Unit - I

PART 1

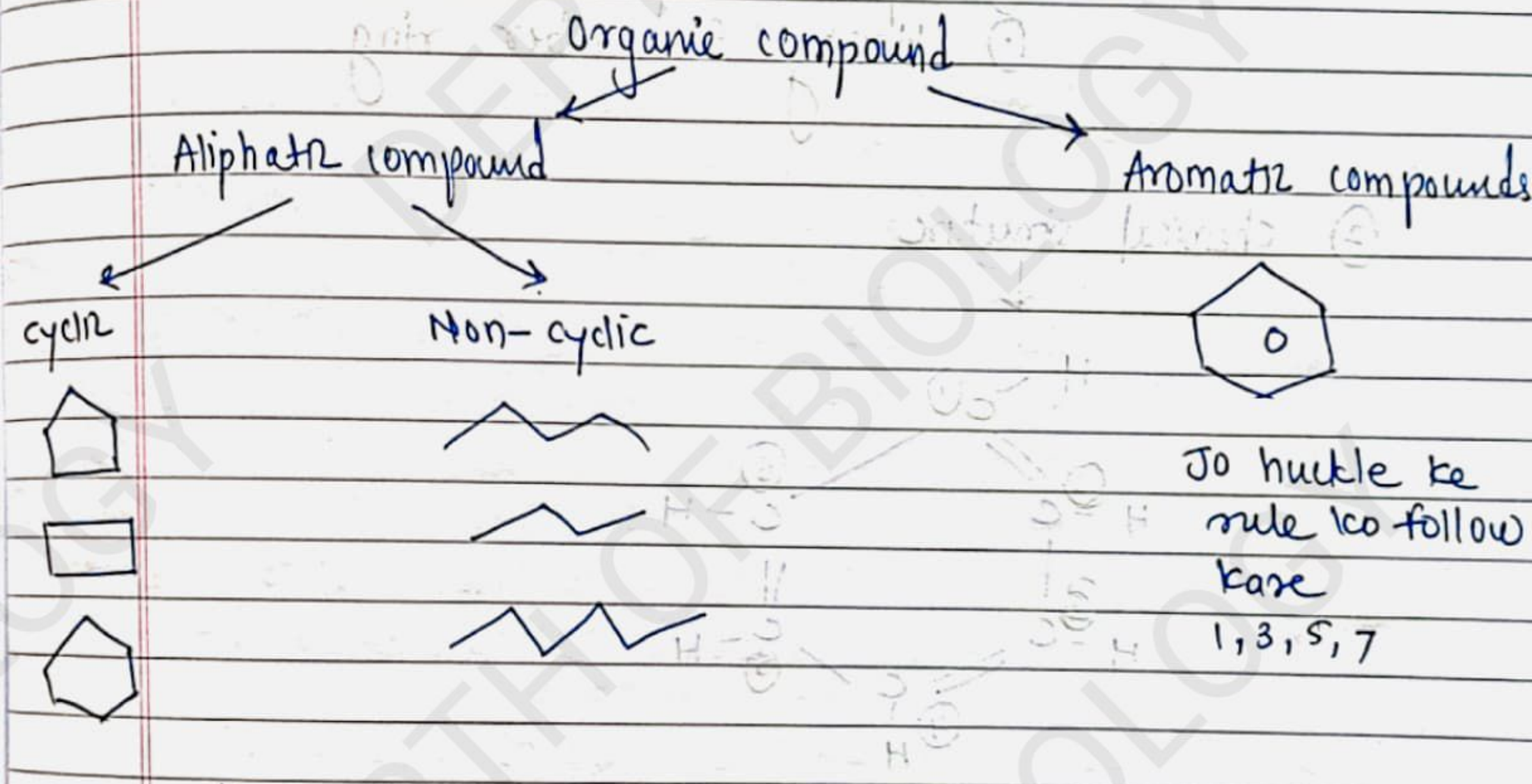
Benzene and it's derivatives

compound

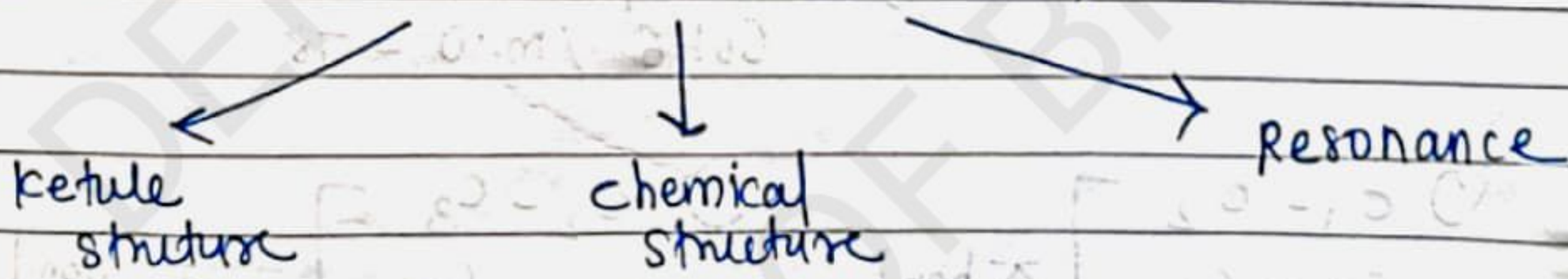
⊙ ~~carbon~~ which contain carbon are known as organic compound.

ex → CH_4, HCl, HCN, CO_2, COOH

① and Here HCH contain carbon but it is not an organic compound it is an an Inorganic compound.



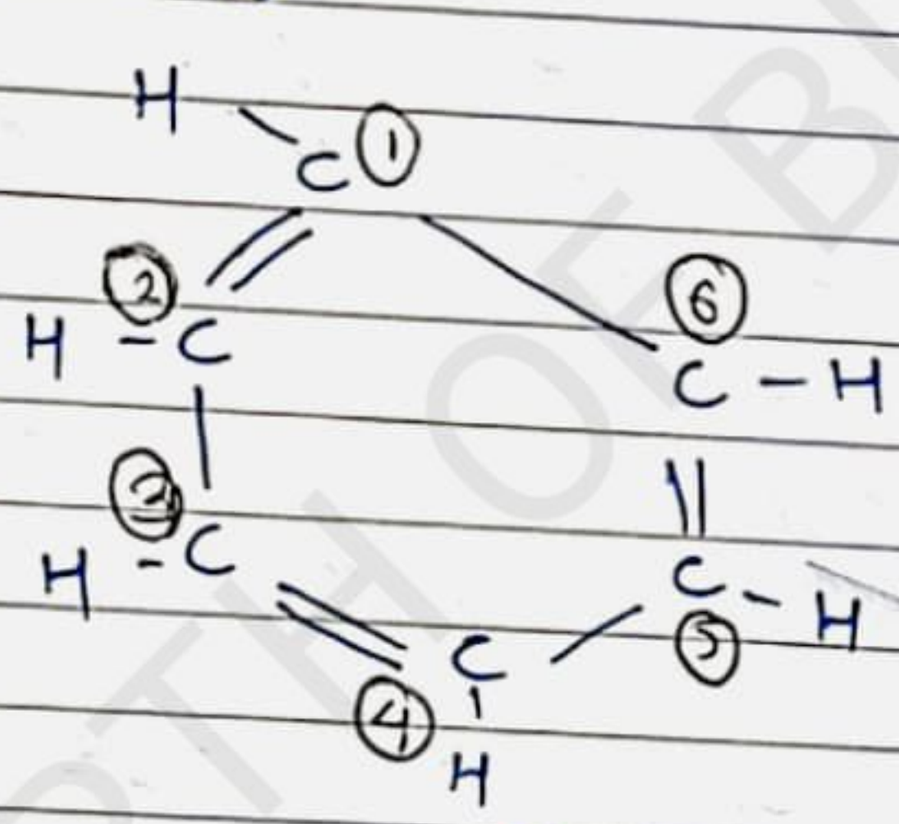
Structure of Benzene →



① KEKULE structure

- 1st and 6th carbon are bonded with each other said by ketule.
- Aromatic compound
- cyclic compound
- Having 6 member ring.

② Chemical structure



- chemical formula of Benzene
  C_6H_6 / m.w = 78

- $C_1 - C_2$, $C_3 - C_4$, $C_5 - C_6$] π bond
- $C_2 - C_3$, $C_4 - C_5$, $C_6 - C_1$] σ bond

- 12 sigma bond and 3 π paie bond

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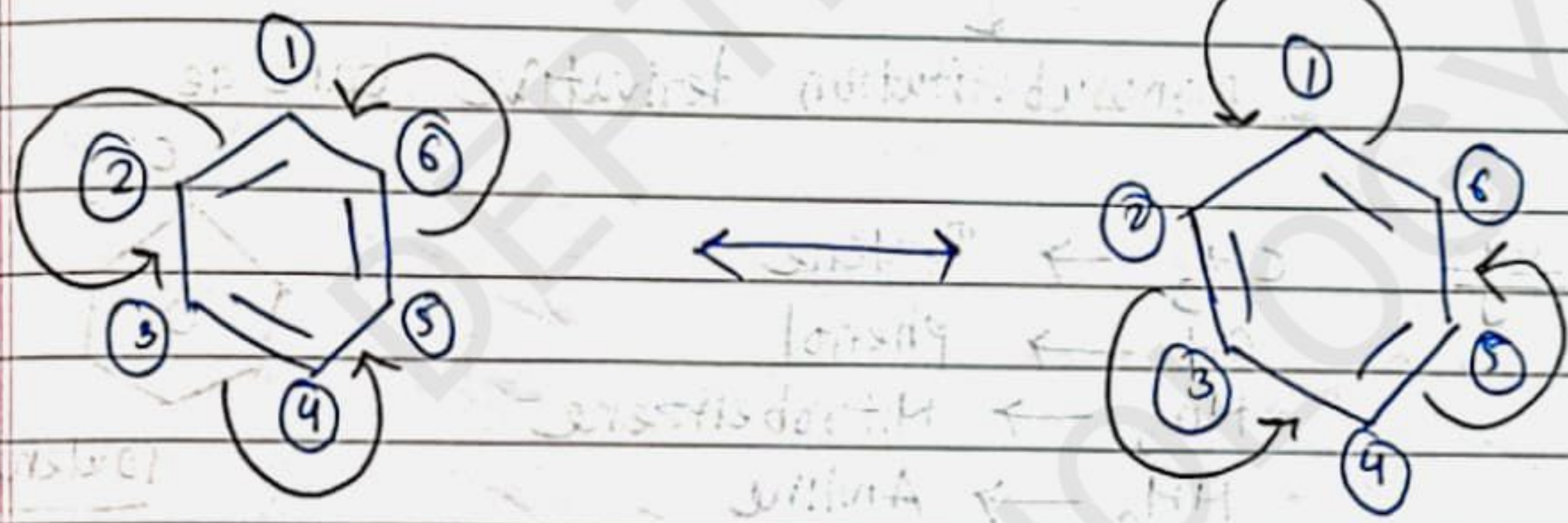
① In Benzene all carbon is sp^2 hybridised
② C-C have bond angle 120°
③ bond angle between → $C_2 - C_3 \rightarrow 1.3$ A°

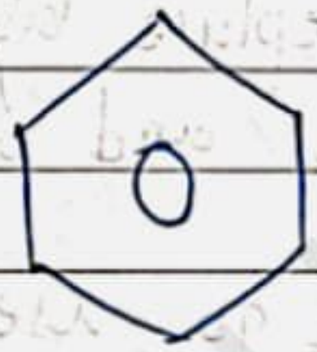
$C_1 - C_2 \rightarrow 1.5$ A°

③ Resonance structure

② shifting of electrons are known as resonance structure.



Jab ay dande fast fast ghumaye tab ayse gol dikhenga.



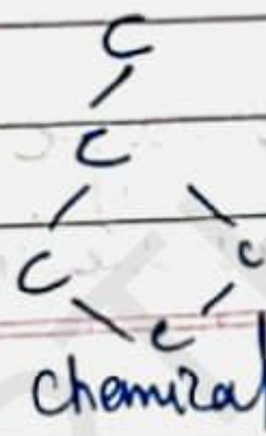
That's why.

Repeat ho gaya.

② electrons yahase waha shift hona is Resonance structure.

ex- fag

Kekule structure



Chemical Structure.

Resonance structure

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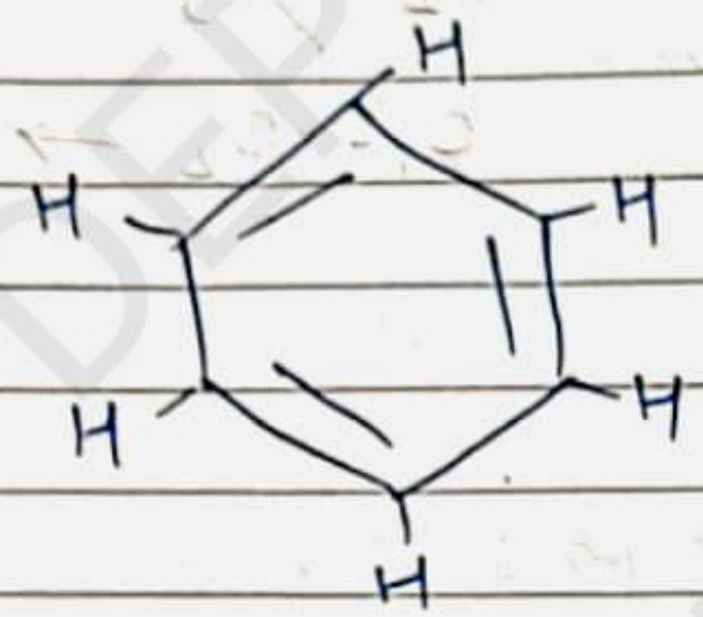
Benzene Derivative → Benzene se kya kya banta hai ise known as Benzene derivative.



→ H को Replace करने जाओ and other group attach kaste jaoo.

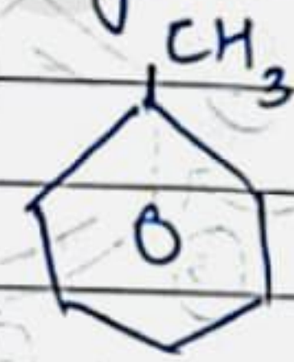
① If 1 H replace huva to use hum

↓

monosubstitution derivative kahe ge.

eg

CH_3 → Toluene
OH → phenol
HO_2 → Nitrobenzene
HH_2 → Aniline
CHO → Benzaldehyde



Toulene

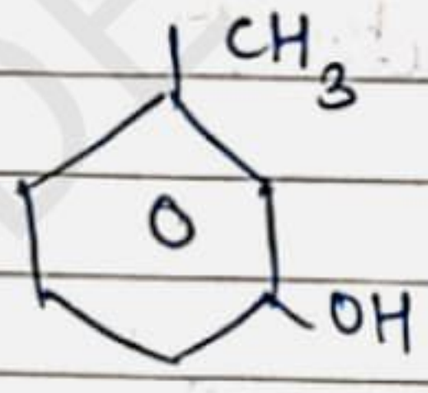
one hydrogen replaced.

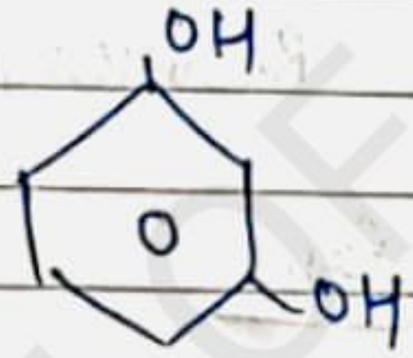
② or agar H ko CH_3 se replace kiya to use hum Toulene kahege and other etc.

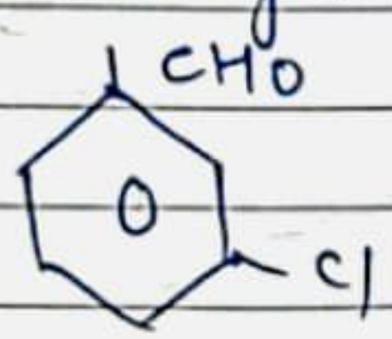
① 2 Hydrogen replace huve to use hum

↓

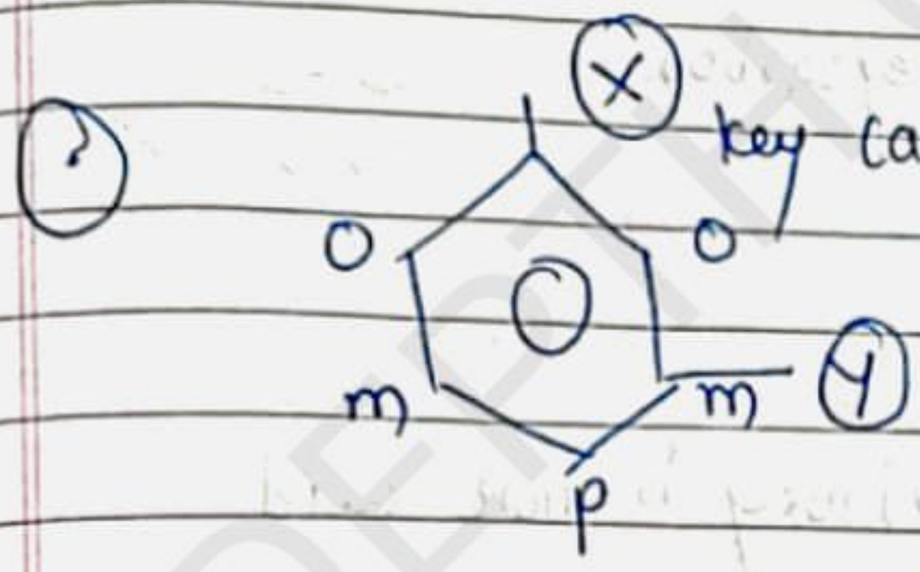
Disubstitution Derivative kahe ge.







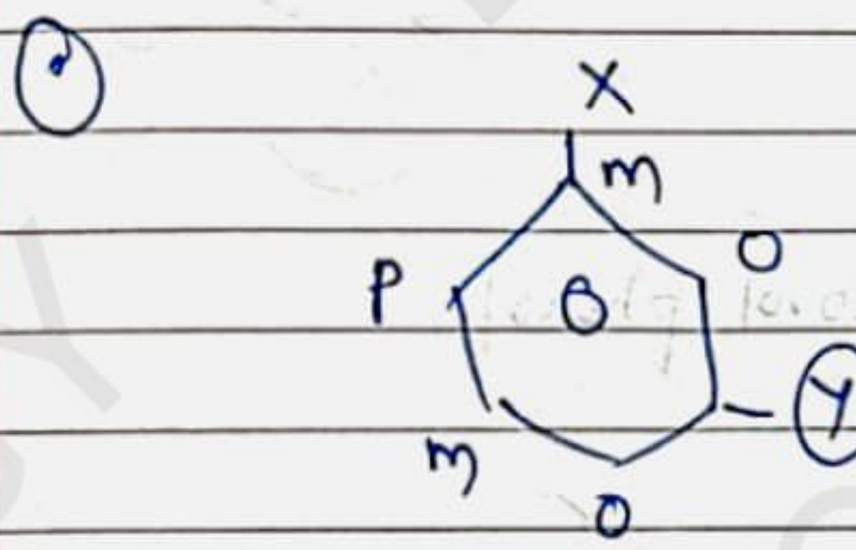
② yaha aise do hydrogen replace hoge.



(key carbon is carbon which is big compound)
here CHO is big so it is key carbon)

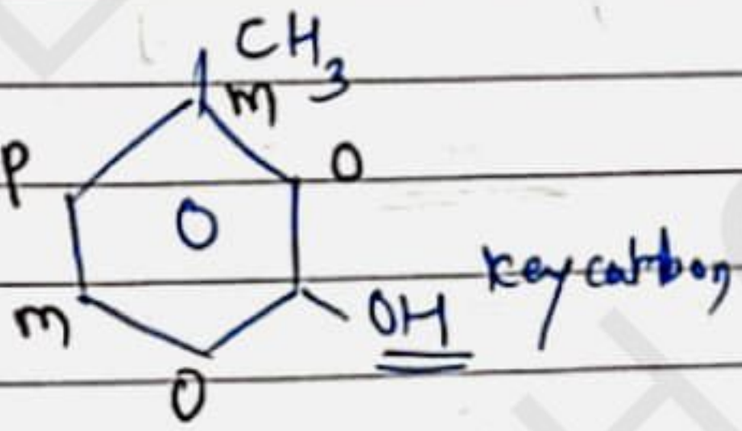
o - ortho position
m - meta position
p - para position.

② kay carbon ke side wale ortho position or uske niche wale meta position and last p - para position.

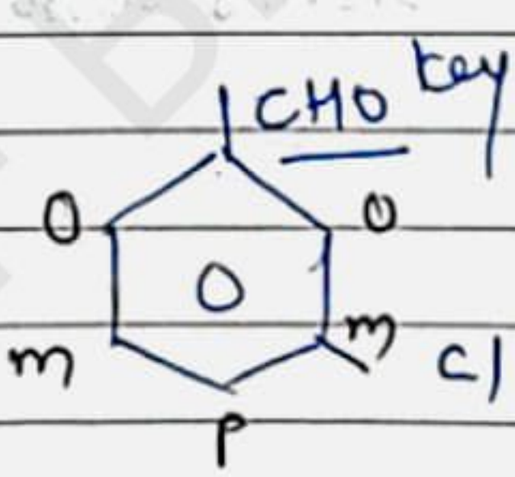


[depends key carbon kaha hai baki bhi ho side wala o or uske niche wala m and for p.]

eg

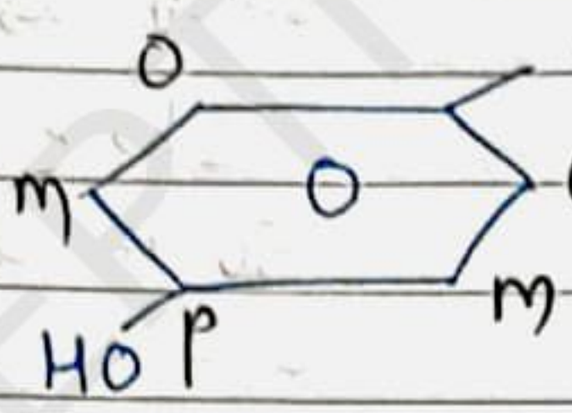


metamethyl phenol



metal chloro Benzaldehyde

[DEPTH OF BIOLOGY]



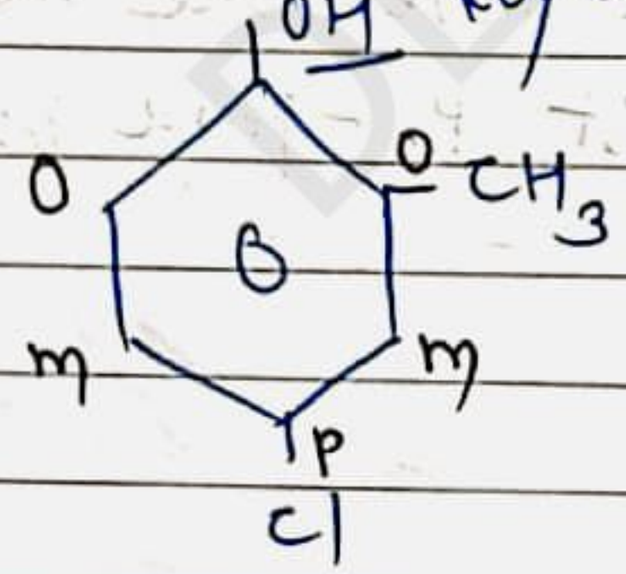
p-hydroxy benoic acid

more then 2 hydrogen replace hume to use hum

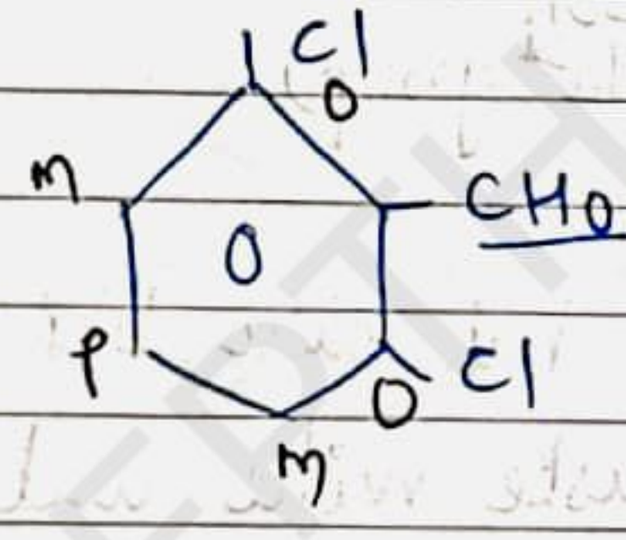
↓

polysubstitution derivative kahege.

eg

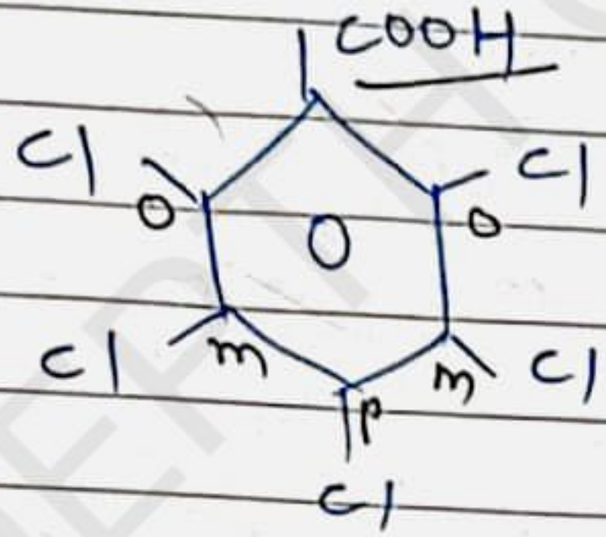
(1) 

orthomethyl para chloro phenol.

(2) 

Diortho Chloro P-hydroxyl Benzaldehyde.

(3)



Dibrotho, Dimetha, para pentaflouro Benzoic acid.