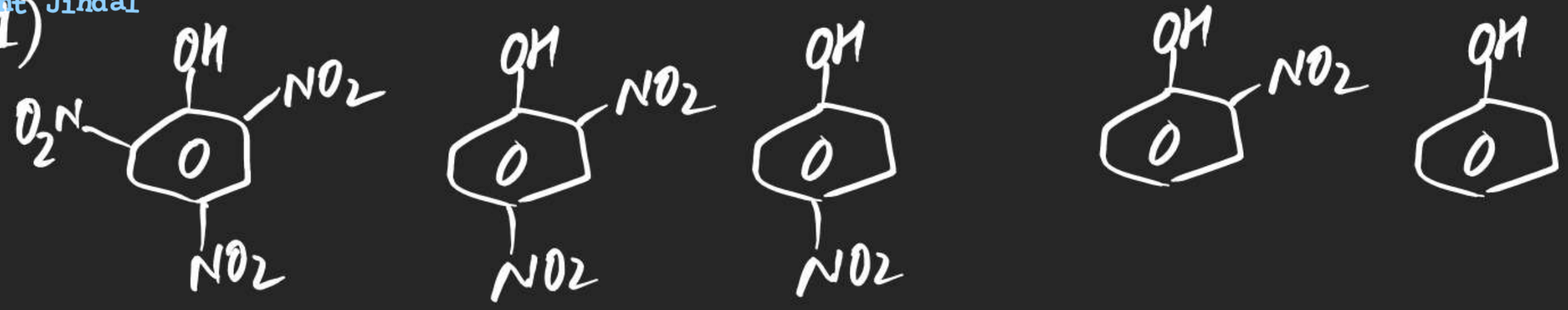
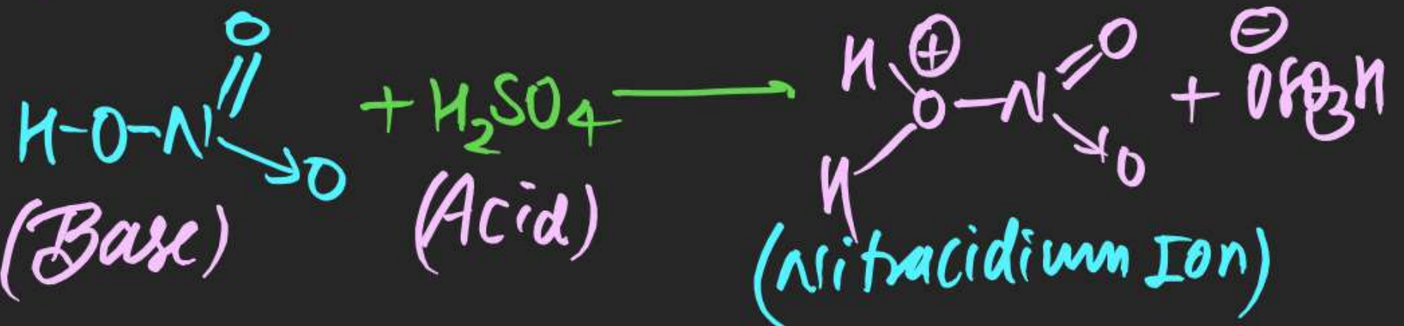
(71)



(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) CH_3-COOH

(ii) Carbolic Acid 

6

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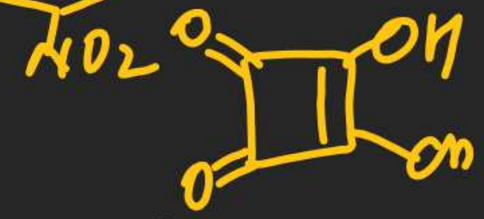
(iii) Benzene Sulphonic Acid

(iv) Picric Acid

(v) Squaric Acid



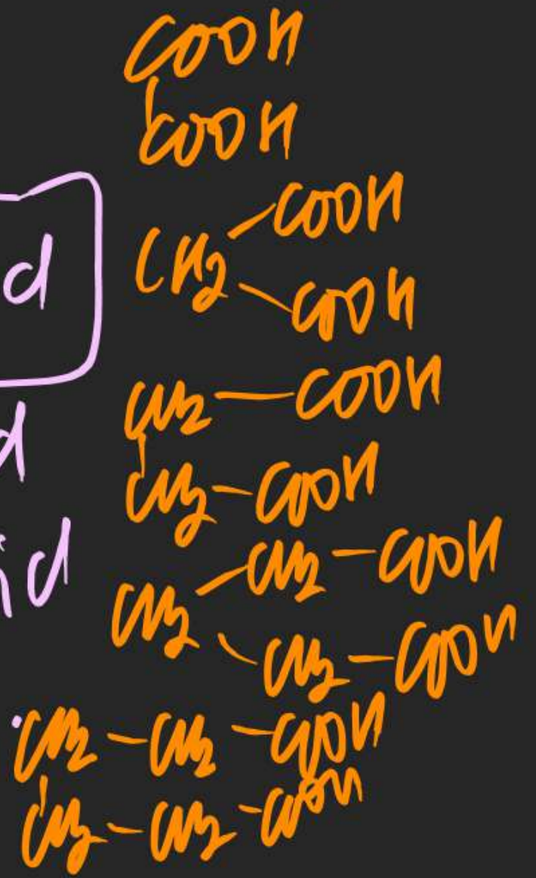
(vi) Oxalic Acid

(vii) Malonic Acid

(viii) Succinic Acid

(ix) Glutaric Acid

(x) Adipic Acid

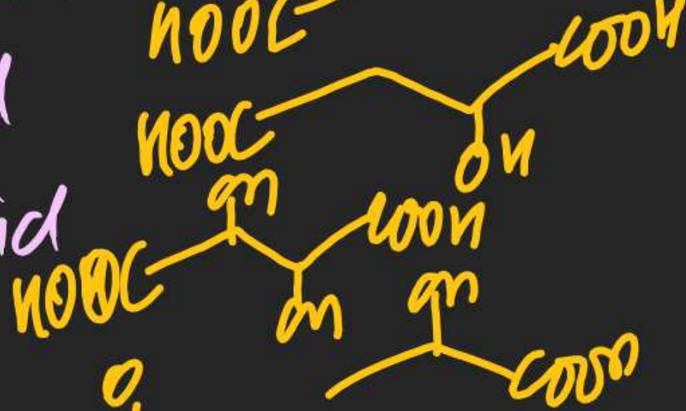


(xi) Palimidic Acid

(xii) Maleic Acid

(xiii) Fumeric Acid

(xiv) Malic Acid

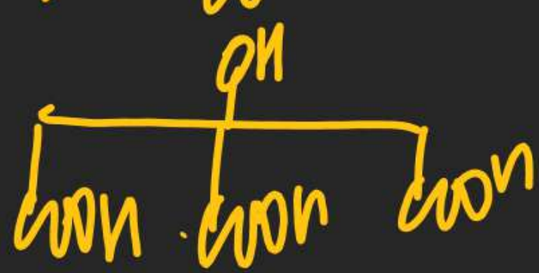


(xv) Tartaric Acid

(xvi) Lactic Acid

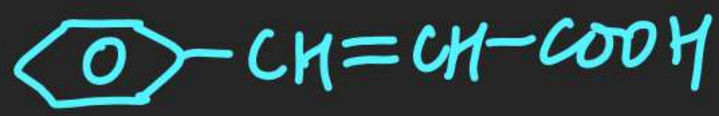
(xvii) Pyruvic Acid

(xviii) Citric Acid

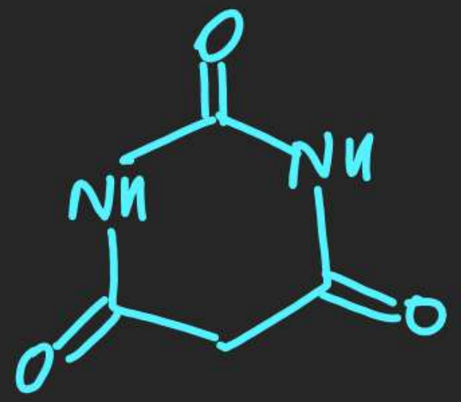


(XIX) Salicylic Acid

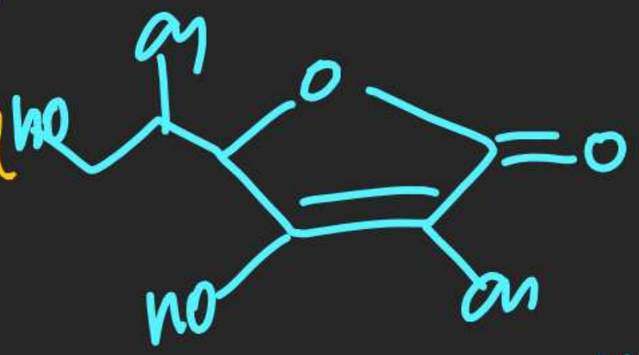
(XX) Cinammic Acid



(XXI) Barbiturnic Acid



(XXII) Ascorbic Acid



(XXIII) Aspartic Acid

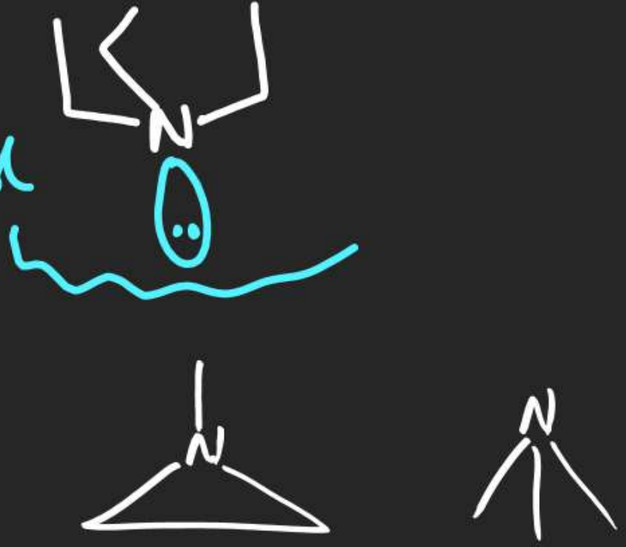
(12)

(13)

(2 > 1)

(14)

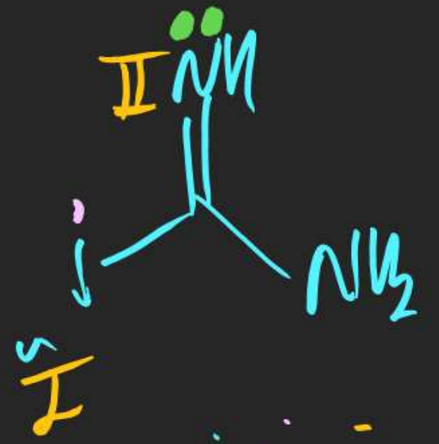
weak Base



(2 > 1)

(15)

(1



(II > I)

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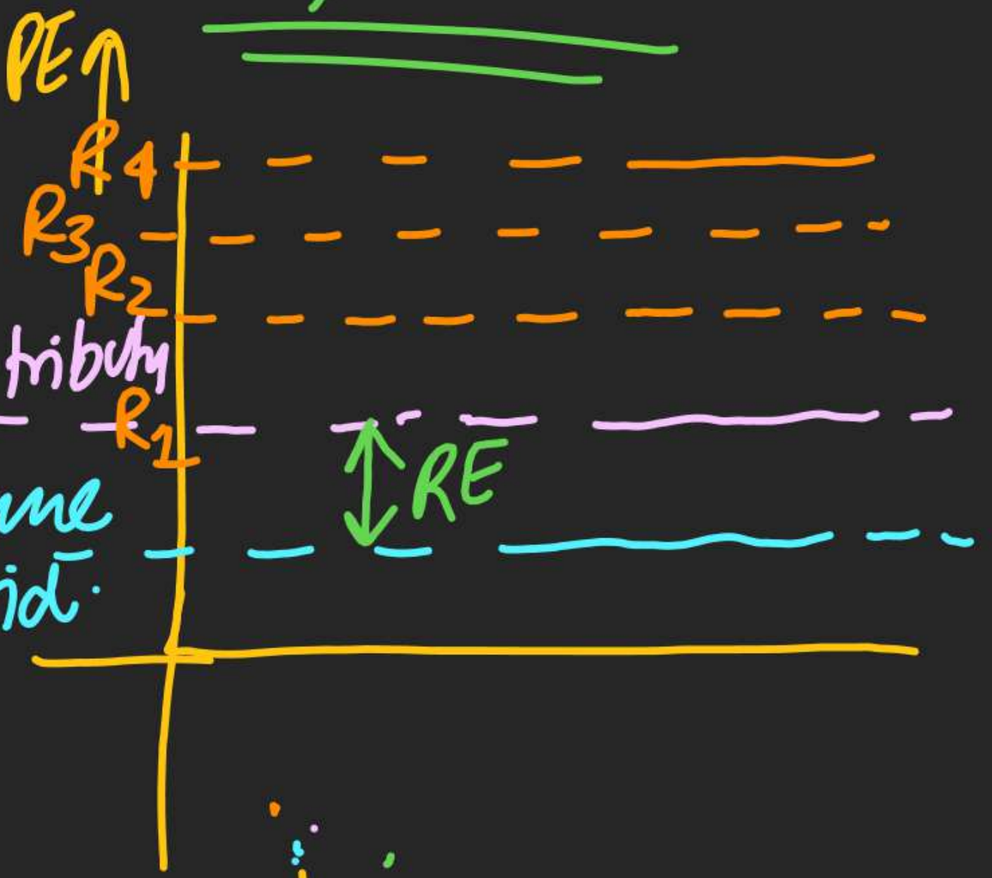
(21)

Resonance Energy

2 > 1 > 3

⇒ Amount of Energy By which R. hybrid is more stable than MCRS is known as RE

$RE = E_{RH} \rightsquigarrow E_{MCRS}$



⇒ RE ∝ Extent of Resonance
∝ No. of R.S

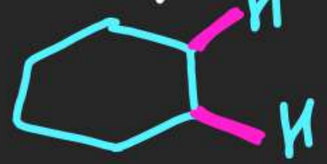
⇒ RE can be estimated only

⟹ RE is usually shown with (-)ve sign.

⟹ RE can be Estimated By different processes.

⟹ RE can also Be Estimated By heat of hydrogenation.

$RE = \Delta H_{exp} - \Delta H_{obs}$

(1)  $+ H-H \longrightarrow$ 

$\Delta H = -29$ Kcal/mol

(2)  $+2H-H \longrightarrow$ 

RE { $\Delta H_{exp} = -58$ Kcal/mol
$\Delta H_{obs} = -50$ Kcal/mol

(3)  $+2H-H \longrightarrow$ 

RE { $\Delta H_{exp} = -58$ Kcal/mole
$\Delta H_{obs} = -55$ Kcal/mole

Stable

(4)  $+3H-H \longrightarrow$ 

RE { $\Delta H_{exp} = -87$ Kcal/mole
$\Delta H_{obs} = -51$ Kcal/mole

(5)  2 > 1

(6)  (2 > 1)

(7)  (1 > 2)

2RS [1 times] 5RS

(8)  (2 > 1)

Cross conjugation Extended Resonance

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(9) 

1 > 2

(10) 

6π in 6P 6π in 5P

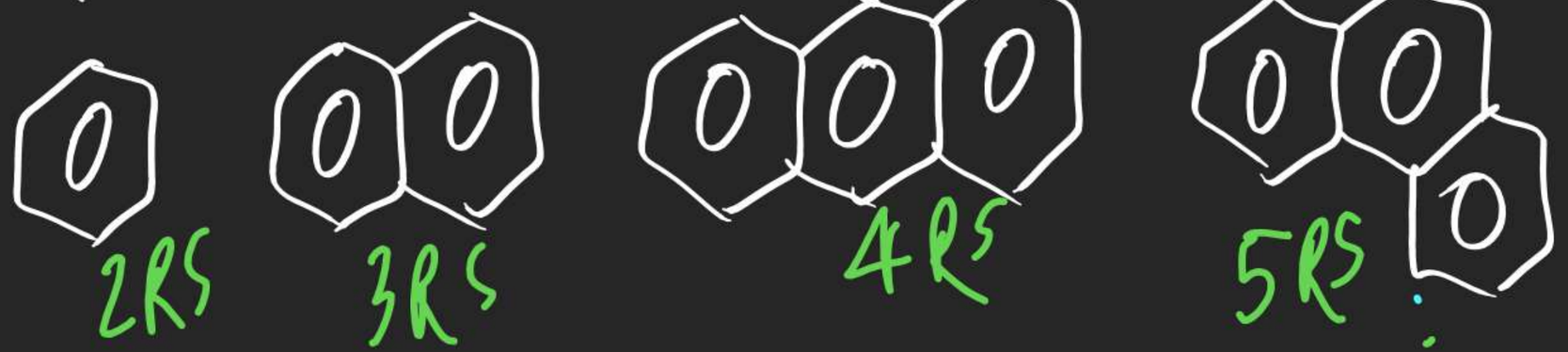
1 > 2

more EN

pyrole furan Thiophene

3 > 1 > 2

[pπ-pπ / pπ-dπ] (pπ-pπ) (pπ-pπ)

(12) 

2RS 3RS 4RS 5RS !

(4 > 3 > 2 > 1)

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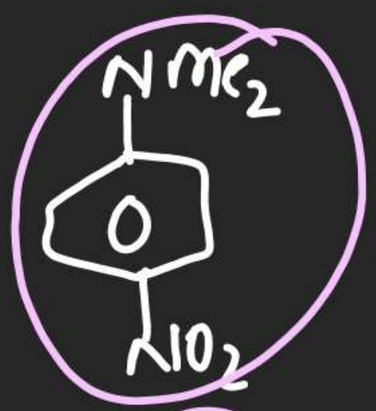
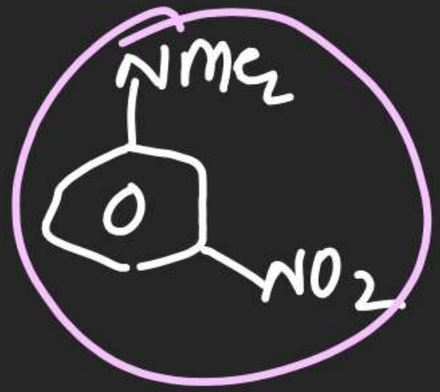
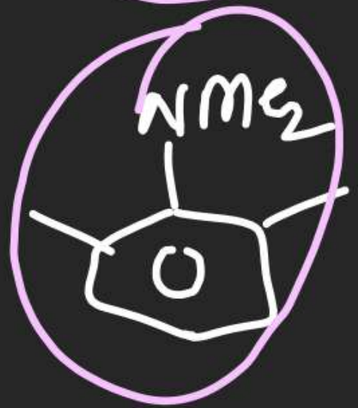
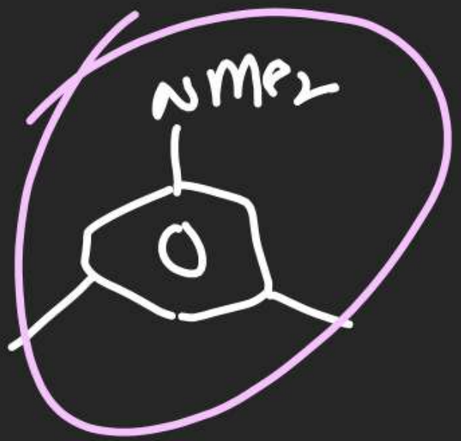
(13)





(14)

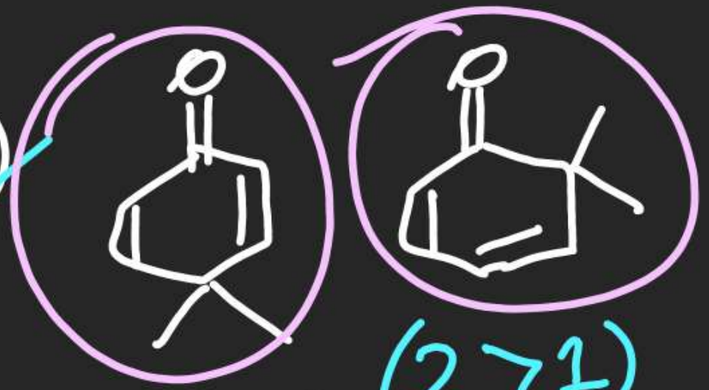




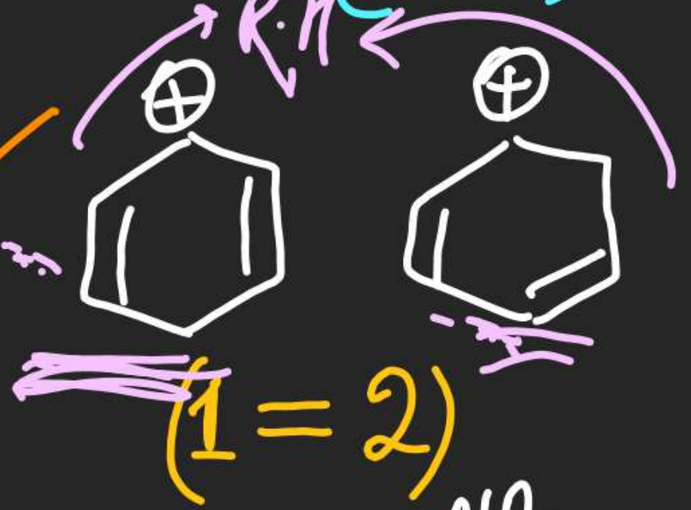
(15)

(2 > 1)

(16)



(17)



(1 = 2)

(18)

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(19) 

(20) 

(21) 

(22) 

(23) Heat of hydrogenation of 1-Hexene is −28.6 kcal/mole. On introducing one new π Bond, heat of hydrogenation obtained is −53.5 kcal/mole. New compound is

(A) Hexa-1,2-diene

(B) Hexa-1,5-diene

(C) Hexa-2,4-diene

(D) Hexa-1,3-diene

(24) Heat of hydrogenation for cyclohepta-1,4-diene & cyclo

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hepta-1,3,5-Triene is "x" & "y" Kcal/mole. Find RE of Cyclohepta-1,3,5-Triene.

(A) $x-y$ (B) $\frac{3x}{2}-y$ (C) $\frac{3y}{2}-x$ (D) $\frac{3x-3y}{2}$ (E) N.O.T

Bond length / Bond Strength / Bond Energy

$\Rightarrow$ Bond length $\propto$ Extent of Resonance (initially double Bond)

$\propto \frac{1}{\text{Extent of Resonance}}$ (initially single Bond)

$\propto \frac{1}{\text{B. Strength}} \propto \frac{1}{\text{B. Energy}}$ . .

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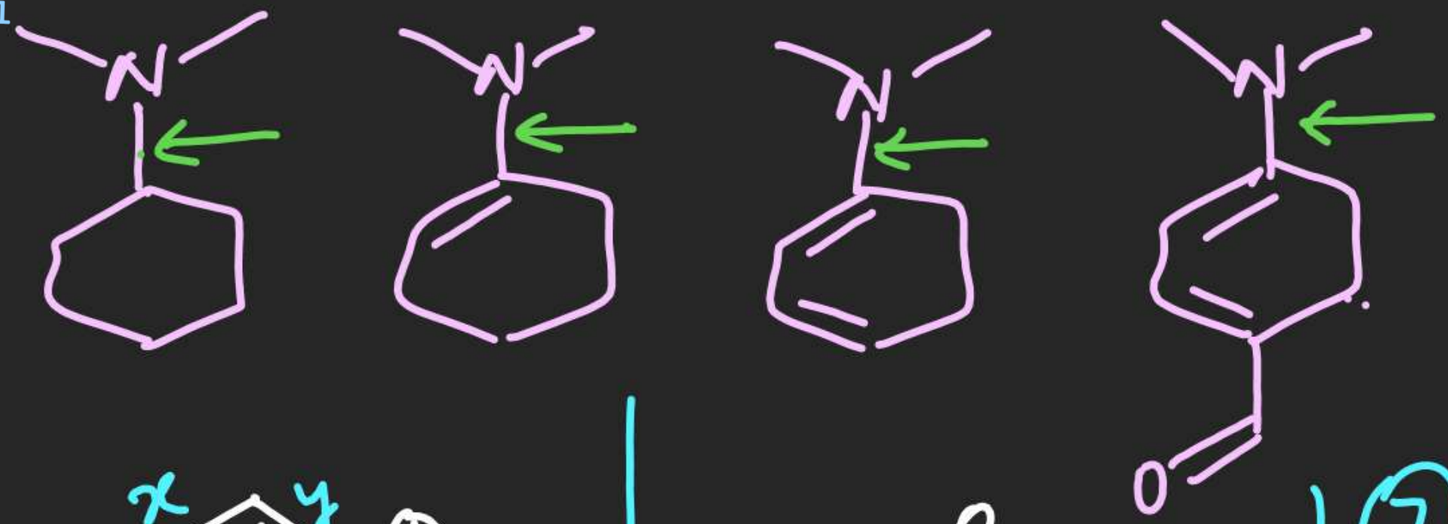
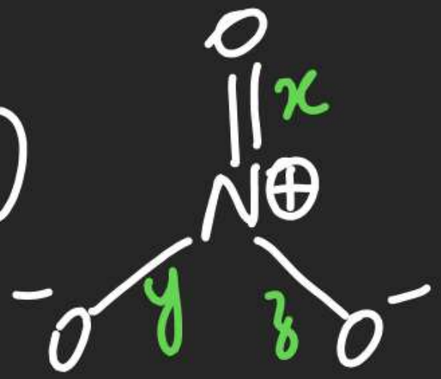
(1)



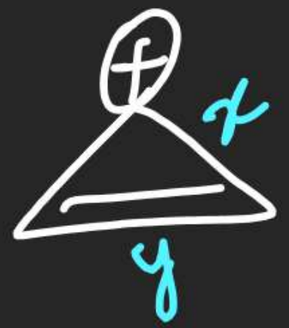
Bond length.
(1 > 2 > 3 > 4)

(2)

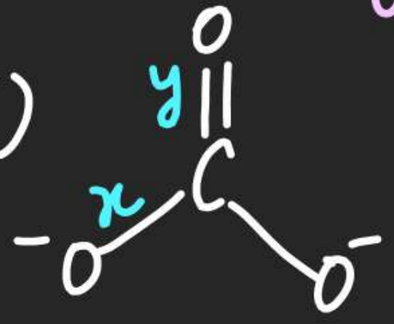
(3)



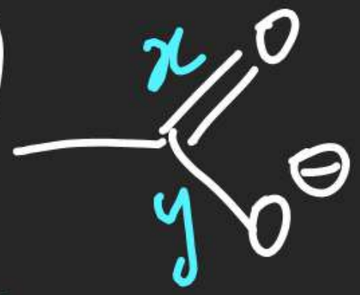
(4)



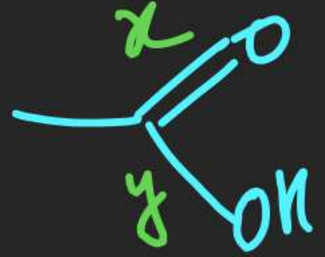
(5)



(6)



(7)



(8)

(9)

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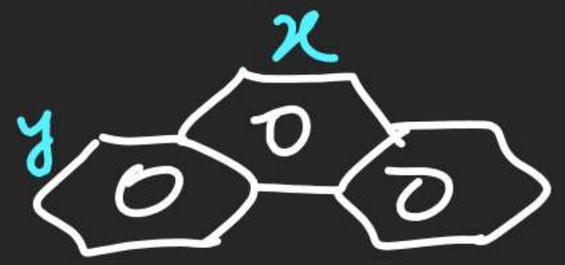
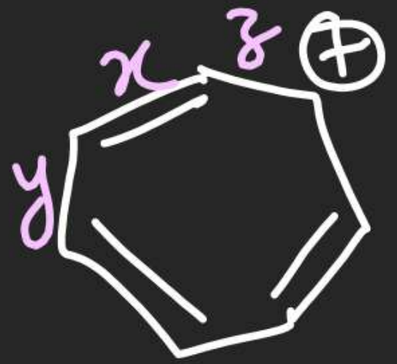
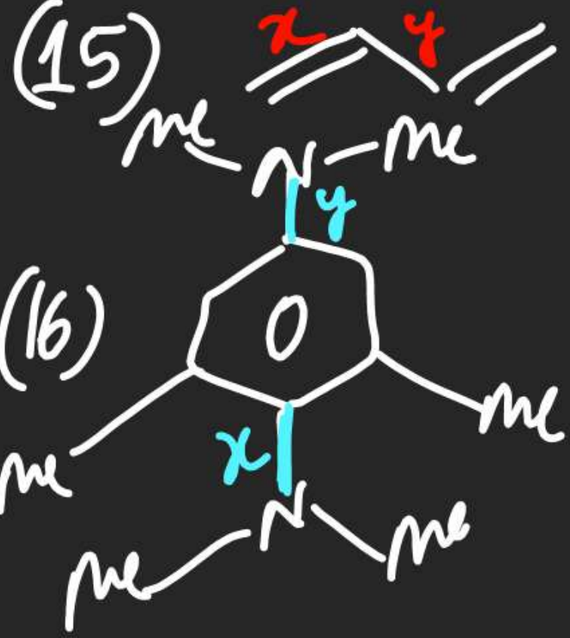
(10) 

(11) 

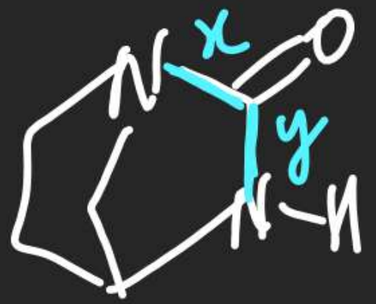
(12) 

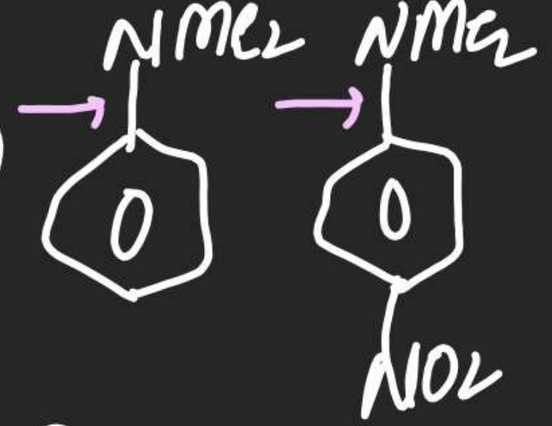
(13) 

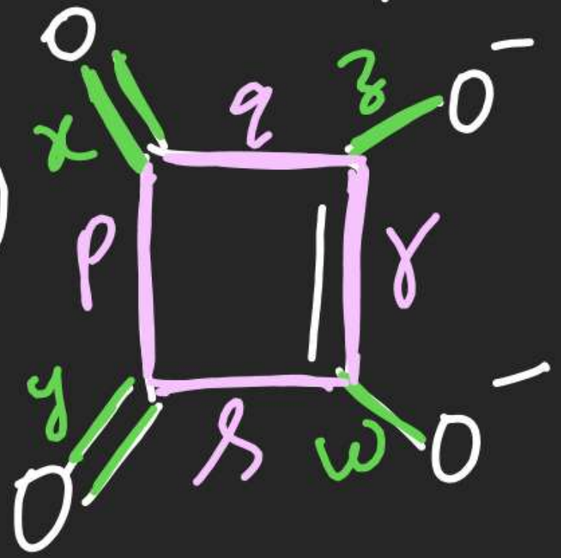
(14) $CH_2=CH-F$ $CH_2=CH-Cl$

(15) 

(16)

(17) 

(18) 

(19) 

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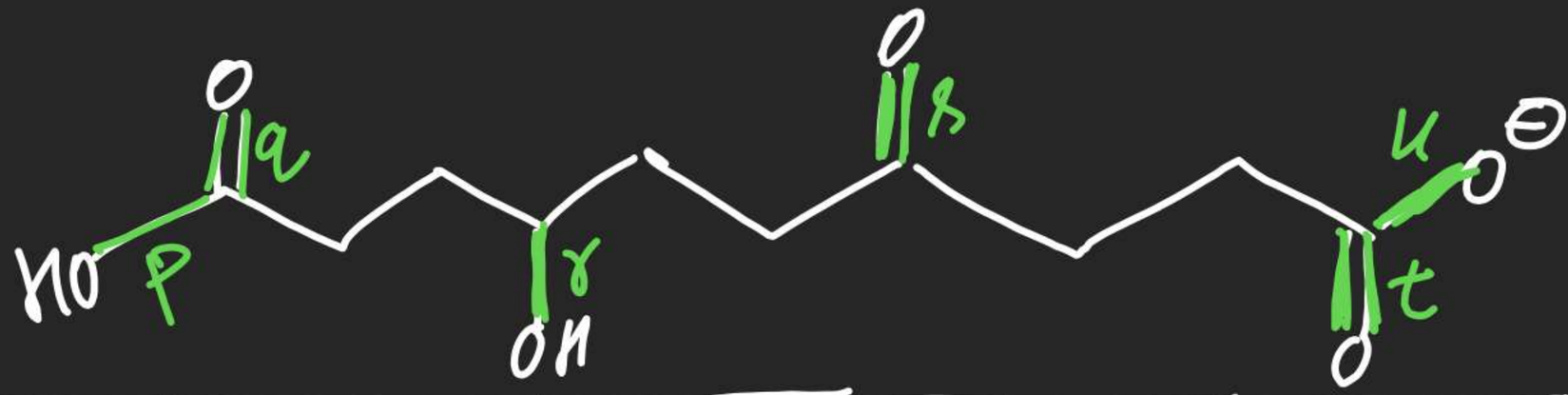
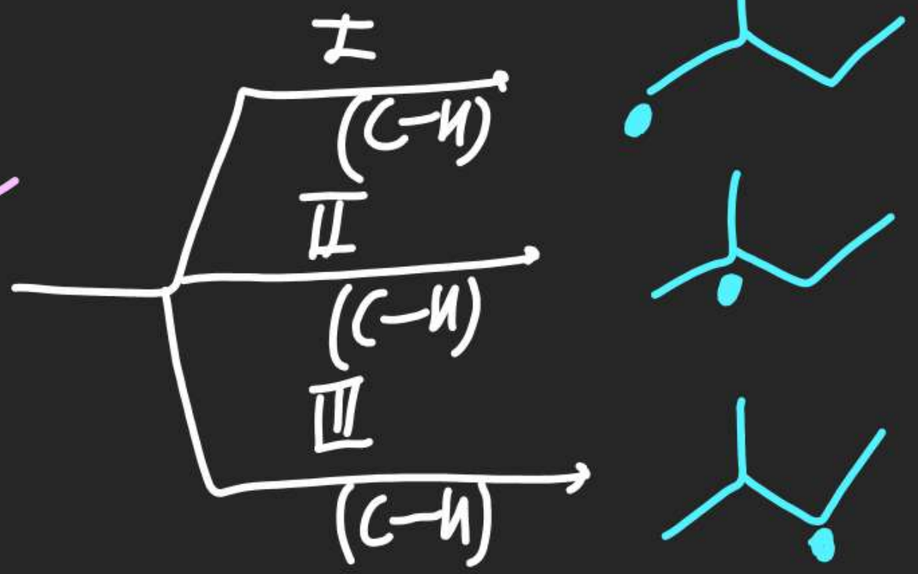
(20)



(#) Bond Energy : $\propto \frac{1}{\text{Stability order of F. Radical.}}$

(1)



Stability order

II > III > I

BE ⇒ I > III > II

∴

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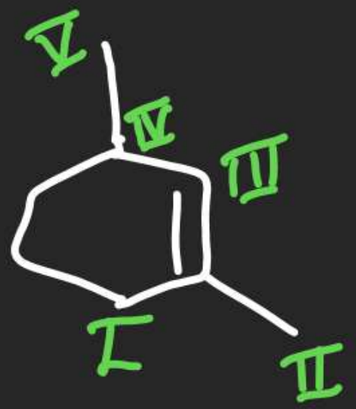
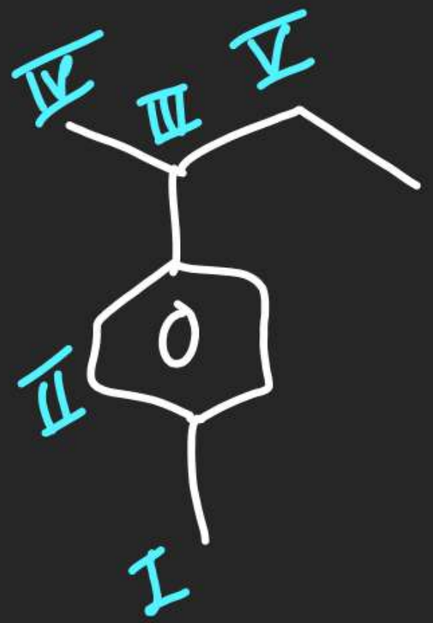
(2)

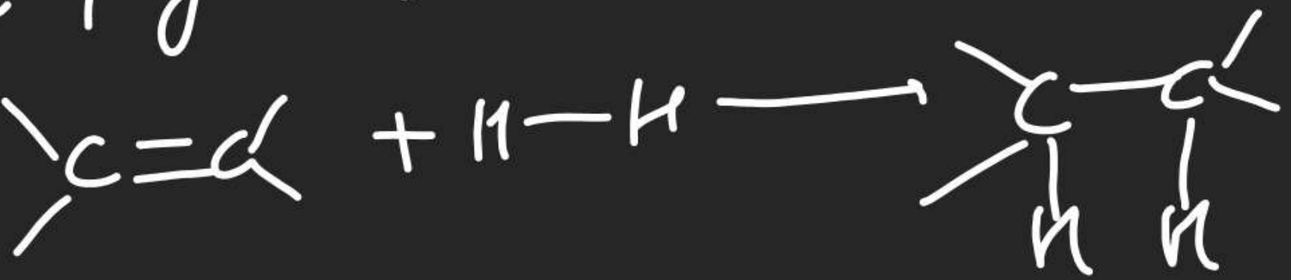


(3)



(#) Heat of Hydrogenation :- (HOH)

⟹ Enthalpy change when 1 mole of any compound is completely Reduced (hydrogenated).

①  $\Delta H \simeq -29$ Kcal/m

Note! HOH $\propto$ No. of π Bond [when all or None is Aromatic]

$$\propto \frac{1}{\text{Stability}}$$

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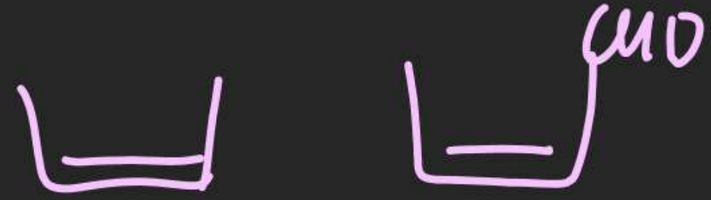
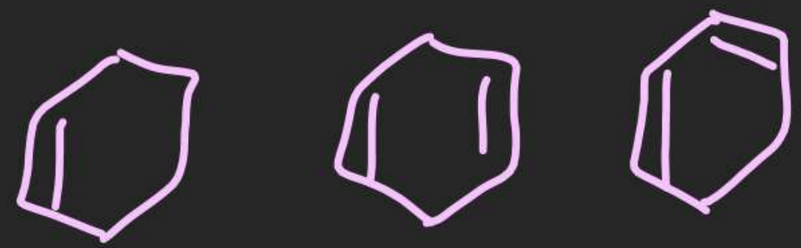
(2) 

(3) 

(4) 

(5) 

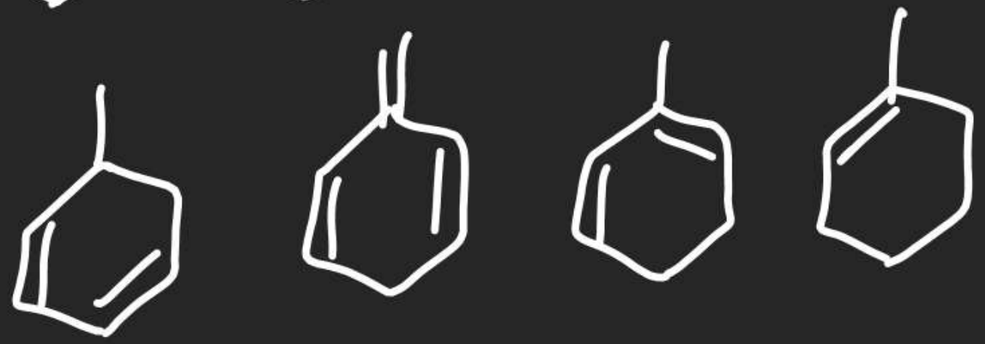
(6) 

(2 > 3 > 1)

(7) ——— (per π Bond)

(1 > 2 > 3)

(8) 

(9) 

M.I.Y.P (10)

HOH

M.I.Y.P (11)

HOC

M.I.Y.P (12)

Stability

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Isomerism