

Date: _____

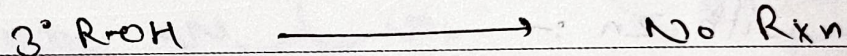
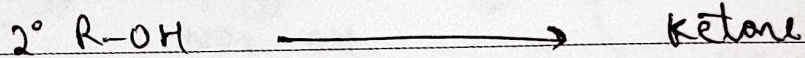
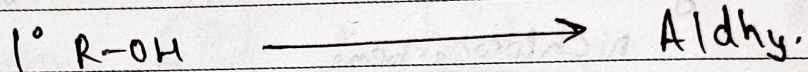
JMPS-03

Aldehyde + Ketones
Carboxylic acid + Amines
+ Diazonium Salt

* Aldehydes / Ketones :-
(Carbonyl Compd)

MOP :-

① From Oxidation of ROH :-



Mild Oxidizing Agent

i) PCC

ii) PDC

iii) Collins' Reagent

iv) Jones Reagent (CrO_3)

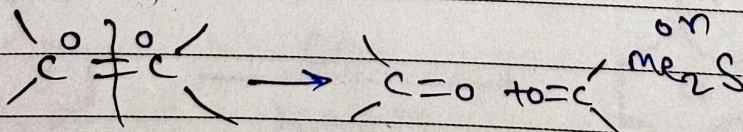
v) Cu or Ag 300° ($3^\circ \text{R-OH} \longrightarrow \text{Alkene}$)

vi) ~~MnO2~~ MnO_2 (for Allylic & Benzylic Alcohol)

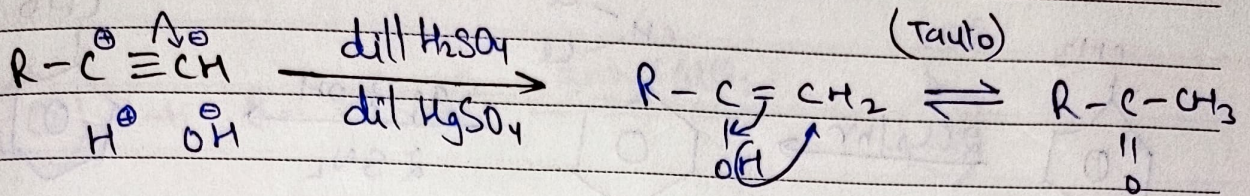
② Reductive Ozonolysis :-

Reagent :- $\text{O}_3 + \text{CCl}_4 / \text{Zn}$
on

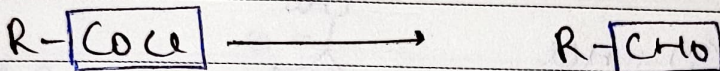
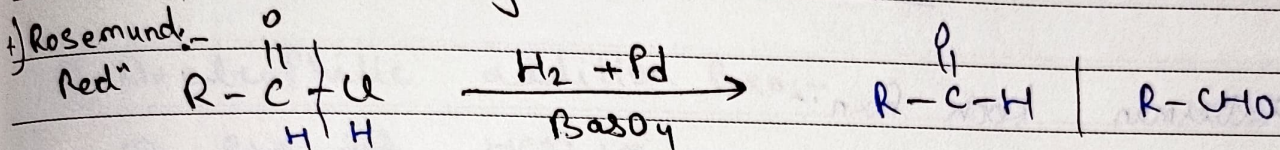
$\text{Zn} + \text{H}_2\text{O}$



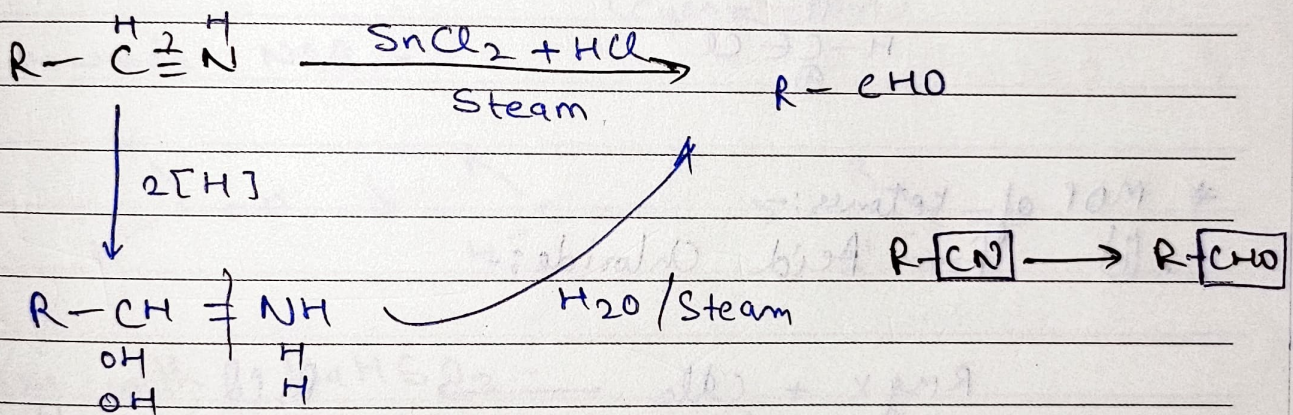
② Kucherov's Rxn:-



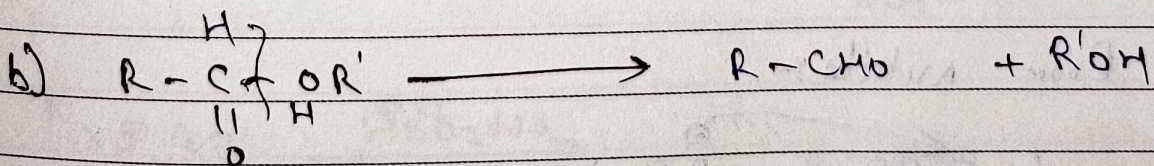
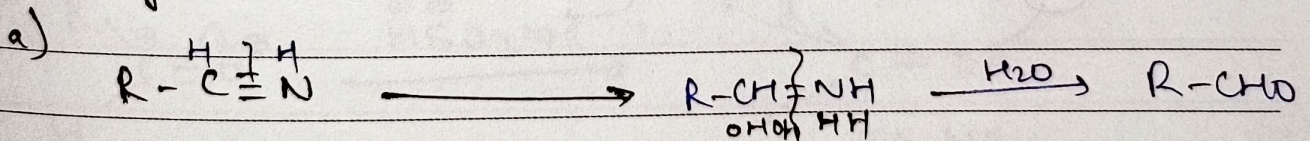
* MOP of Aldehydes:-



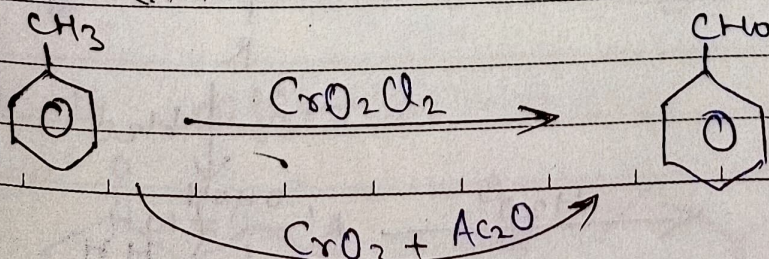
ii) Stephen's Redⁿ:-



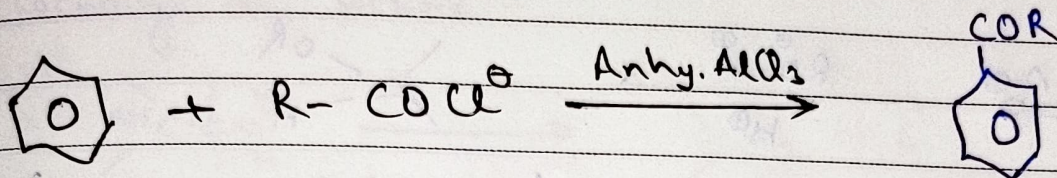
iii) Redⁿ by DiBAL-H:-



iv) Etard Rxn:-



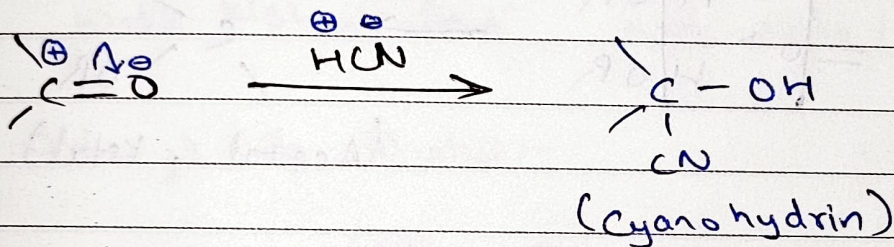
iii) F.C Acylation:-



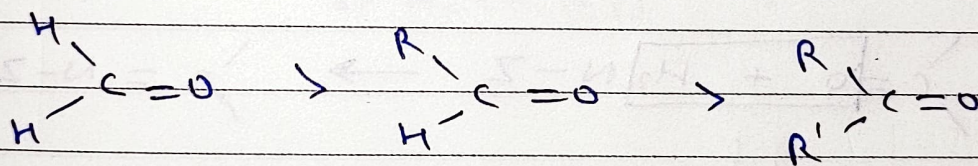
* Properties :-

① Nucleophilic addition Rxn:-

② Rxn with HCN :-

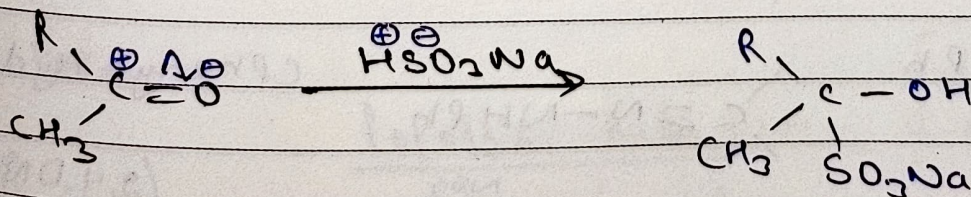
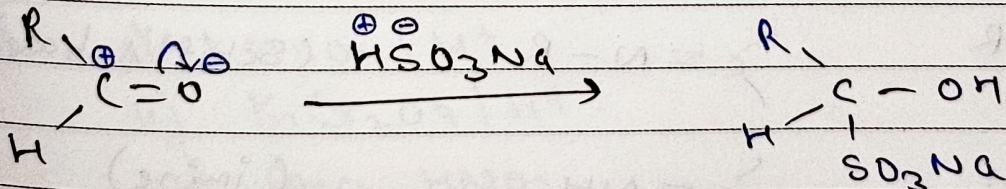


ROR towards NAR:-

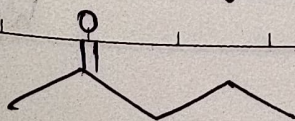


③ Rxn with NaHSO₃:-

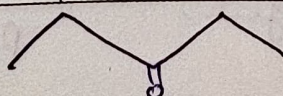
(Ald & methyl ketone)



Used to diff:-

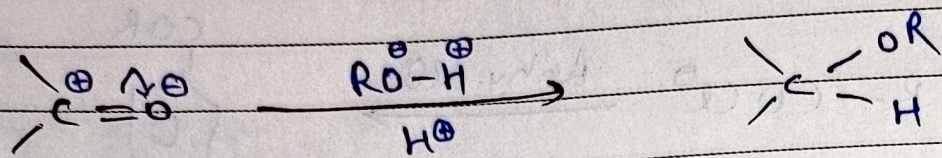


and

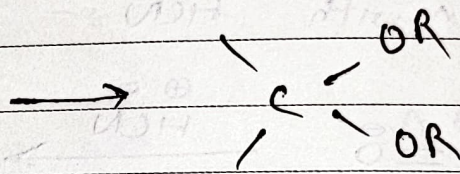
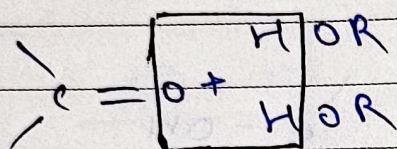
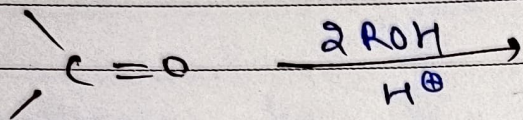


Date :

(c) Rxn with ROH / H⁺ :-

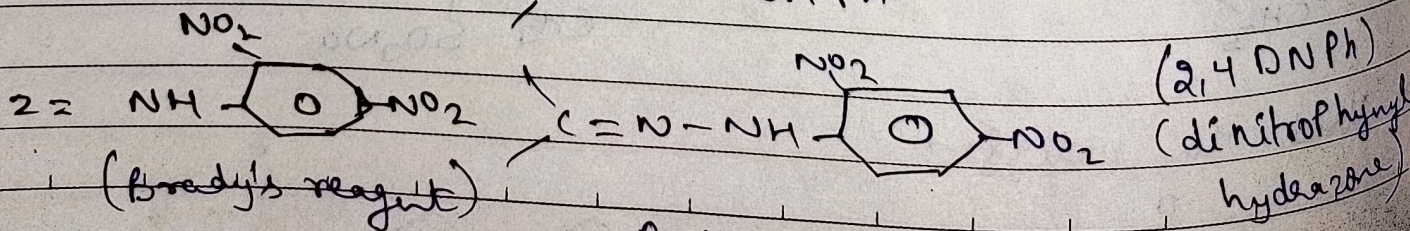
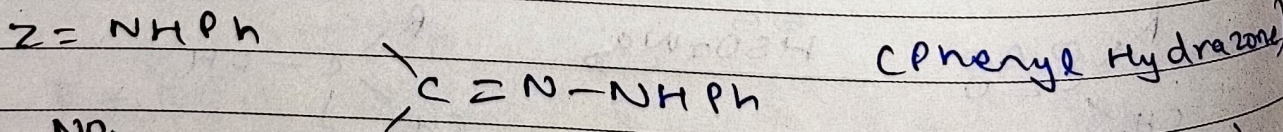
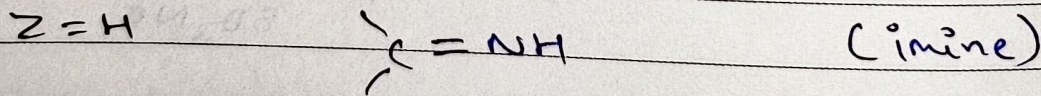
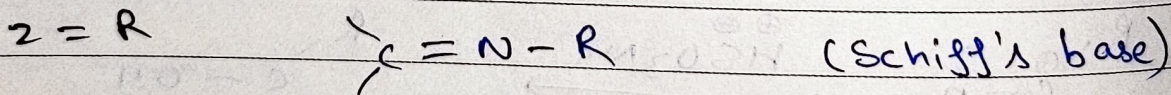
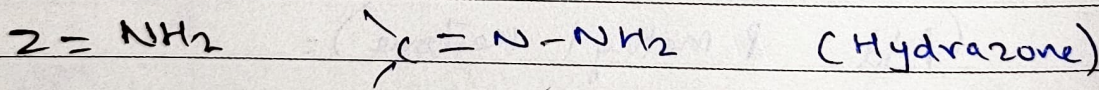
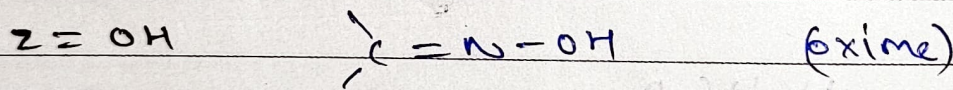
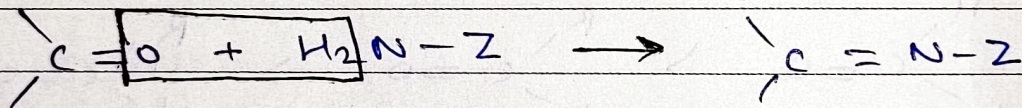


(Hemi acetal, Hemi ketal)



(Acetal, ketal)

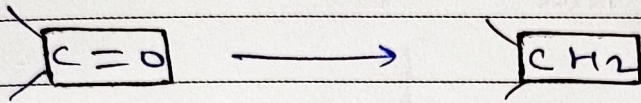
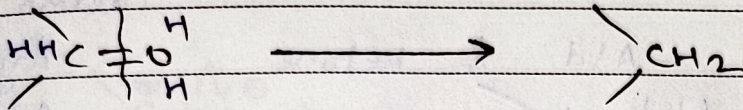
(d) Rxn with NH₂-Z



ROT PIT

② Redⁿ Rxn:-

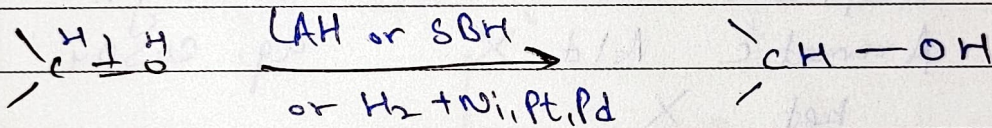
① Carbonyl to alkane:-



① Clemmenson Redⁿ $\text{Zn(Hg)} / \text{Conc. HCl}$

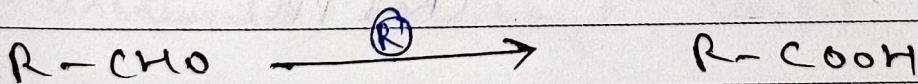
② Wolf Kishner Redⁿ $\text{NH}_2\text{-NH}_2 / \Delta$

② Carbonyl to Alcohol:-



③ Oxidation of Carbonyl:-

① Ald:-



① ⇒ i) $\text{KMnO}_4 / \text{H}^+$

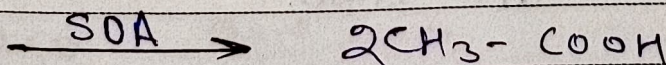
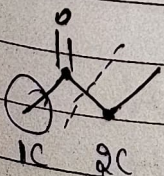
ii) $\text{K}_2\text{Cr}_2\text{O}_7 / \text{H}^+$

iii) Conc. HNO_3

② Ketone:-

Popoff's Rule :-

[$\text{C}=\text{O}$ smaller
Alkyl $\frac{1}{2}$ $\frac{2}{12}$
जिसका]

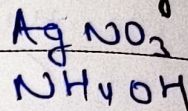


Date: _____

* Test for Carbonyl:-

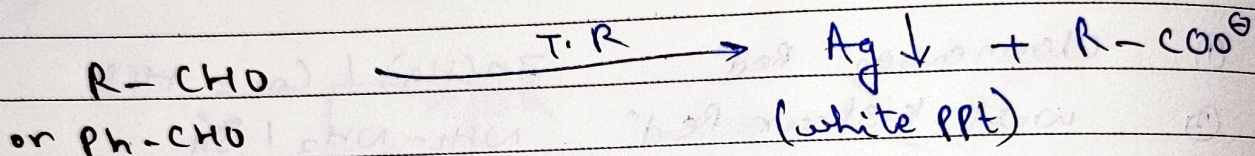
① Tollen's Test:-

Tollen's Reagent:-



diff. Ald & ketone

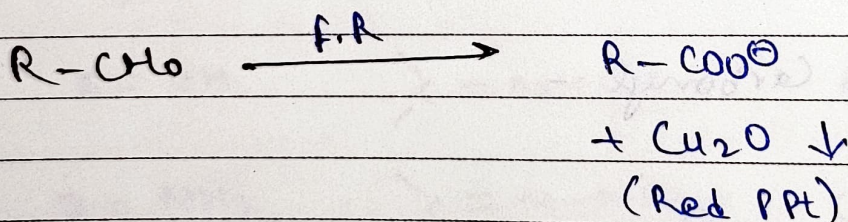
Aliphatic Ald	✓
Aromatic Ald	✓
ketones	X



② Fehling Test:-

Aliphatic Ald	✓
Aromatic Ald	X
ket	X

Fehling A + Fehling B
aq. CuSO_4 NaKT
Sodium Pota
Tartar
 COONa



* Name Rxn:-

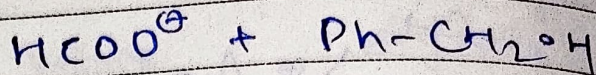
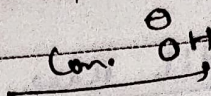
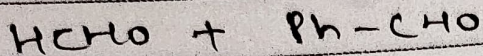
① Aldol Condensation:-

i) Carbonyl having α -H.

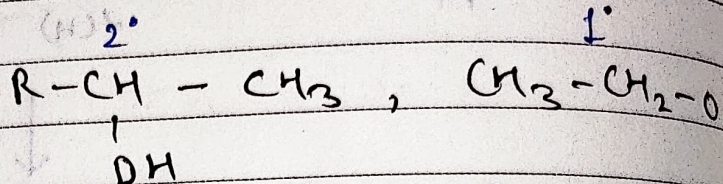
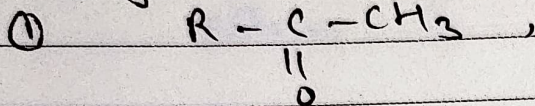
ii) Reagent:- dil. Base

Date :

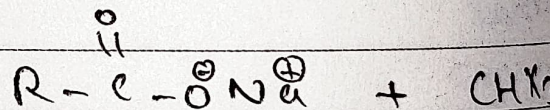
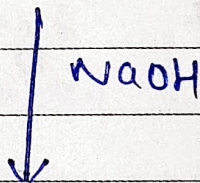
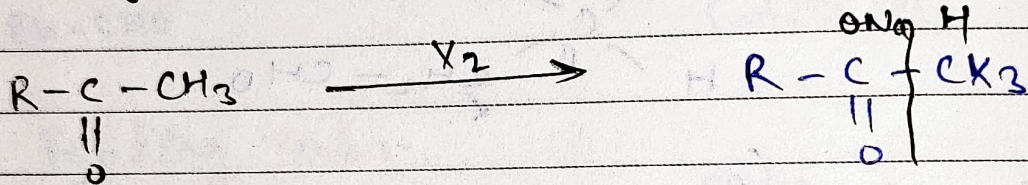
Ex:-



③ Haloform Rxn:-



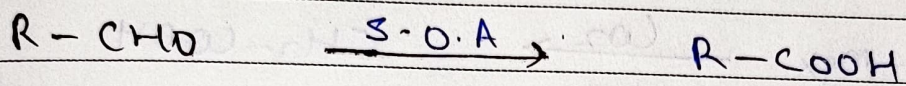
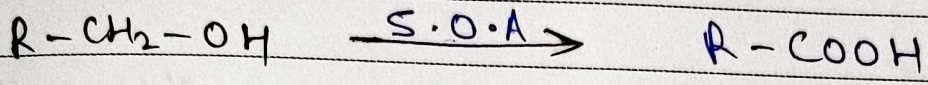
② Reagent:- X₂ + NaOH or NaOX.



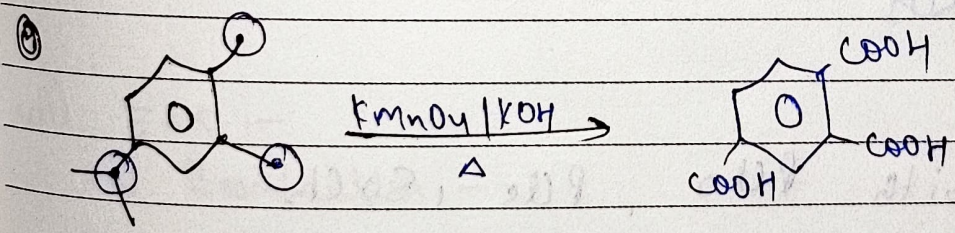
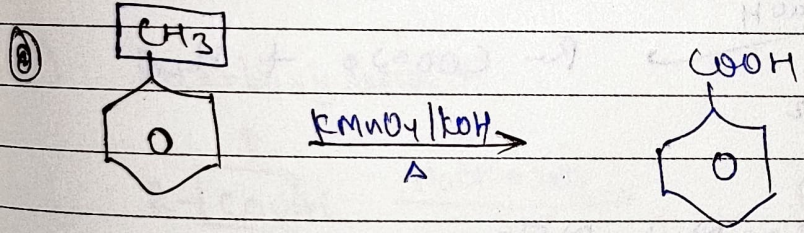
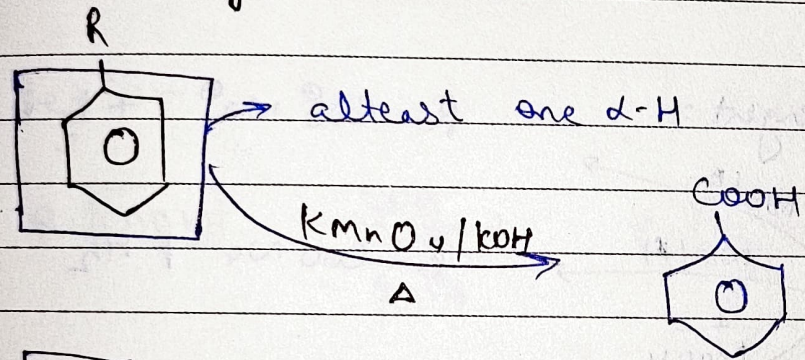
Carboxylic Acid :-

* **MOP :-**

① From oxidation of 1° ROH and aldehyde :-

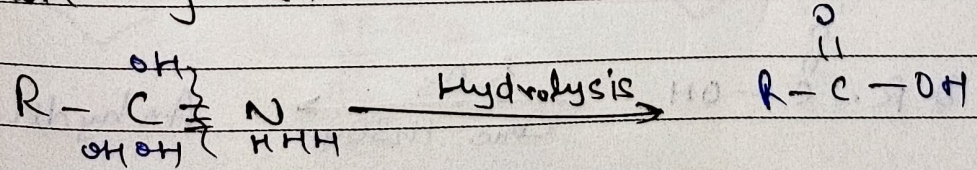


② From Alkyl Benzene :-

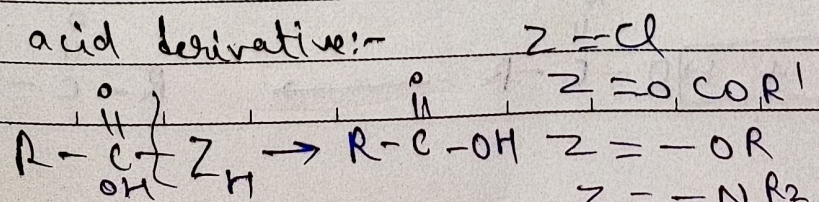


③ **Hydrolysis :-**

a) from cyanide :-

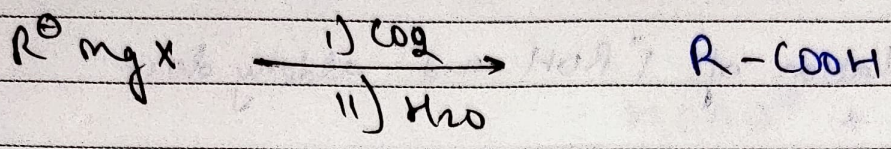


b) from acid derivative :-

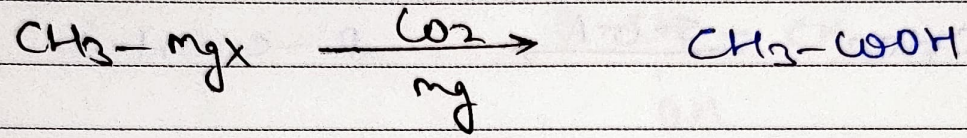


Date: _____

4) From G.R:-

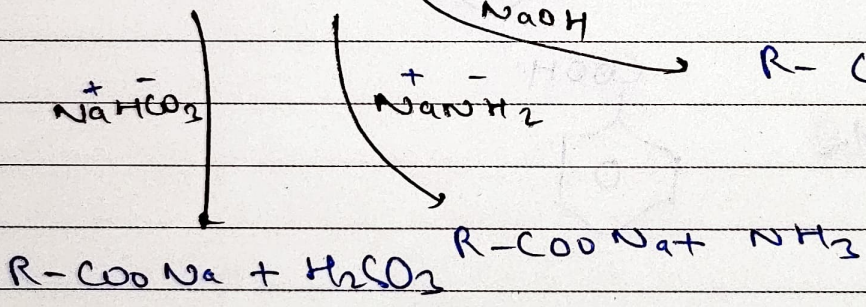
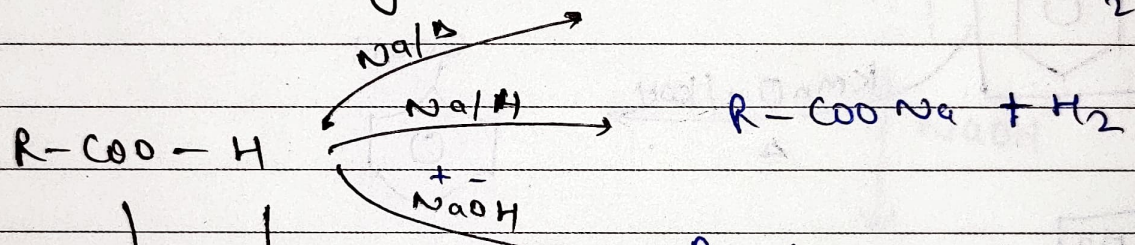
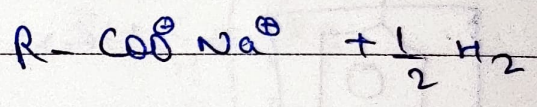


Ex:-

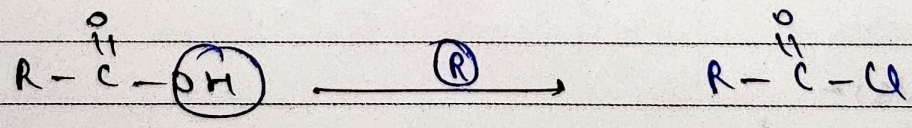


+ Properties :-

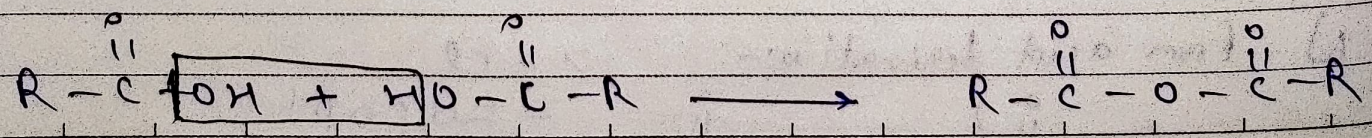
i) Acidic strength:-



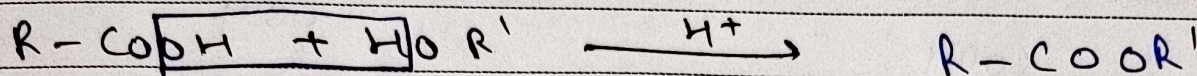
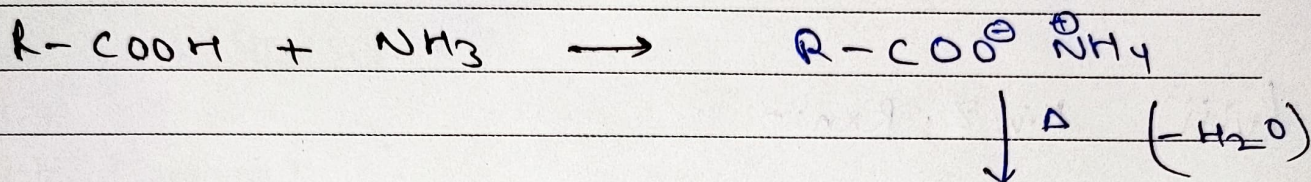
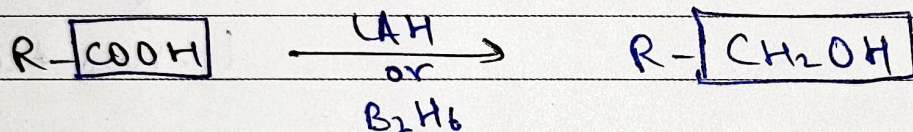
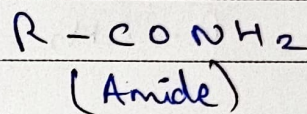
ii) Rxn with PCl_5 , PCl_3 , $SOCl_2$



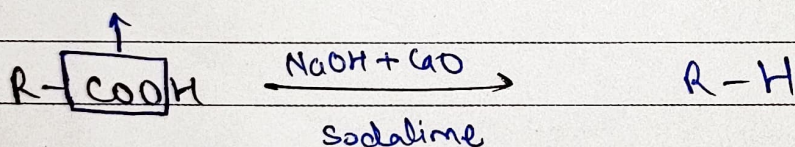
iii) $2 R-\overset{\overset{O}{\parallel}}{C}-OH \xrightarrow[\text{Conc. } H_2SO_4]{P_2O_5}$ Anhydride formation



(iii) Esterification:-

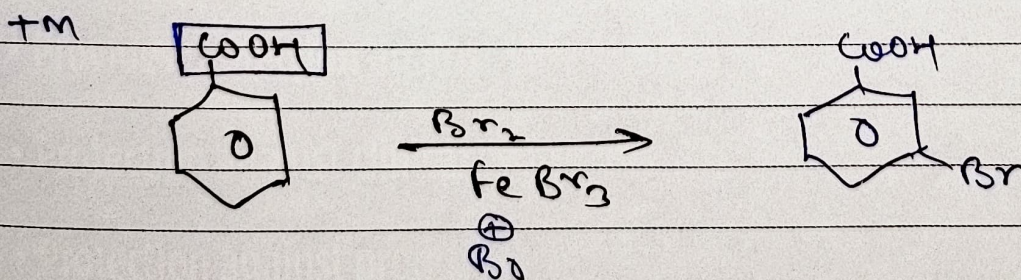
(iv) Rxn with NH_3 / Δ v) Redⁿ :-

vi) Decarboxylation:-



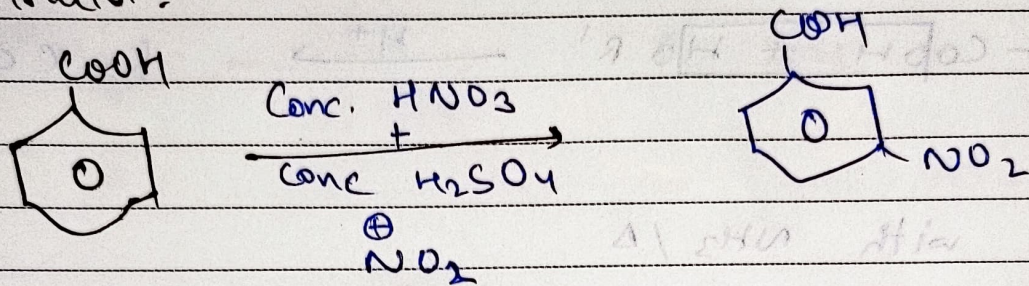
vii) EAS:-

a) Bromination:-

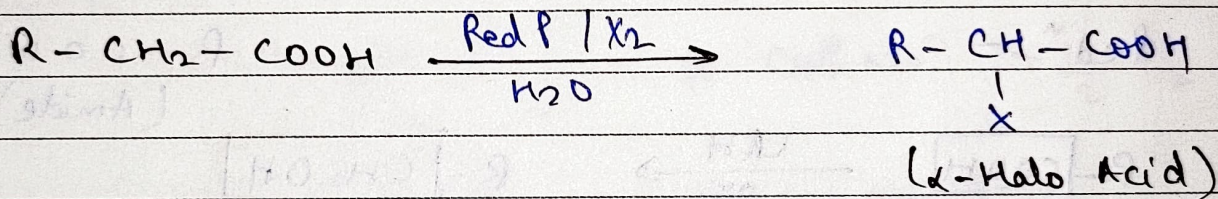


Date : _____

b) Nitration :-

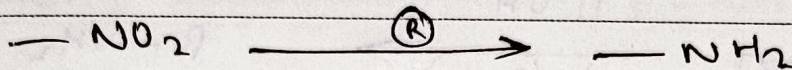


(viii) H.V.Z. Rxn :-



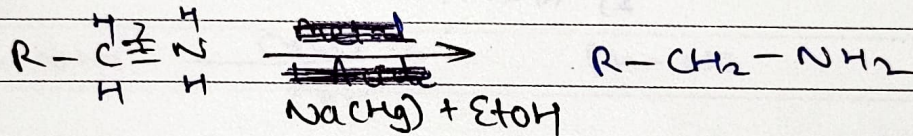
* Amines :-

① Redⁿ of Nitro :-

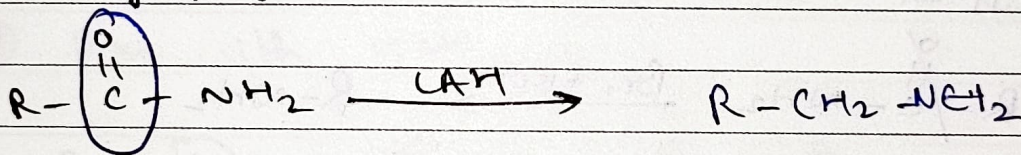


- ② \Rightarrow
- i) $H_2 + Pd$
 - ii) $Sn + HCl$
 - iii) $Fe + HCl$

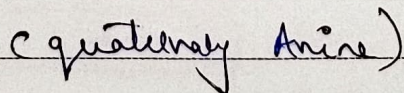
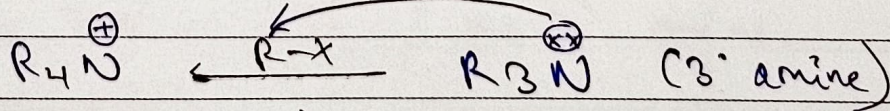
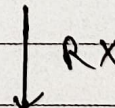
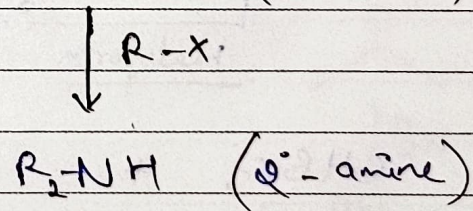
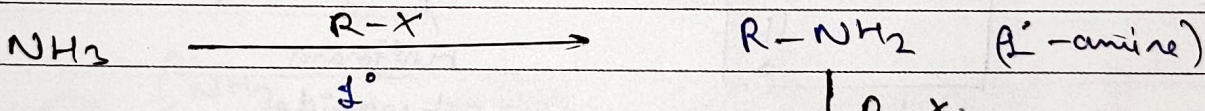
② Redⁿ of Nitrite :-



③ Redⁿ of Amide :-

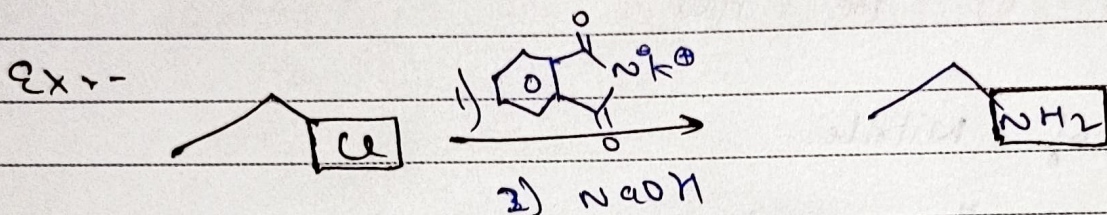
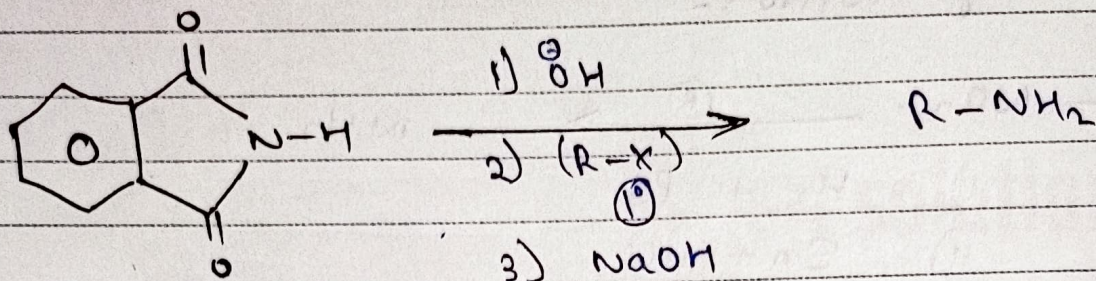


④ Ammonolysis :-

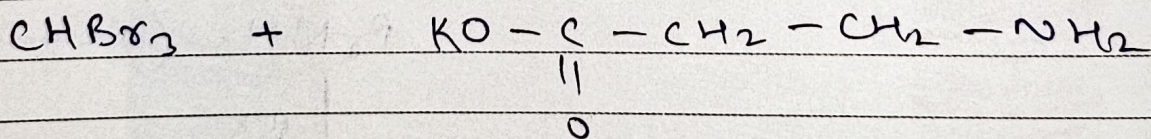
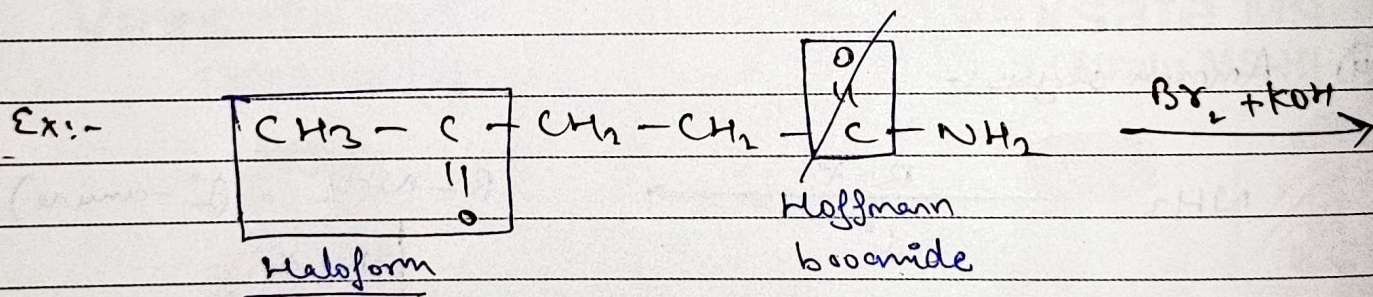
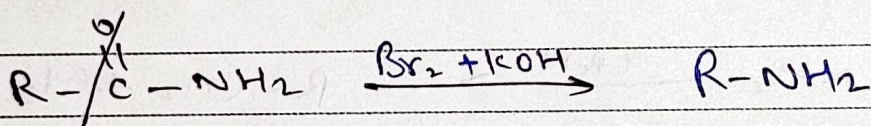


Date: _____

⑤ Gabriel phthalimide Rxn:-

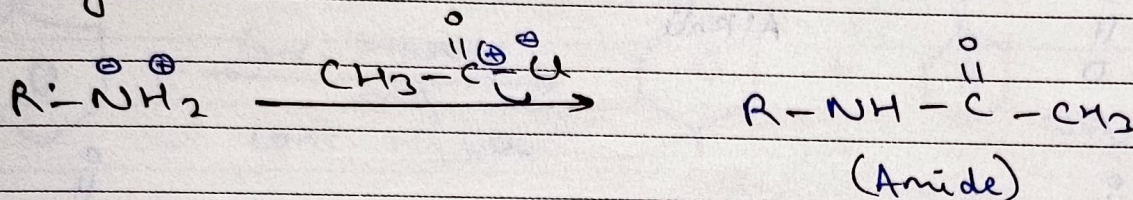


⑥ Hoffmann bromamide Rxn:-

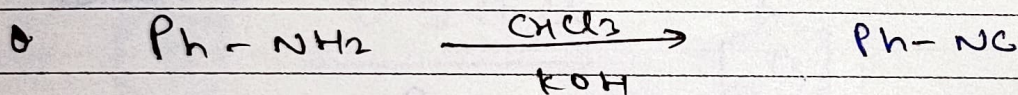
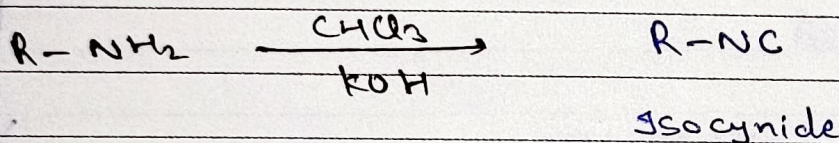


* Properties :-

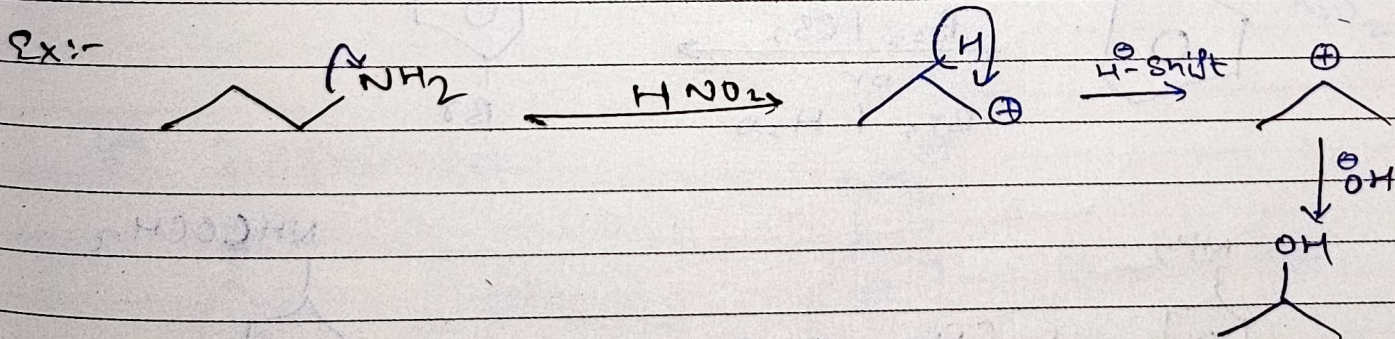
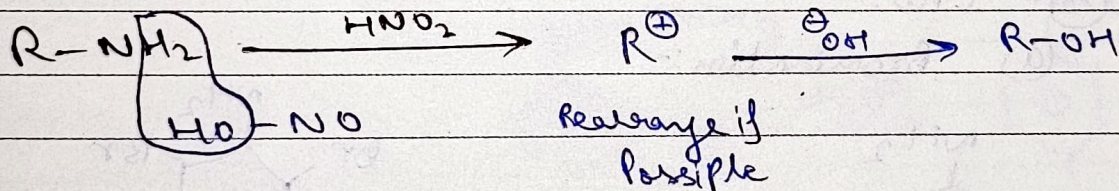
① Acylation :-



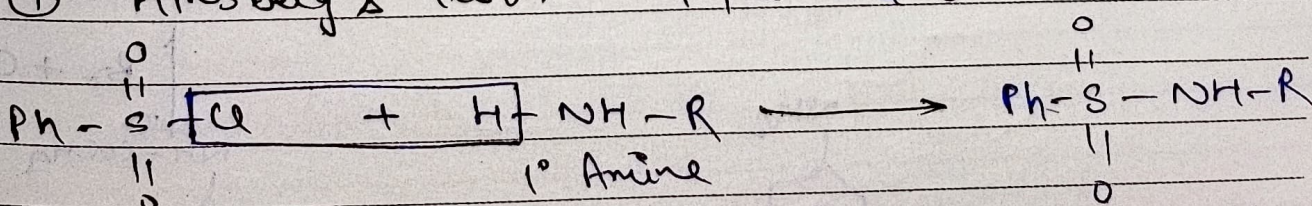
2) Carbyl Amine Rxn :- | Isocyanide Test :- (only 1° Amine)



③ Rxn with HNO_2 :-

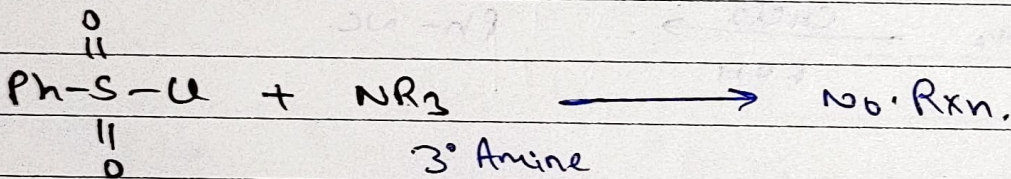
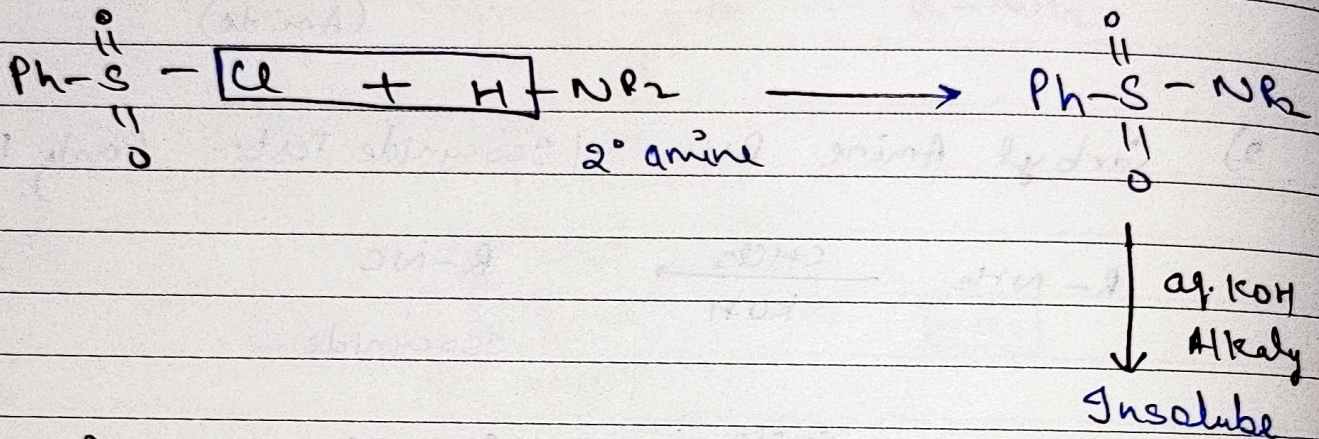
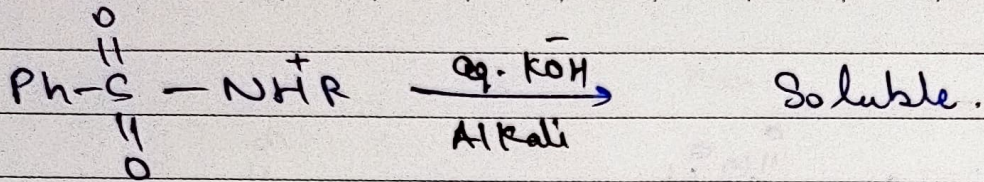


④ Hinsberg's Test :- 1°, 2° and 3° amine.



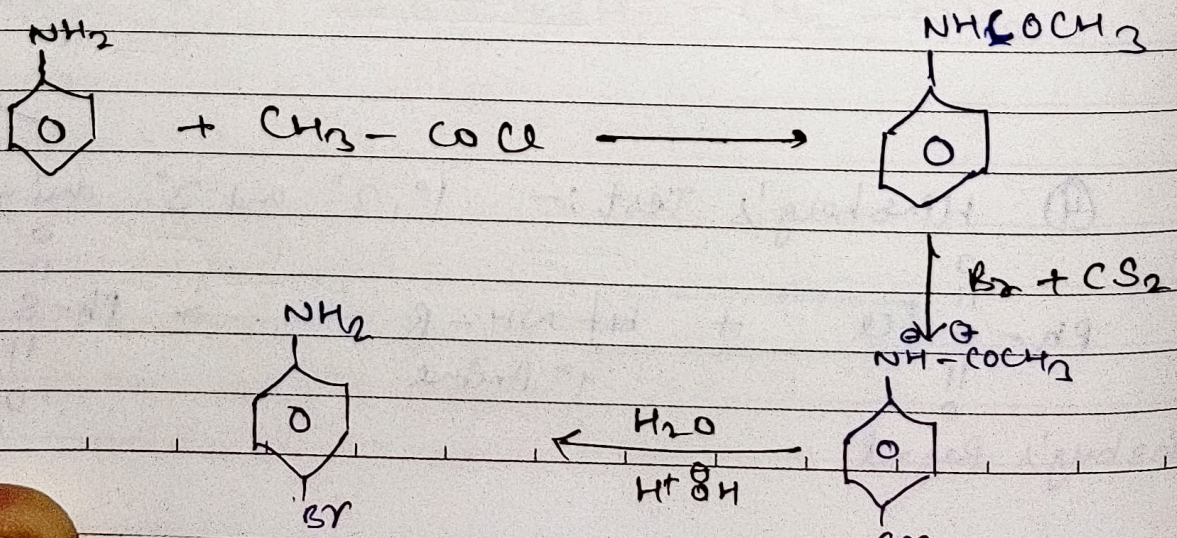
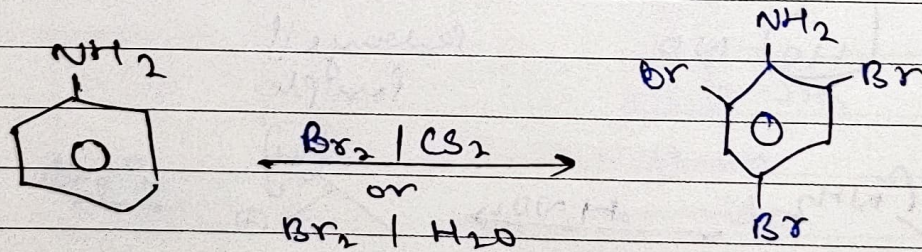
Hinsberg's Reagent

Date: _____

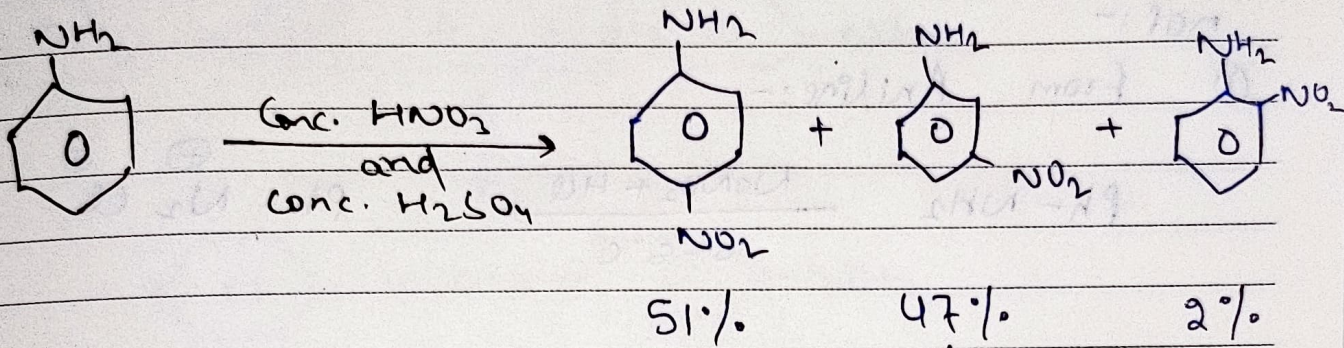


⑤ EAS:-

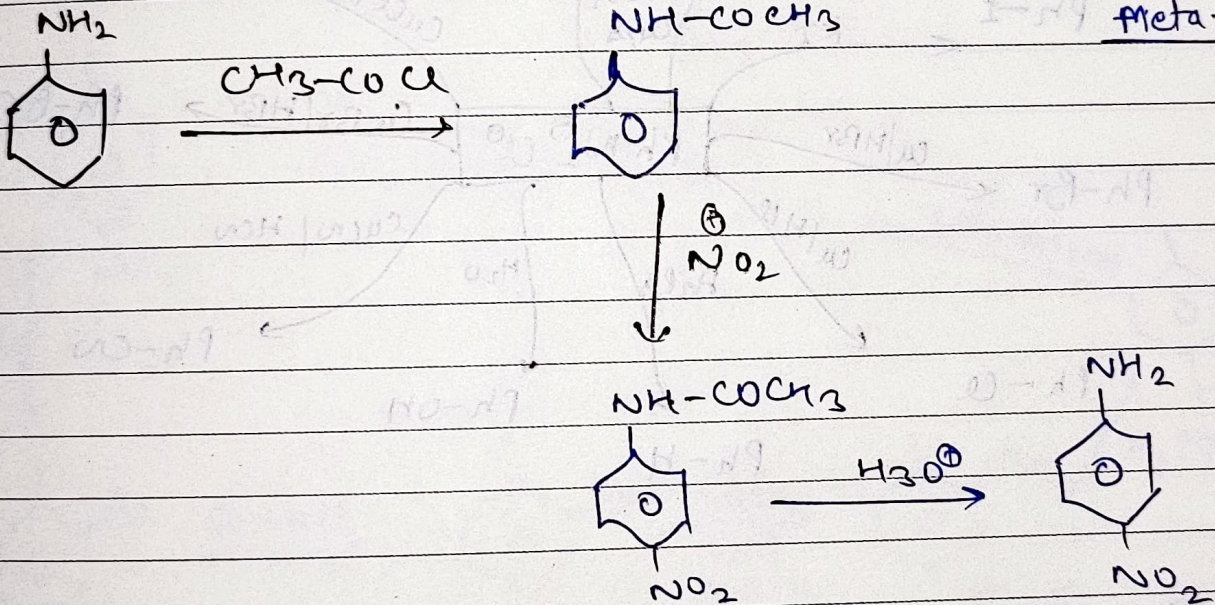
(a) Bromination:-



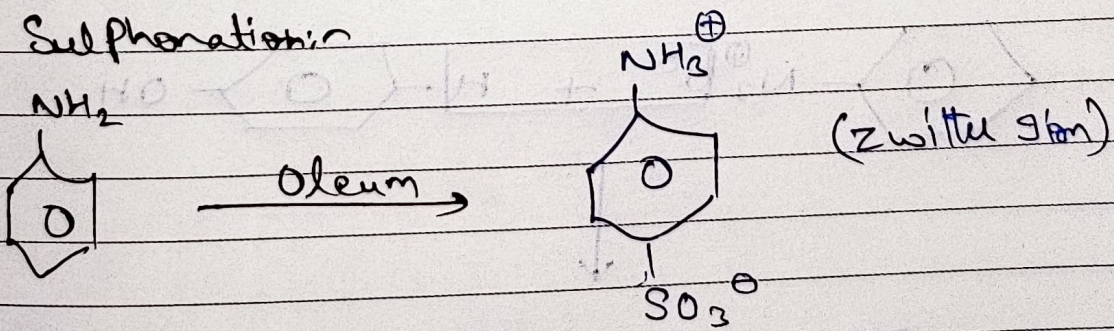
(b) Nitration:-



Acid-Base; (-m)
meta-dirac.



(c) Sulphonation:-

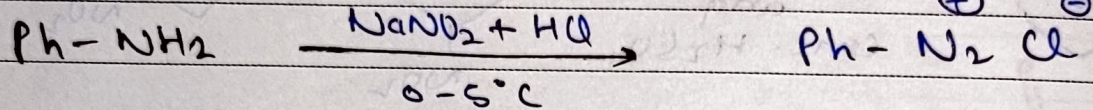


Date: _____

* Diazonium Salt:-

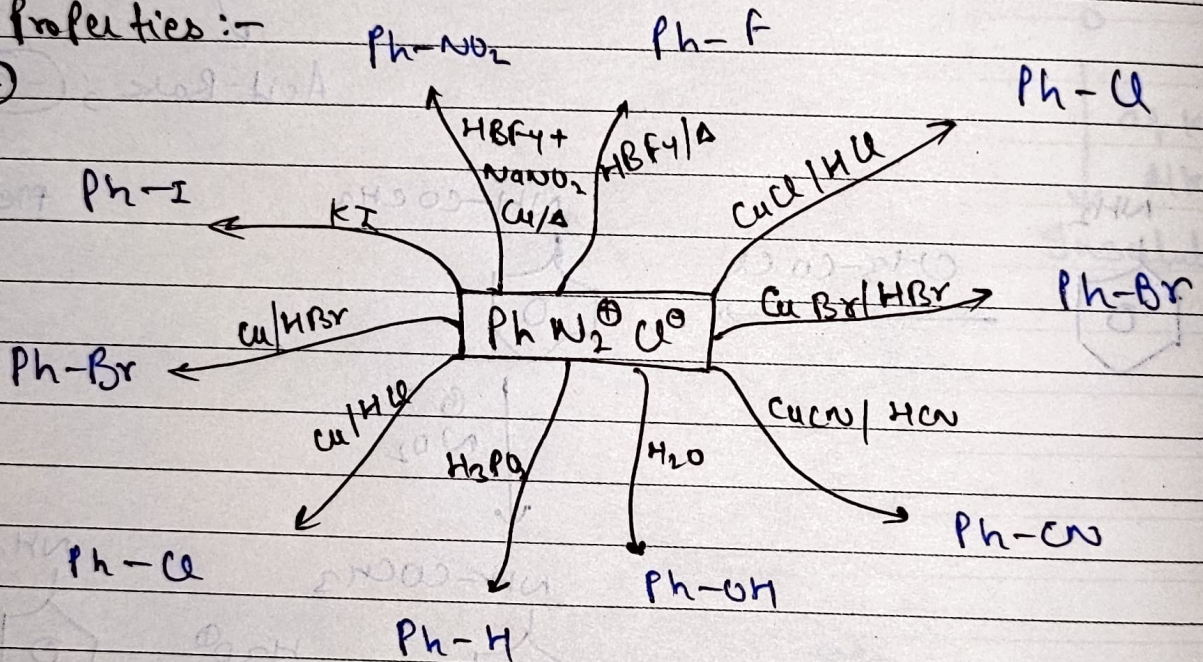
mol:-

① From Aniline:-

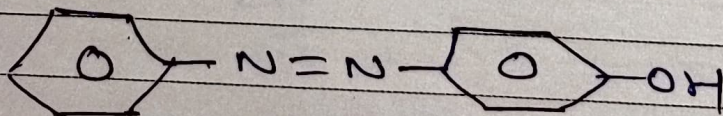
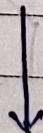
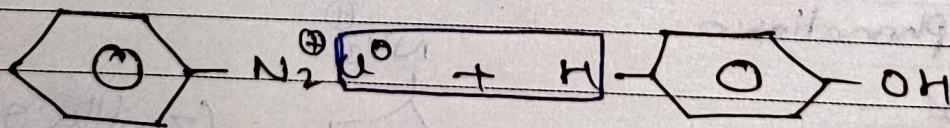


② Properties:-

(*)

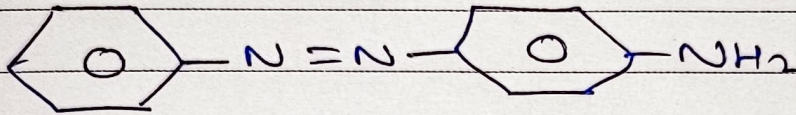
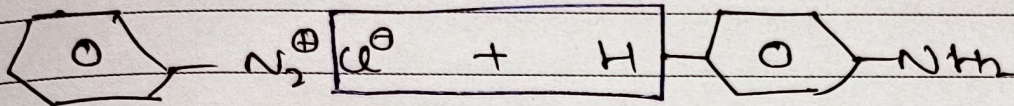


(*) Coupling Rxn:-



p-hydroxy azobenzene

(orange dye)



p- amino - azo benzene

Q :- Conversion :-

