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Arrye following in ↓ order of Acidic strgth

(26) HF HCl HBr HI

C-Base: $F^{\ominus}$ $Cl^{\ominus}$ $Br^{\ominus}$ $I^{\ominus}$ most stable

(4 > 3 > 2 > 1)

(27) ROH RSH

$R\text{-}O^{-}$ $R\text{-}S^{\ominus}$ most stable (2 > 1) (Size)

(28) CH_4 NH_3 HF H_2O

$^{-}CH_3$ $^{-}NH_2$ F^{-} ^{-}OH (En)

3 > 4 > 2 > 1

* Acidic strgth ∝ Stability of C.Base

∝ EWG

(*) P.T L → R (En)

(*) P.T T to B (Size)

(*) in Case of Strain (Strain)

(#) ——— diff. hybridisation (%S)

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(29) H_3C-CH_3 $H_2C=CH_2$ $HC\equiv CH$

$H_3C-\overset{\ominus}{C}H_2$ $H_2C=\overset{\ominus}{C}H$ $HC\equiv C^{\ominus}$ (most stable)

$(3>2>1)$ (due to % S character)

(30) CHF_3 CH_3

$\overset{\ominus}{C}F_3$ $\left[H-\overset{\ominus}{C}(H)-H \leftrightarrow H=C(H)-H\right]$

$(2>1)$ due to $(p\pi-d\pi)$

(31) CH_3-COOH CH_2-COOH $CH-COOH$ $C-COOH$

CH_2: Cl

CH: H, H

C: H, H, H

$4>3>2>1$

(due to higher no. of $-I$ groups)

MIM

(32)

$(3>2>1)$

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(33) $H_3C-C\equiv CH$ $\quad HC\equiv CH$ $\quad CH_2=CH_2$

$H_3C\rightarrow C\equiv C^{\ominus}$ (sp) $\quad HC\equiv C^{\ominus}$ (sp) $\quad H_2C=CH^{\ominus}$ (sp^2)

(2 > 1 > 3)

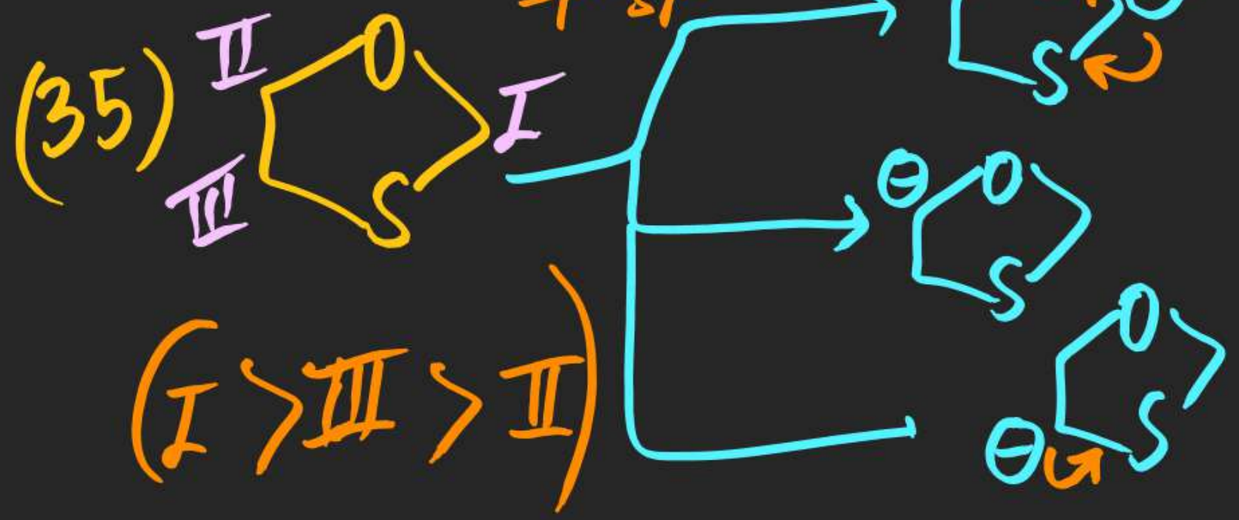
(34)

3 > 2 > 1

$\ominus$ (Aromatic)

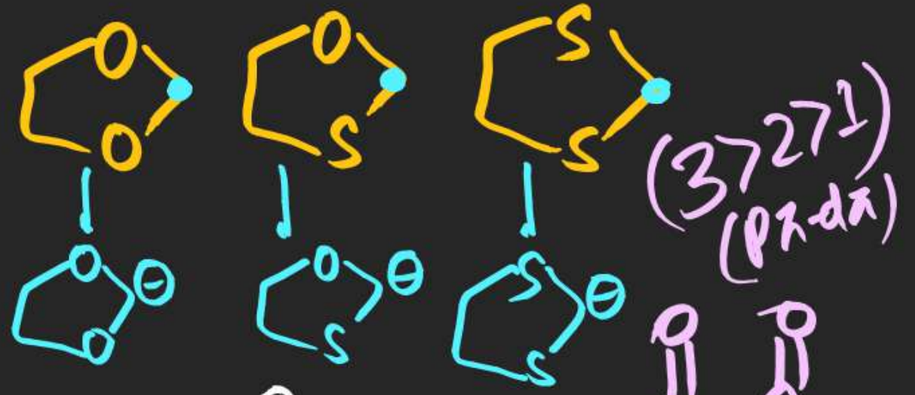
(sp^3 sp^3)

(35)



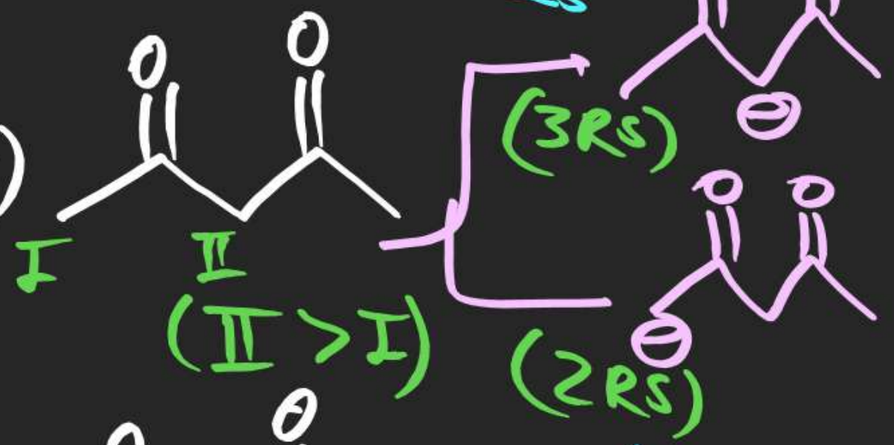
(I > III > II)

(36)



(3 > 2 > 1) (p-π)

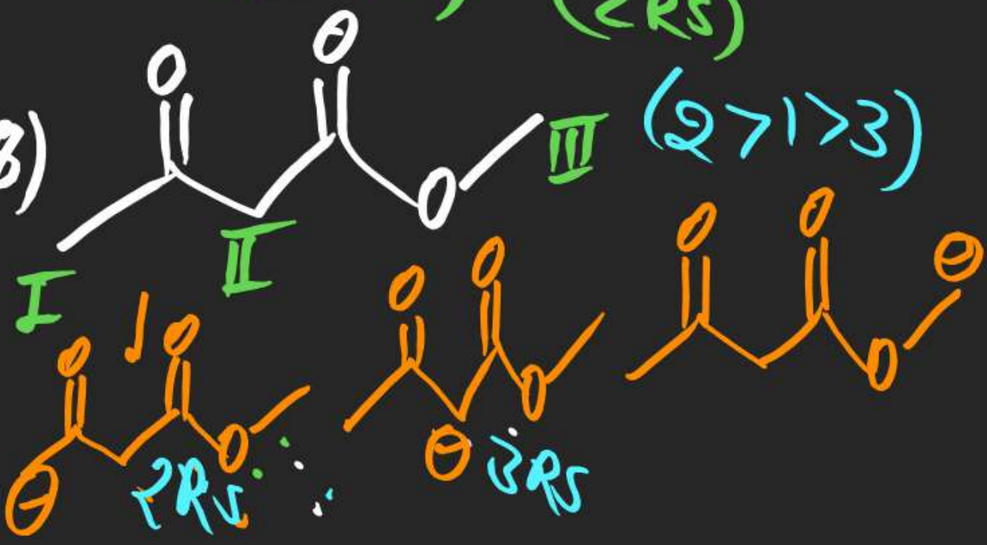
(37)



I $\quad$ II $\quad$ (II > I)

(3RS) $\quad$ (2RS)

(38)



I $\quad$ II $\quad$ III $\quad$ (2 > 1 > 3)

2RS $\quad$ 3RS

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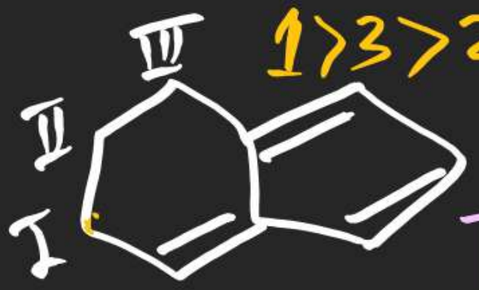
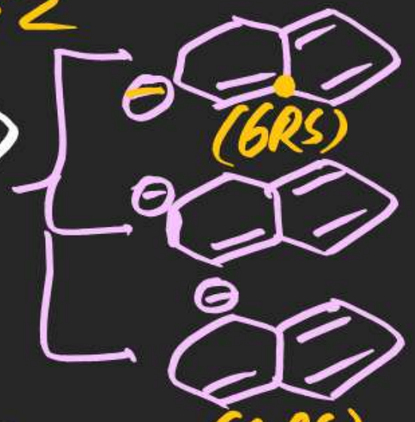
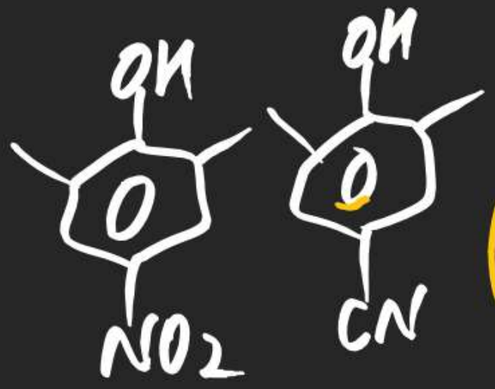
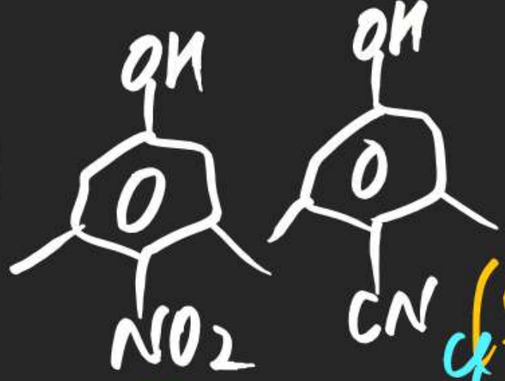
(39) 

1>3>2

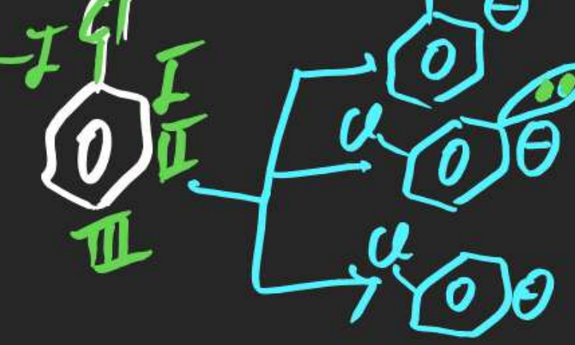


(40) 

(1>2) due to −R of NO_2

(41) 

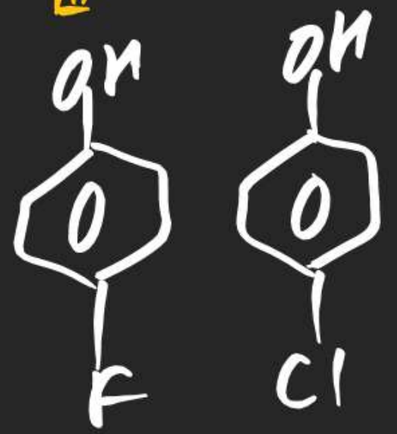
(2>1) due to (SIR) −R of CN

(42) 

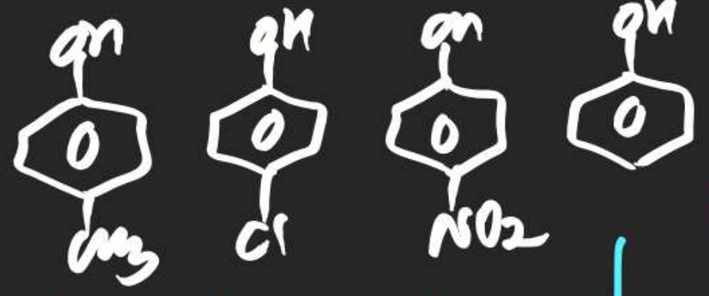
(I>II>III) −I effect of Cl

(43) 

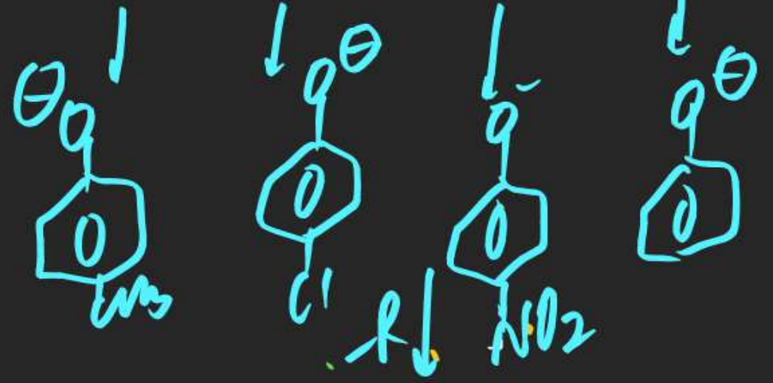
(III>II>I) (due to +I effect of CH_3)

(44) 

(2>1)

(45) 

(3>2>4>1) −R, −I, +H



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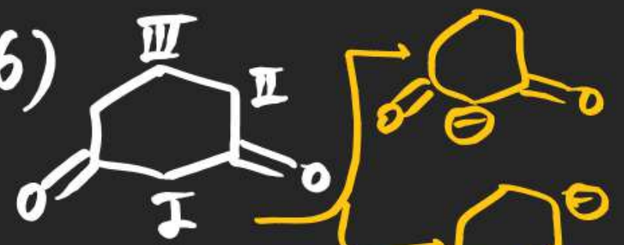
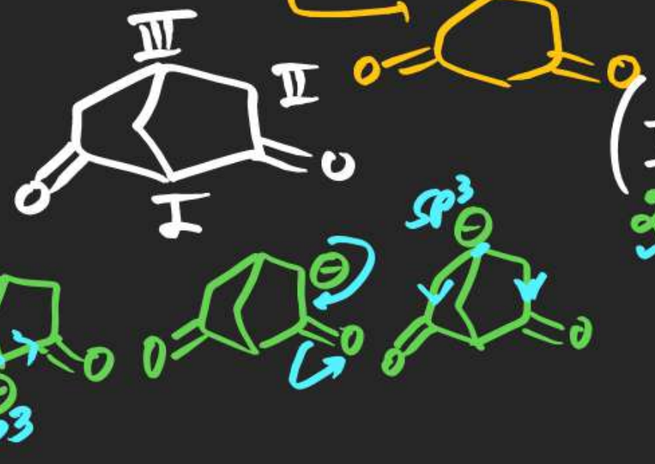
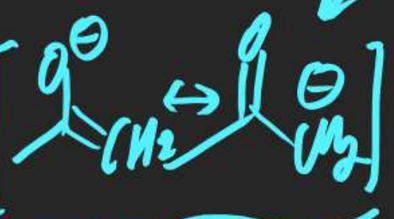
(46) 

(I > II > III)
3RS 2RS 0RS

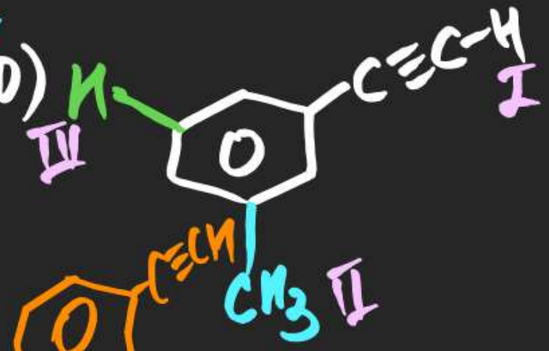
(47) 

(II > I > III)
2RS 0RS 0RS

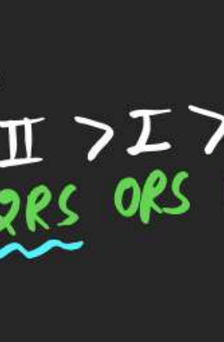
(48) 
(1 > 2)

R-Hybrid

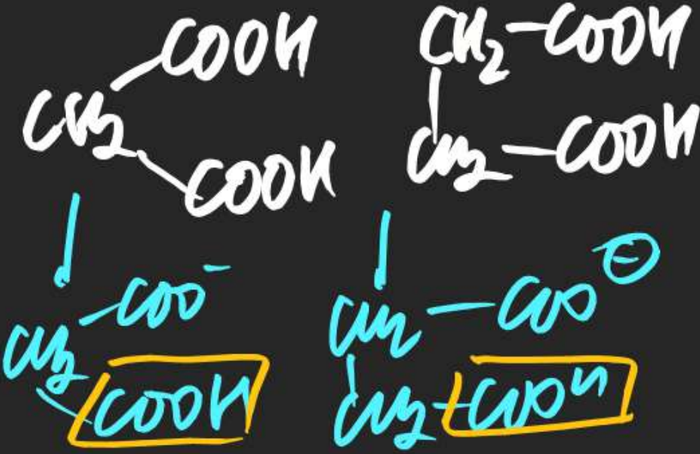
(49) 

R-Hybrid.

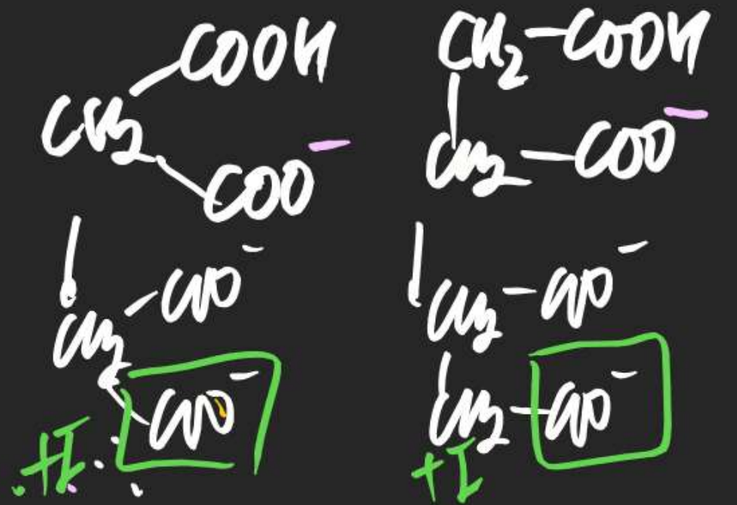
(50) 

I > II > III
sp sp2 sp2
with Resonn

(51) 
(1 > 2 > 3)
-I



(52)
(3 > 2 > 1)
+I



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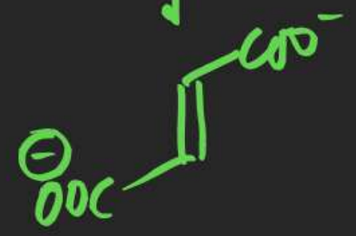
(53)

Maleic Acid

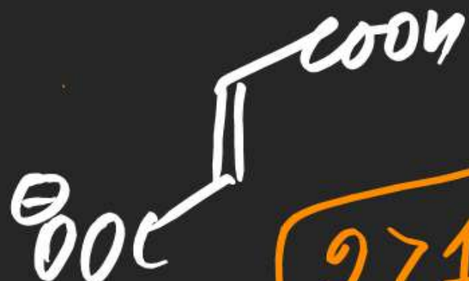
Fumeric Acid.

1 > 2

more stable due to H Bond



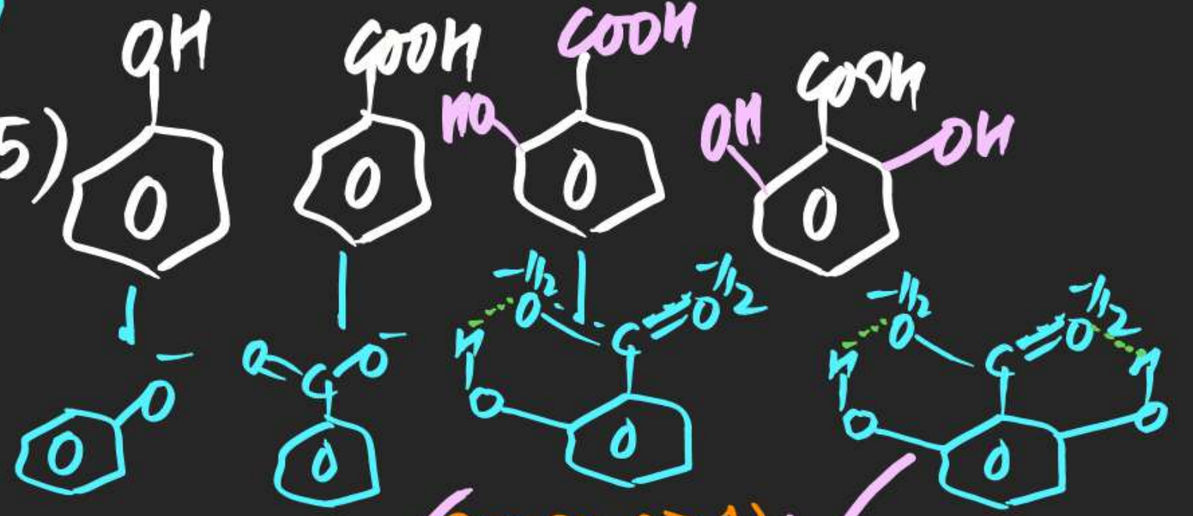
(54)



2 > 1

M.Imp

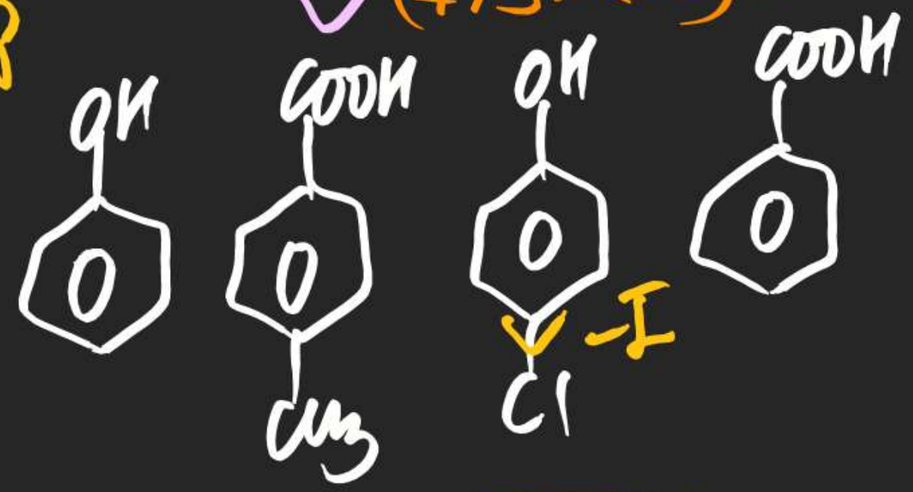
(55)



(4 > 3 > 2 > 1)

M.Imp

(56)



4 > 2 > 3 > 1

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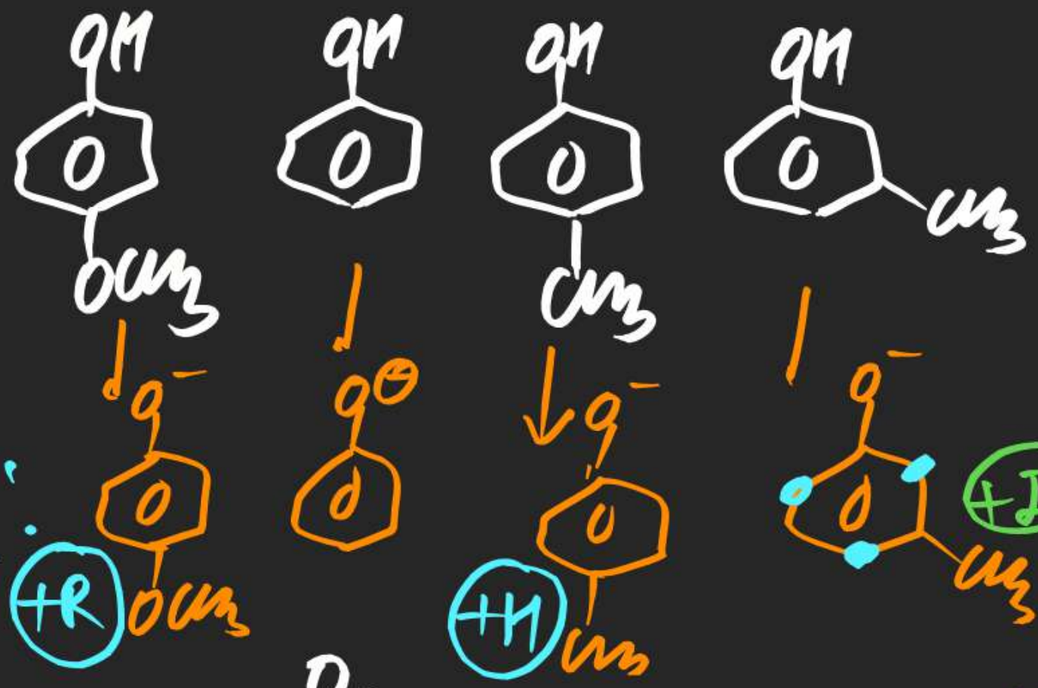
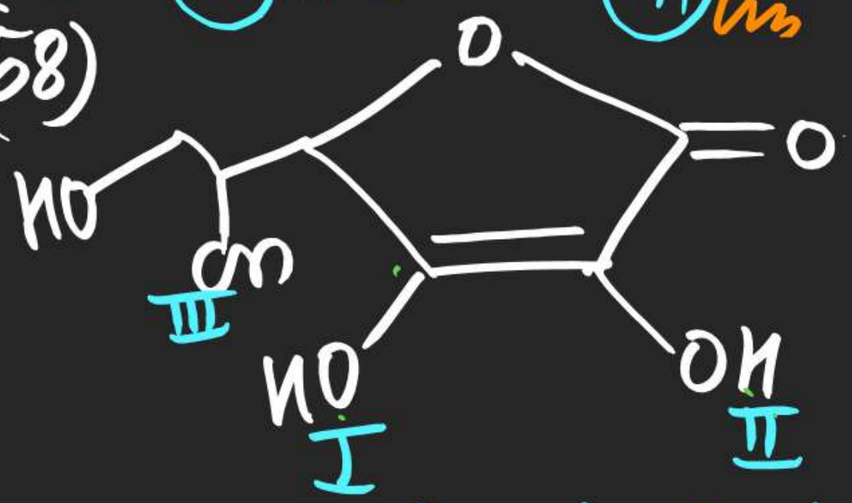
(57)



(2 > 4 > 3 > 1)

M.Imp:

(58)



Ascorbic Acid
(vitmin-C)

I > II > III

(3RS) (2RS) (ORS)

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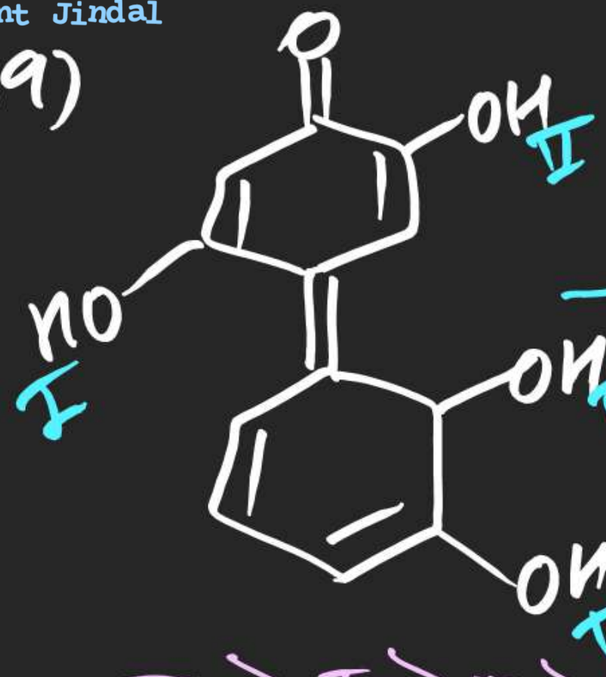
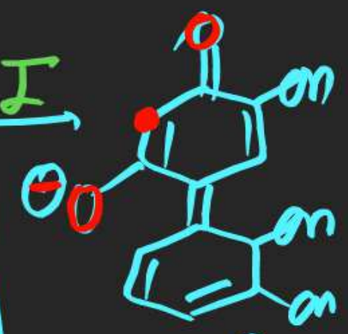
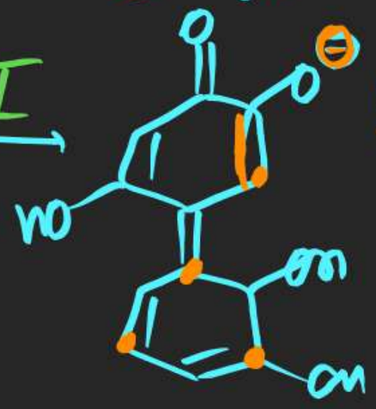
(59)



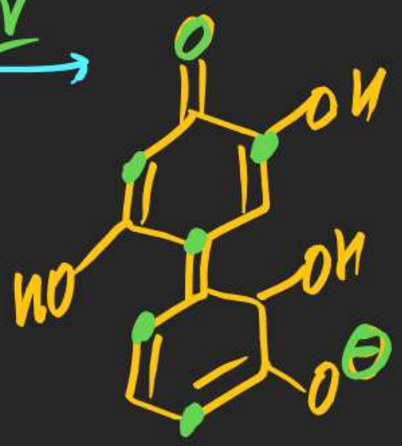
IV > I > II > III



3RS [2 times $O^{\ominus}$]

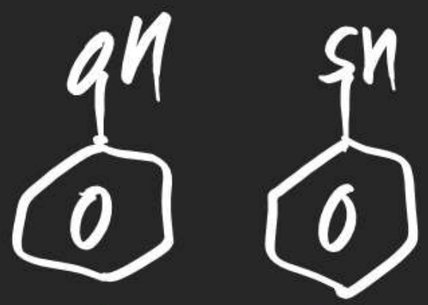


5RS [1 times $O^{\ominus}$]



8RS [3 times $O^{\ominus}$]

(60)



(271) (Size)

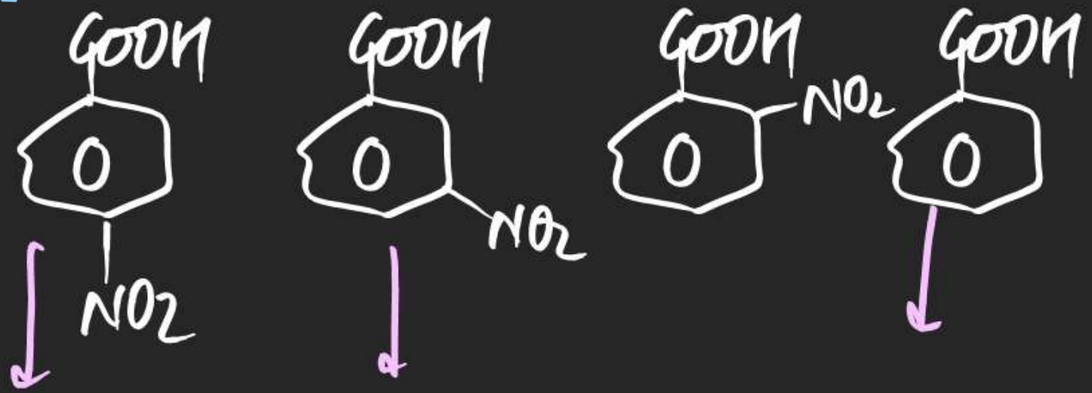
(61)

(1 > 2)

MIMP

(62) $CH_3-OH > H_2O > R-OH$

(65)



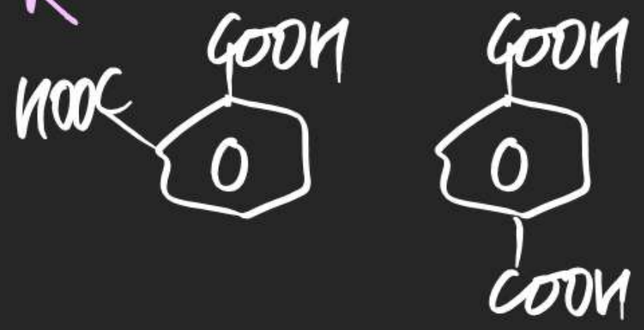
3 > 1 > 2 > 4

ortho effect

−R

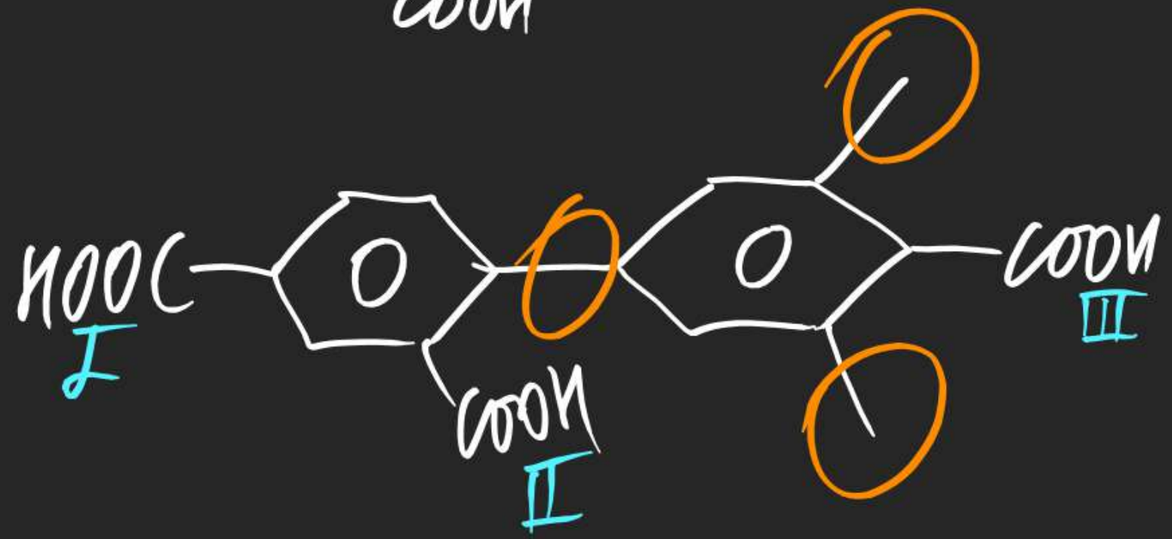
−I

(66)



(1 > 2)

(67)



III > II > I

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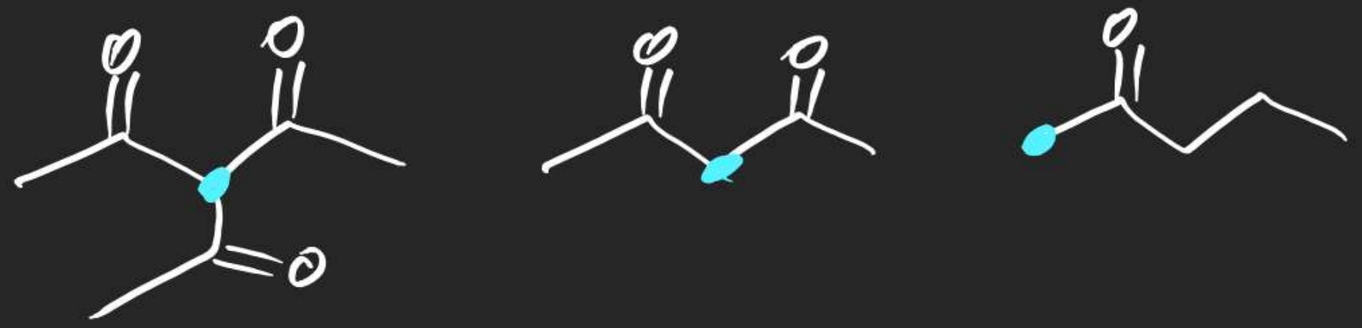
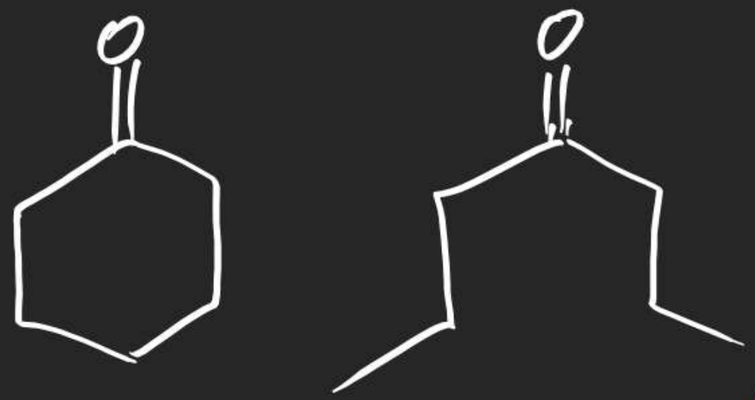
(68)

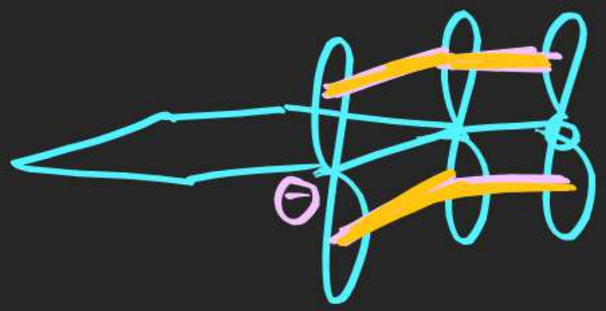


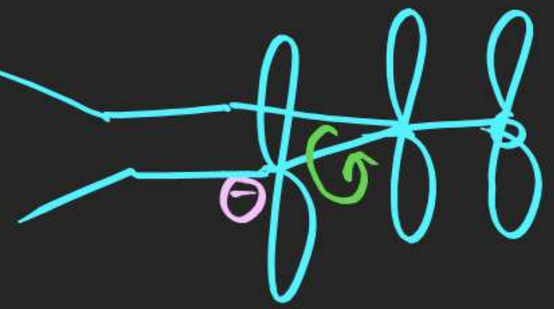
1 > 2 > 3

(4RS) (3RS) (2RS)

(69)

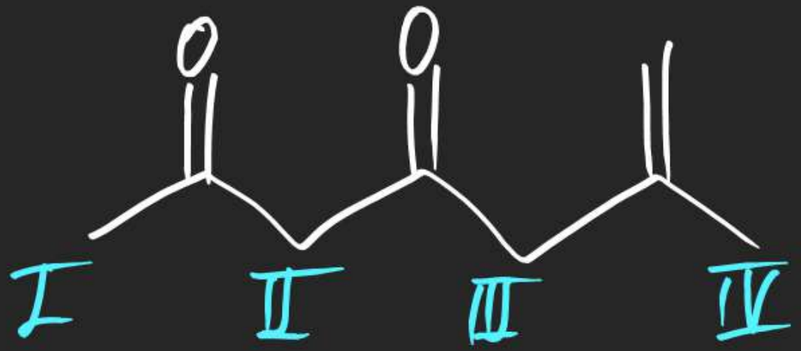






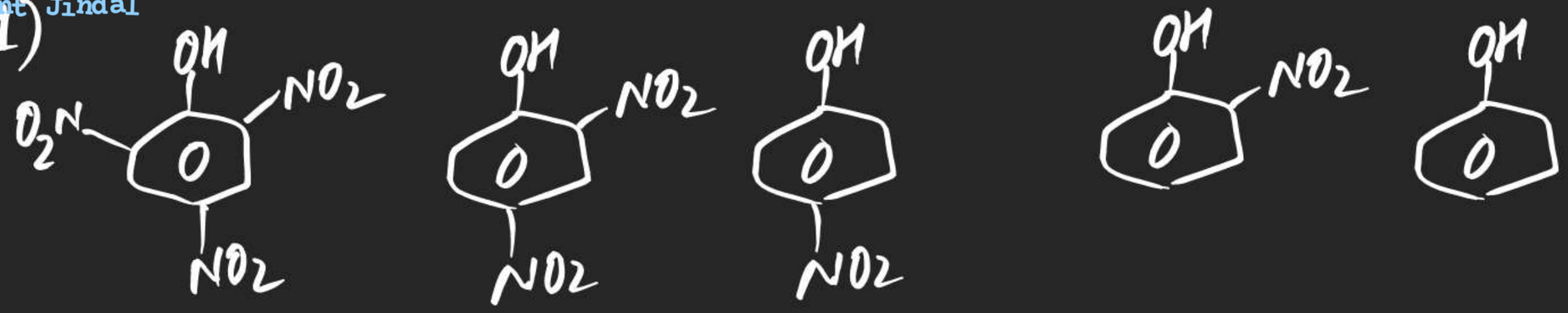
(1 > 2)

(70)



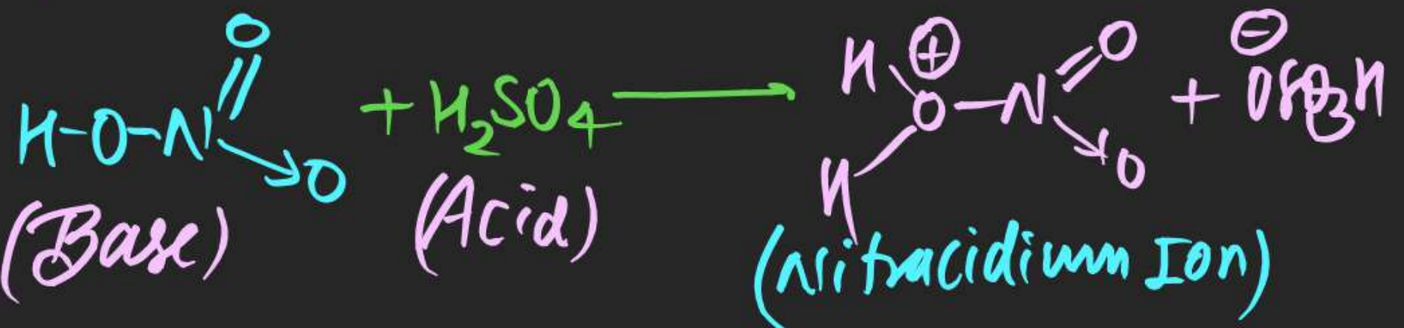
II > III > I > IV

(71)



(72) A mixture contains HNO_3 & H_2SO_4 write possible Reaction.

Soln:



(73) which of the following doesn't have Caboxy (-COOH) group.

(i) Vinegar (Acetic Acid)

(ii) Carbolic Acid

(iii) Benzene Sulphonic Acid

(iv) Picric Acid

(v) Squaric Acid

(vi) Oxalic Acid

(vii) Malonic Acid

(viii) Succinic Acid

(ix) Glutaric Acid

(x) Adipic Acid

(xi) Palimidic Acid

OMSGAP

(xii) Maleic Acid

(xiii) Fumeric Acid

(xiv) Malic Acid

(xv) Tartaric Acid

(xvi) lactic Acid

(xvii) Pyruvic Acid

(xviii) Citric Acid

(xix) Salicylic Acid

(xx) Cinammic Acid

(xxi) Barbiutaric Acid

(xxii) Ascorbic Acid

(xxiii) Aspartic Acid

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(#) Arrange following in ↓ order of Basic strength.

less stable / most Basic — most stable / less Basic

(1) $F^{\ominus}$ $Cl^{\ominus}$ $Br^{\ominus}$ $I^{\ominus}$

C. Acid: H–F (most stable) H–Cl H–Br H–I (least stable)

Basic strength $F^{\ominus} > Cl^{\ominus} > Br^{\ominus} > I^{\ominus}$

(2) $R-O^{\ominus}$ $R-S^{\ominus}$

(I > II)

(3) $CH_3^{\ominus}$ $NH_2^{\ominus}$ $OH^{\ominus}$ $F^{\ominus}$ (1 > 2 > 3 > 4)

C. Acid CH_4 NH_3 H_2O HF

To compare Basic strength

(*) Aliphatic Amine > Aromatic Amine

(*) localised e^- density > delocalised e^- density

(*) Conjugate Acid stability

- Resonance
- Hybridisation ($sp^3 > sp^2 > sp$)
- Solvation effect (Ortho subs. Amine weakest Base)

(*) EDG > EWG

⋮

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(4) $CH_3-\overset{\ominus}{C}H_2$ $CH_2=\overset{\ominus}{C}H$ $HC\equiv\overset{\ominus}{C}$

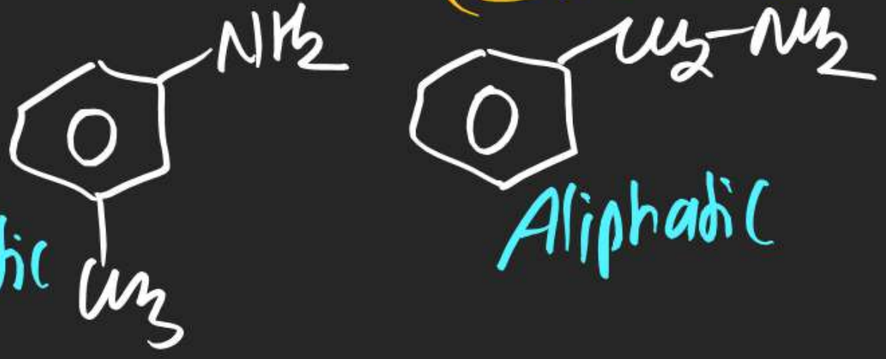
SP^3 SP^2 SP

(1 > 2 > 3)

(5)

(I > II > III)

(6)



Aromatic

Aliphatic

(2 > 1)

(7)

(1 > 2)

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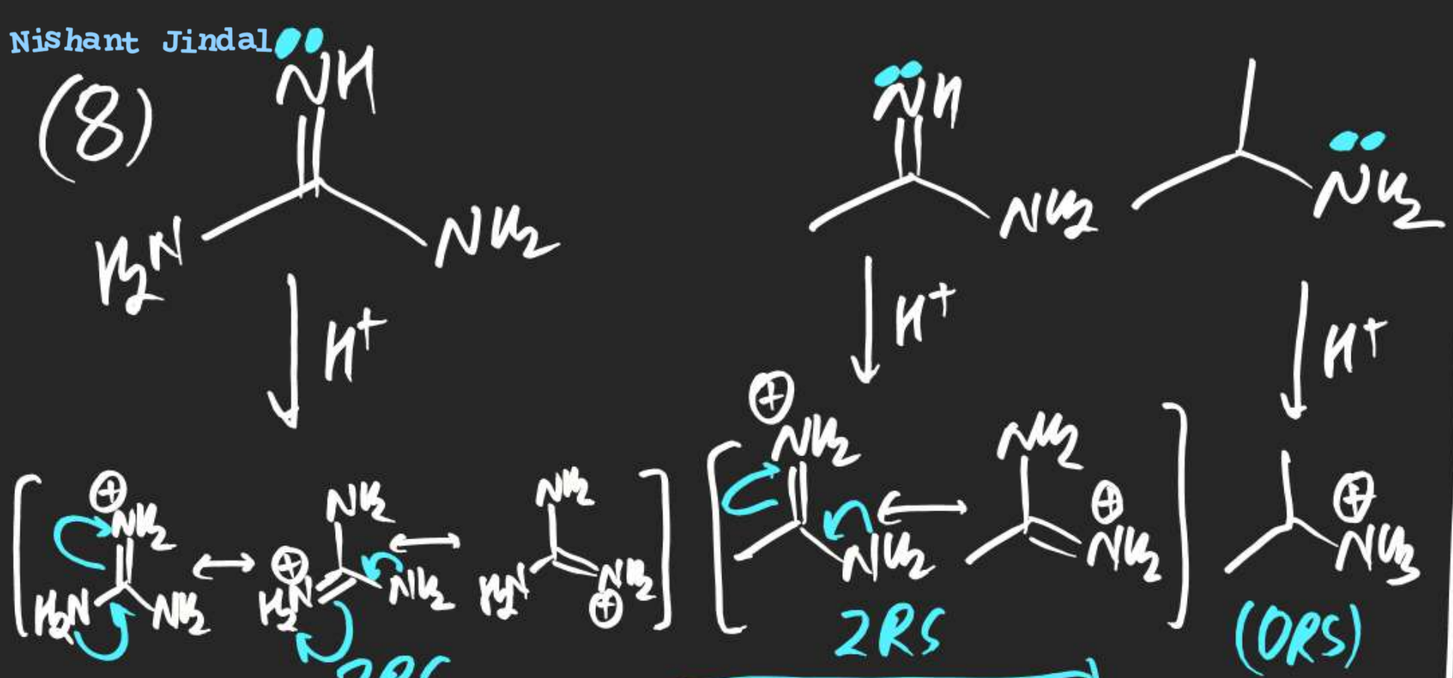
(8)

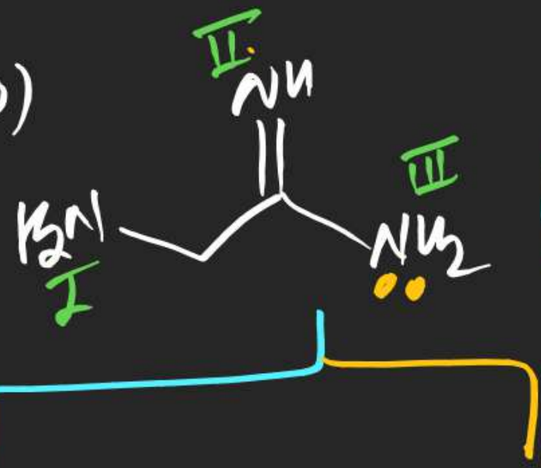


$$I > II > III$$

(9)

$$(I > II)$$

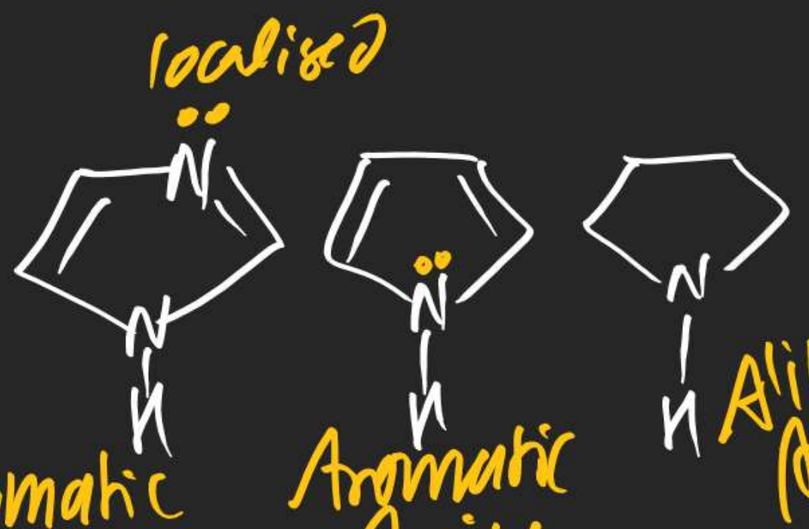
(10)



$$(II > I > III)$$

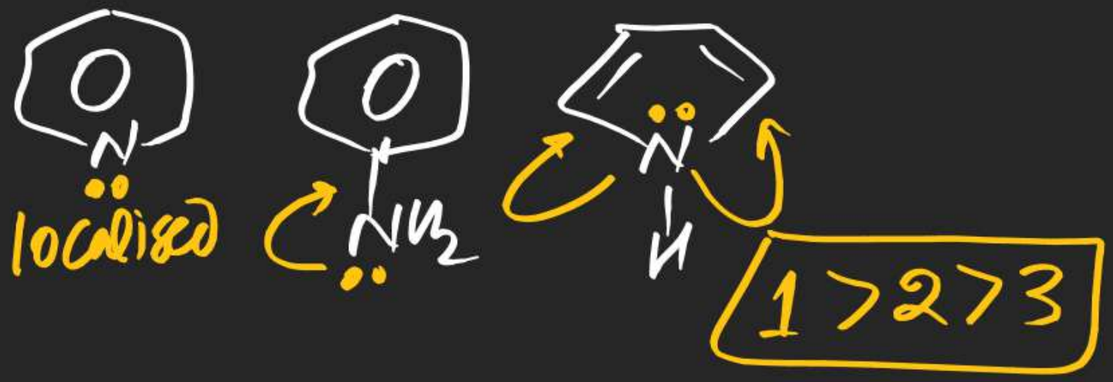
delocalised

(11)



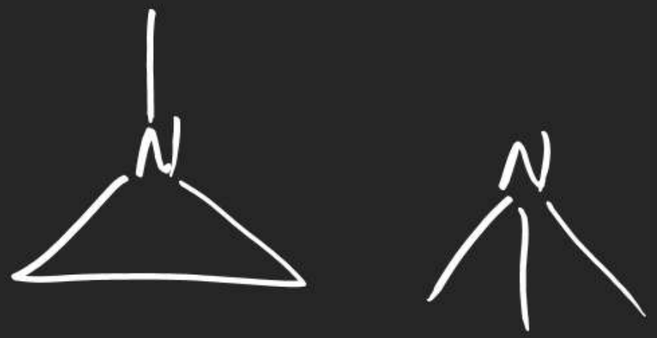
$$3 > 1 > 2$$

(12)

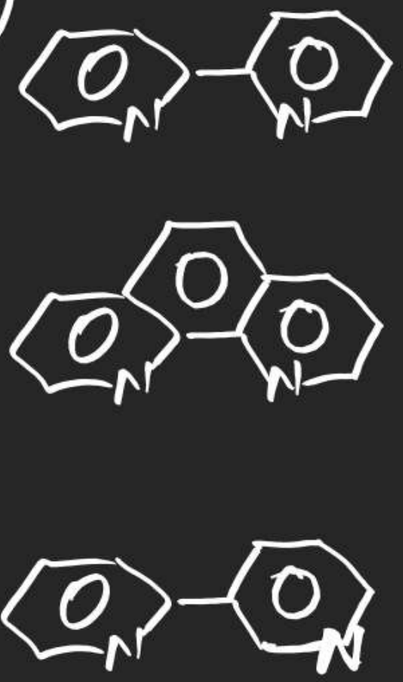


(13)

(14)



(15)



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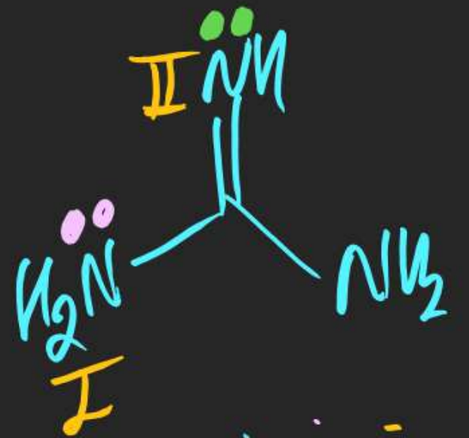

(II > I)

(17) H_3N Ammonia | CH_3-NH_2 Primary Amine | $(CH_3)_2NH$ Sec. Amine | $(CH_3)_3N$ Tert. Amine (in Aq. phase) H_2O S > P > T > A

(18) H_3N CH_3-NH_2 $(CH_3)_2NH$ $(CH_3)_3N$ (in Gas phase) T > S > P > A

(19) H_3N $Et-NH_2$ $(Et)_2NH$ $(Et)_3N$ (in Gas phase) T > S > P > A

(20) H_3N $Et-NH_2$ $(Et)_2NH$ $(Et)_3N$ (in H_2O) S > T > P > A

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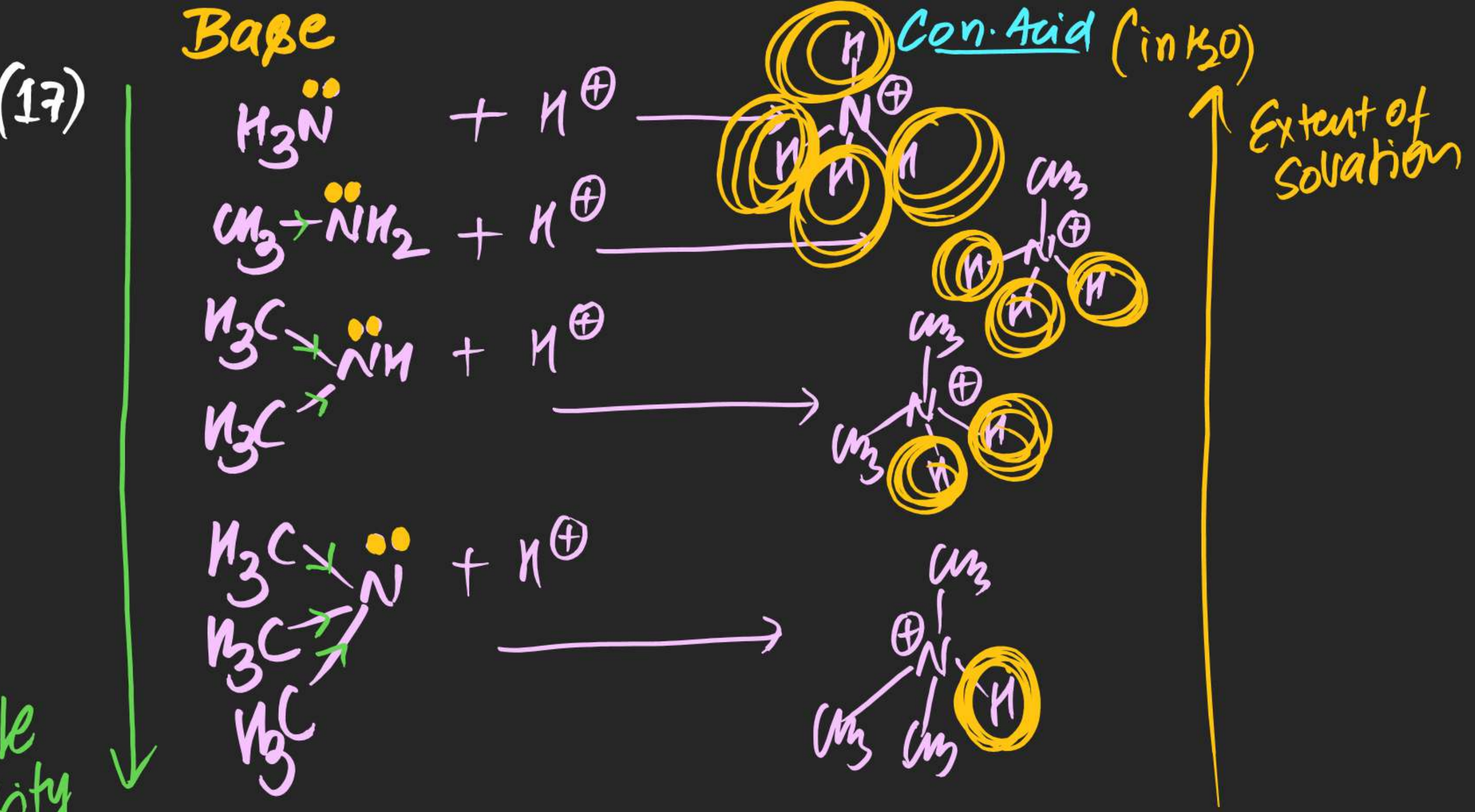
Ex:- (17)

Base → **Con. Acid (in H_2O)**



Extent of Solvation ↑

Avoible e^- density ↓

	Base	Ar $\bar{e}$ density	Ex. of Solvn.
X	H_3N	X	↑↑↑
	$Me-NH_2$	↑	↑↑
	Me_2NH	↑↑	↑
X	Me_3N	↑↑↑	X

$Me_2NH > Me-NH_2 > Me_3N > NH_3$

(S > P > T > A).

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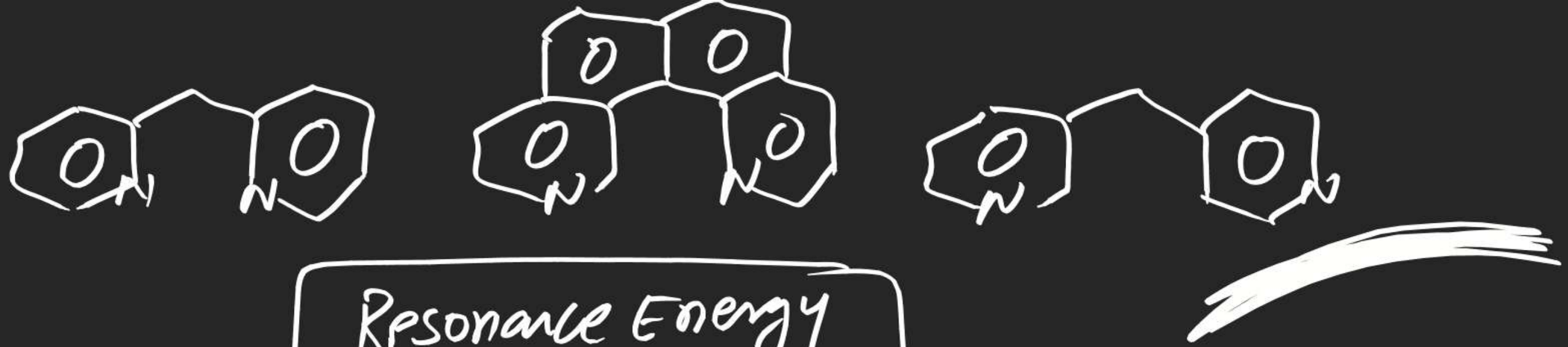
(21)



Resonance Energy

RE ∝ Extent of Resonance.

∝ No. of R.S

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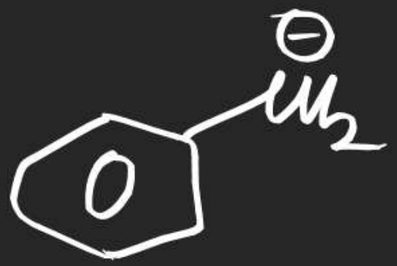
(1) 

(2)  

(3)  

(4)  

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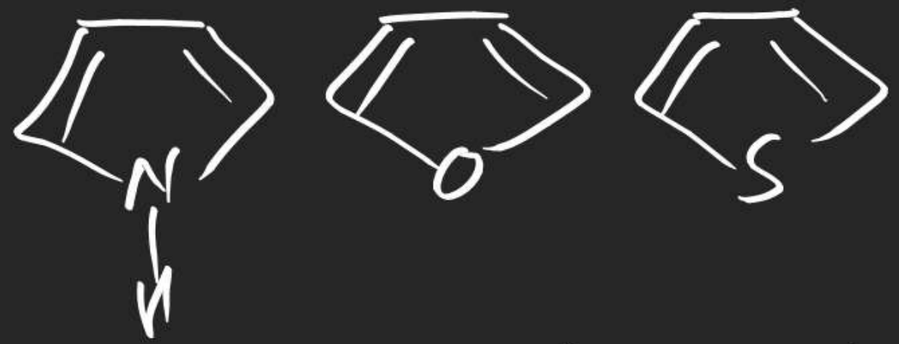
(5) 

(6) 

(7) 

(8)