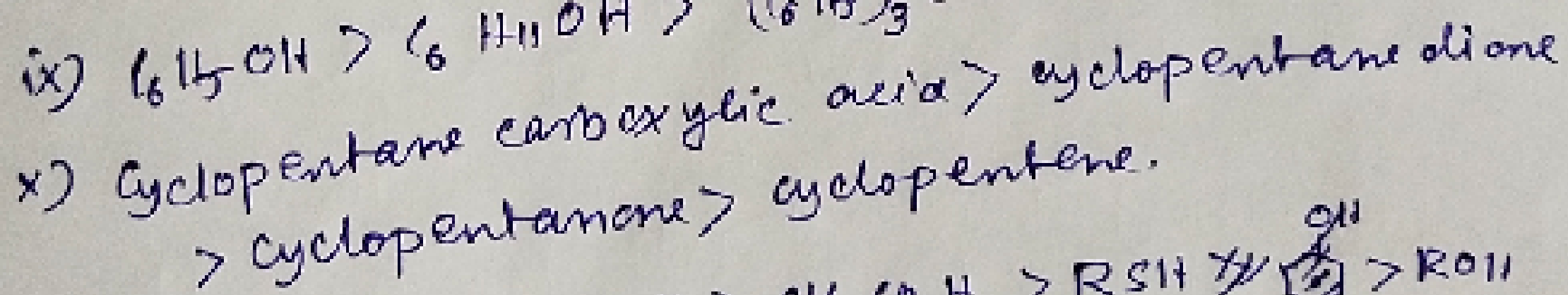
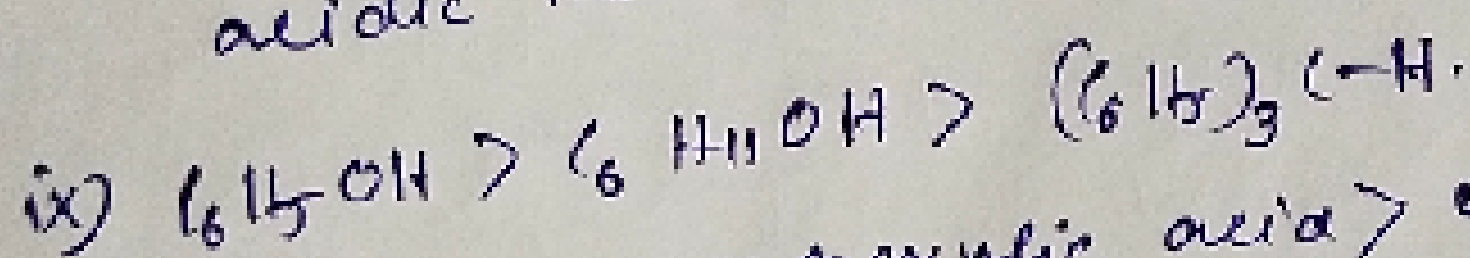
Organic acid (Phenol & benzoic acid derivatives)



Some aliphatic compound / alicyclic compound.



Among all alcohols only CH_3OH is slightly more acidic than H_2O .



: Overall acidic strength: [Inorganic & organic compounds]

Acidic strength ↑

$K_a \uparrow$ $pK_a \downarrow$

$HF + SbF_5$ or $(HF + SbF_5 + SO_3)$ > $HClO_4$ > HI > H_2SO_4 > HBr
super acid.

> HCl > RSO_3H > $CH(CN)_3$ > HNO_3 > HF > HNO_2

> RCO_2H > H_2CO_3 > H_2S > HCN > NH_4^+ > C_6H_5OH

> RSH > CH_3OH > H_2O > H_2 > RC_2H_5OH > R_2CHOH

> R_3C-OH > $HC \equiv CH$ > Ph_3CH > Ph_2CH_2

> $H_2 \rightleftharpoons NH_2$ > $PhCl_3$ > PhH > $CH_2 = CH_2$

> CH_4 > CH_3-Cl > $(CH_3)_3Cl$.

: Points to be noted:

⇒ Super acid is strongest acid reported.

⇒ $Mg-H$ is weakest acid reported.

⇒ F_3C-SO_3H (Triflic acid) is strongest organic acid reported.

⇒ weak base/acid \rightleftharpoons stable strong base/acid \rightleftharpoons unstable

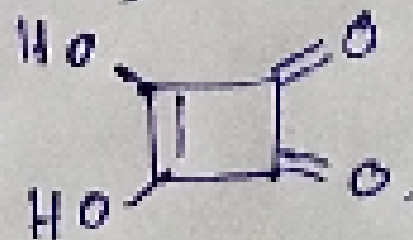
$S.A + S.B \rightleftharpoons W.A + W.B$ equilibrium is shifted to forward direction

⇒ 1° Alcohol > 2° Alcohol > 3° Alcohol (Acidic strength/ K_a)

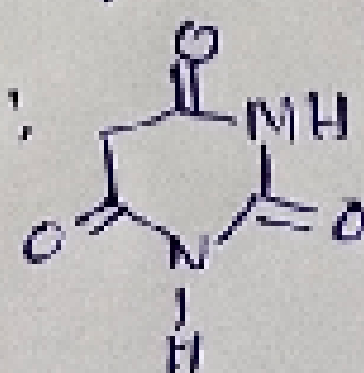
⇒ C.B is aromatic anion; strong acid e.g. HCl

⇒ C.B is antiaromatic anion; weak acid Δ

⇒ Squaric acid: strong acid



⇒ Barbituric acid:



strong acid.

: Miscellaneous Examples: (Acidic strength)

5

