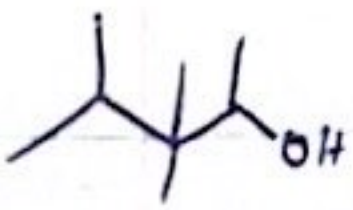
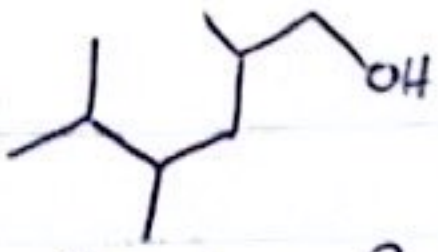
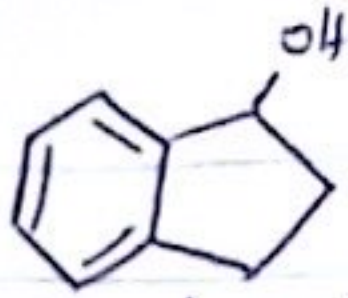


[2° alcohol]

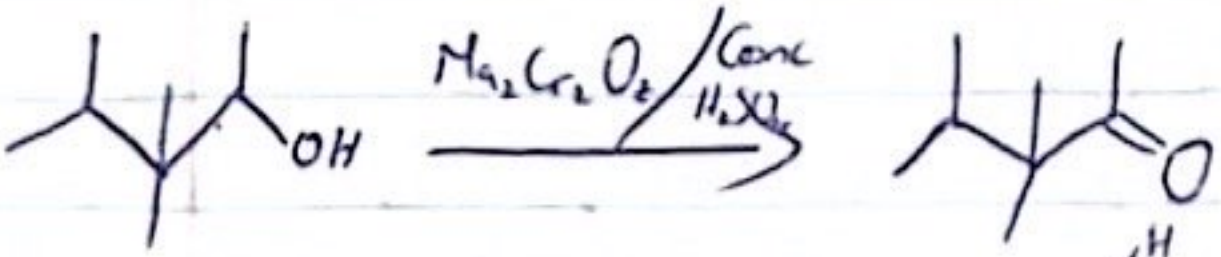


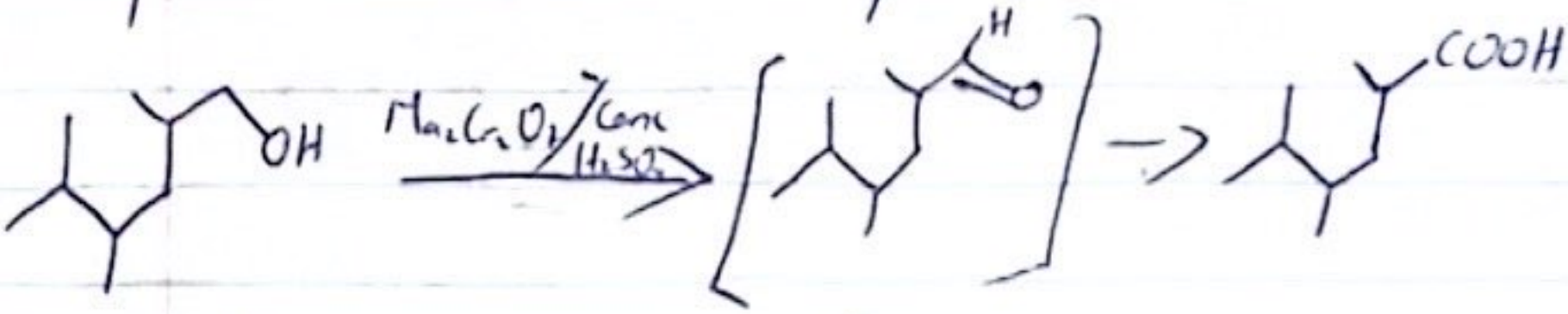
[1° alcohol]

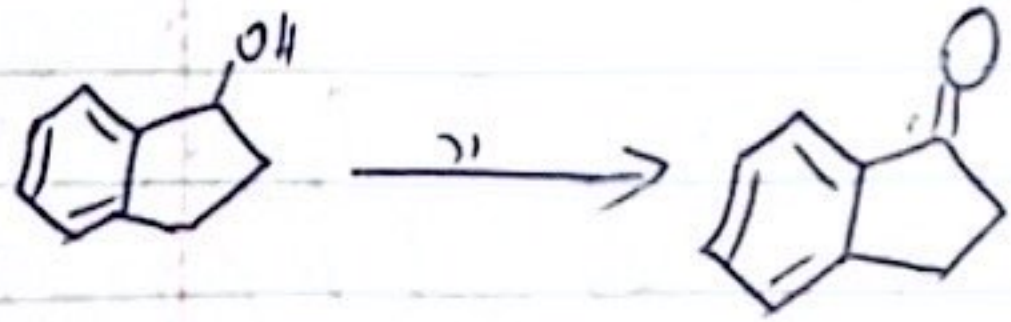


[2° alcohol]

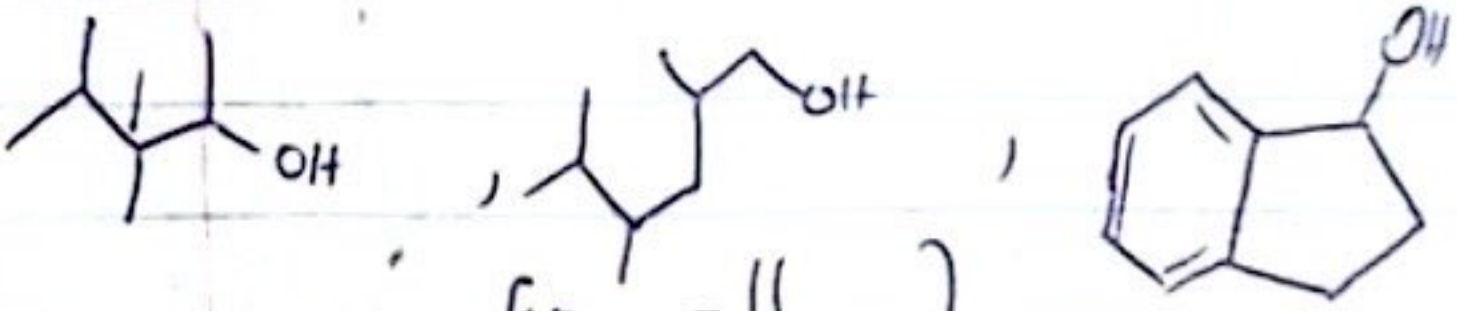
b







c



(using mild oxidizing agent)

d) Volume of Propanone

Density of benzaldehyde = $\frac{\text{Mass}}{\text{volume}}$

Mass = Density × Volume

= 1.05 × 2.5

= 2.625

$n_{\text{benzaldehyde}} = \frac{Rm}{Fm} = \frac{2.625}{106.12}$

= 0.0247 mol

Since it is 2 : 1

$\frac{1}{2}(0.0247) = n_{\text{propanone}}$

= 0.01237 mol

$n_{\text{propanol}} = \frac{Rm}{Fm}$

$Rm = 0.01237 \times 58.08$

$Rm = 0.7183\,g$

Density = $\frac{\text{mass}}{\text{volume}}$

$\text{Volume} = \frac{0.7183}{0.80}$

= 0.897 cm^3

b) Percentage yield of dibenzaldehyde

= $\frac{\text{obtained yield}}{\text{Theoretical yield}} \times 100$

obtained => 2.0g

Theoretical => ?

Since it is also in ratio 2 : 1

$n_{\text{dibenzaldehyde}} = \frac{1}{2}(0.02$

= 0.01237 mol

$n_{\text{dibenzaldehyde}} = \frac{Rm}{Fm}$

$Rm = 0.01237 \times 232$

= 2.8945

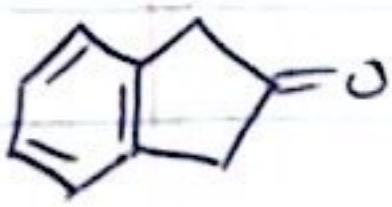
Theoretical = 2.8945

$\%\ \text{Yield} = \frac{2.0}{2.8945} \times 100$

= 69.09%

b | Recall, for aldol Condensation, the 2 ketones or aldehyde must have α hydrogen to for β-hydroxyl ketone/aldehyde But for Claisen Schmidt Condensation, they must have 2 α hydrogens. 1 for the formation of β-hydroxyl and the other for the removal of water.

Therefore, the only Correct answer is "8"



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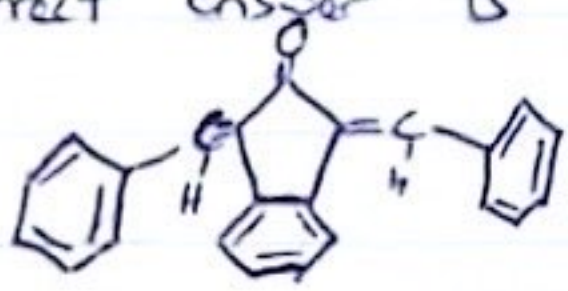
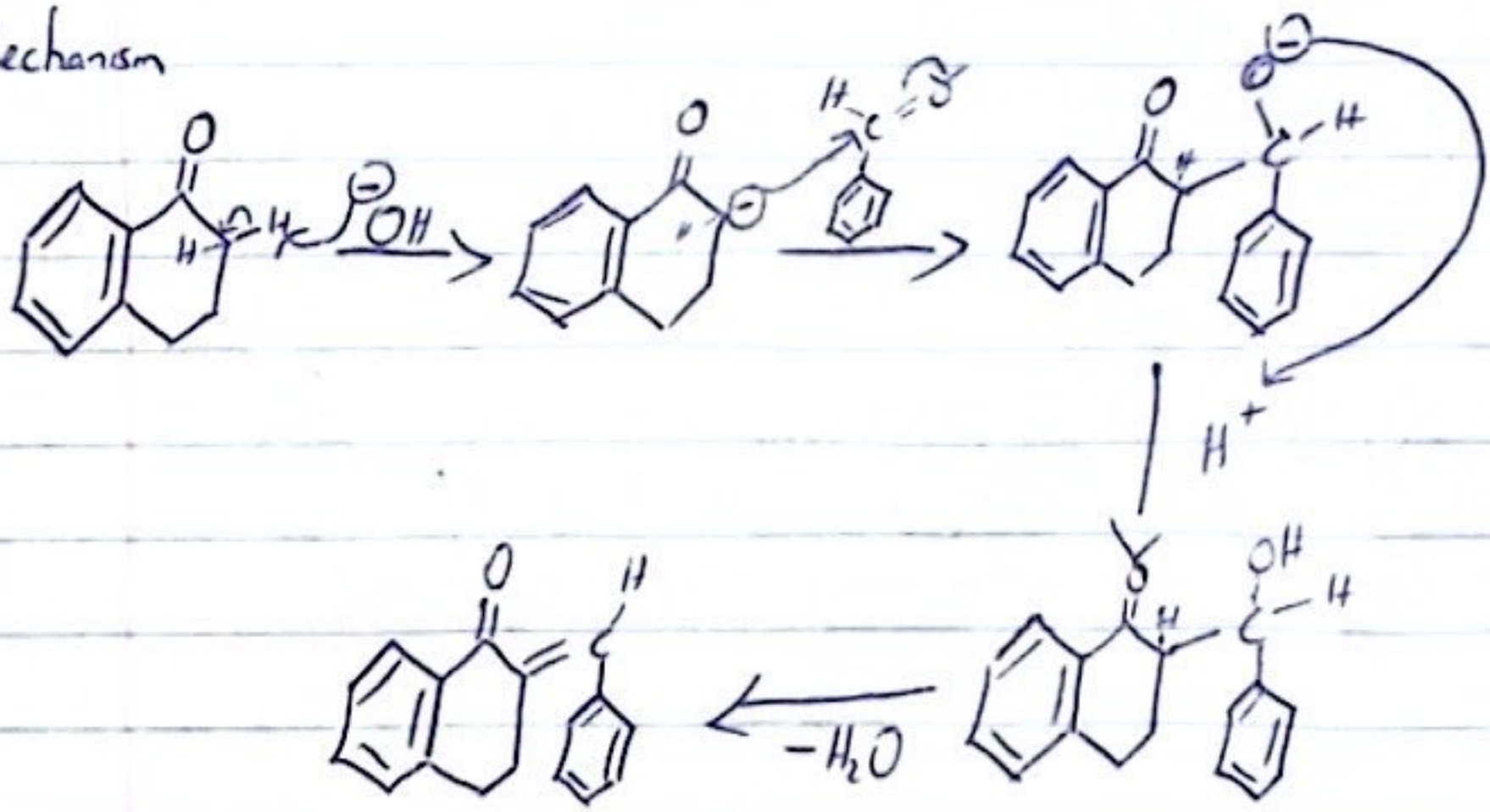


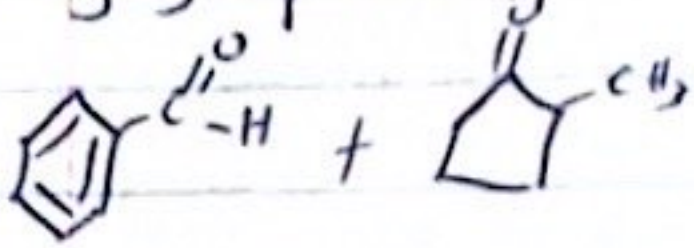
c | Mechanism



3] Mah that experiment wah wa skip
E Cannur Come out.

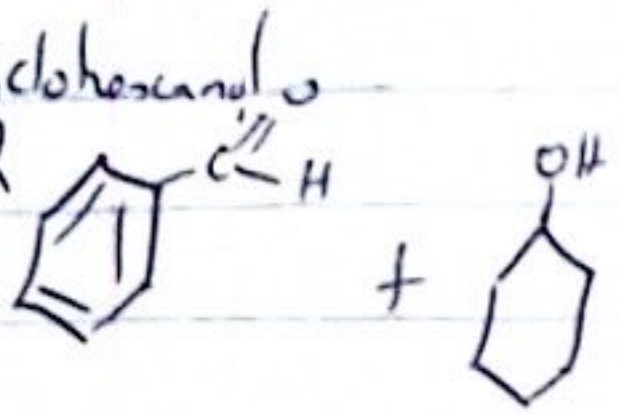
4] a] Note, Only Primary and Secondary alcohol can oxidizable. The oxidation of tertiary alcohol is not normal.

3 2-methylcyclopentanone



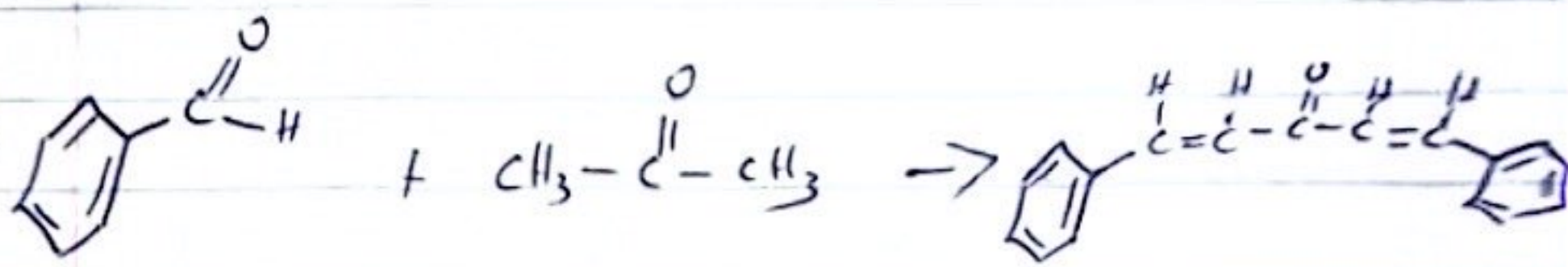
→ Mo reaction [It can only react with 1]

4 Cyclohexanol



→ Mo reaction [Mo >C=O]

11



2 1 1

Volume of benzaldehyde = 2.5cm³

Inleight of dibenzalpropanone = 2.0g

-Specific gravity = Density

S.g benzaldehyde = 1.05

" Propanone = 0.80

Mm benzaldehyde = 106.12g/mol

" Propanone = 58.08 g/mol

" dibenzaladehyde = 234g/mol

2021/2022 Session

Answer Question 1

i A moderate acidic condition is important for the reaction in other to protonate the Carbonyl and to make the Carbonyl Carbon atom more electrophilic and more susceptible to nucleophilic attack.

ii Recrystallization is necessary in other to remove other 2,4-dinitrophenyl hydrazine present in the crystalline derivative [phenyl hydrazone]. In other to get a sharp melting point range.

iii] i] solubility -> Highly soluble at high temp
Low solubility at low temp

2] Chemical Inertness: It must not react with the Compound

3] Appropriate boiling point: The bp of the solvent should be low enough to easily evaporate after recrystallization but high enough to allow the solution to be heated without evaporating excessively.

CHM7312

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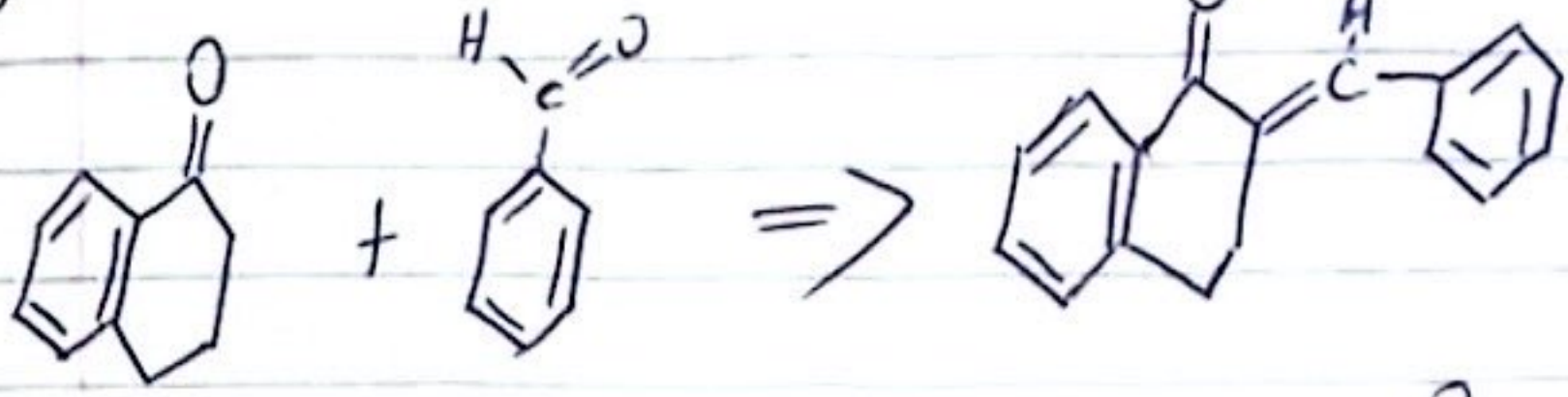
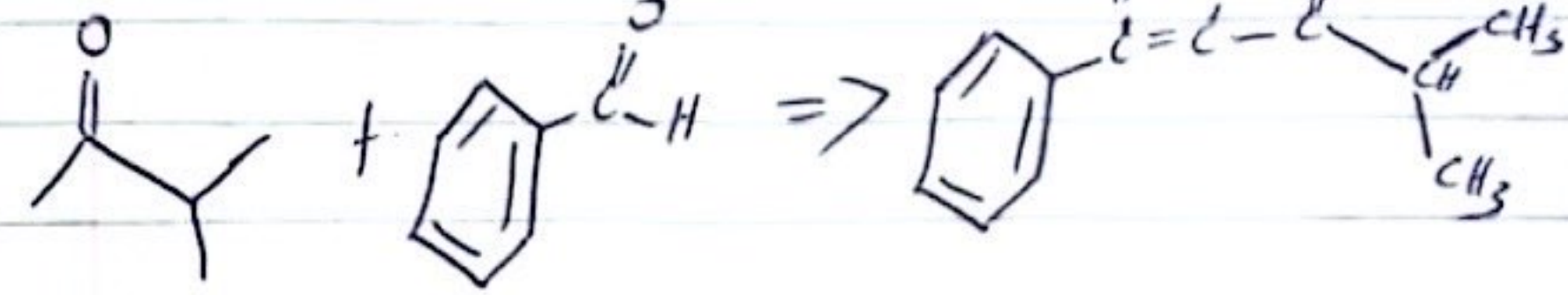
1] We no use Semicarbazide hside lab

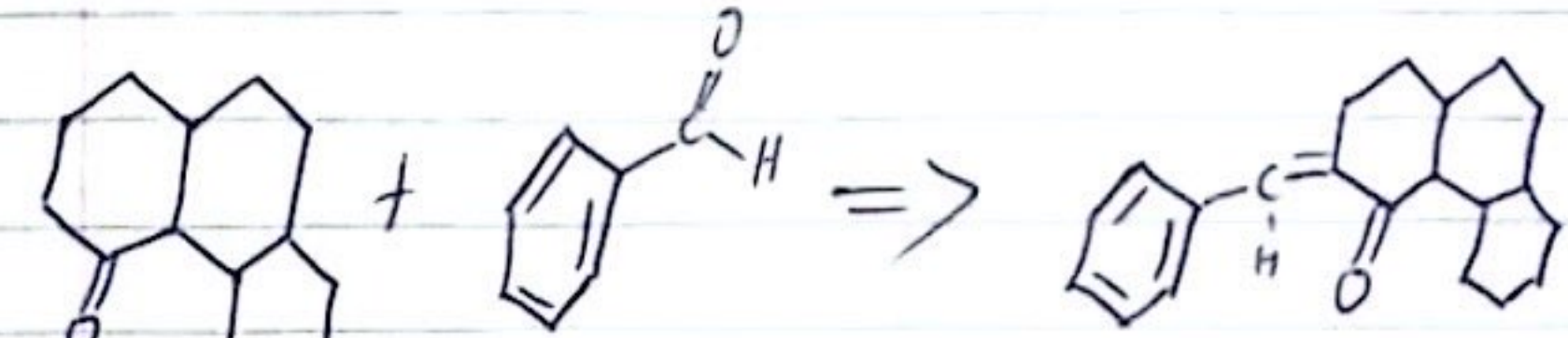
⇓

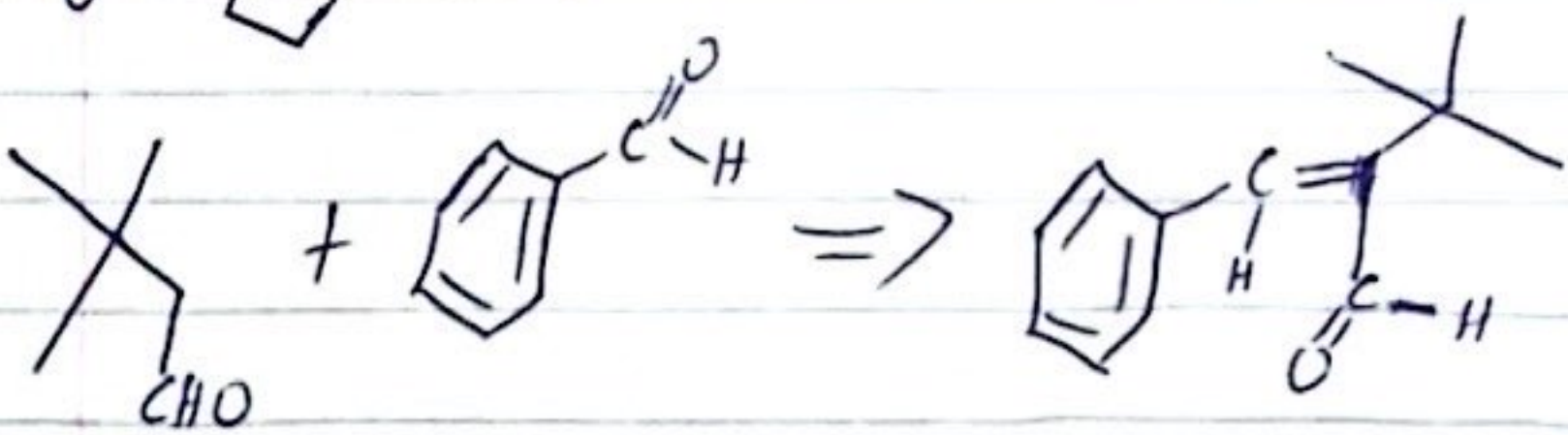
Therefore It cannot come out

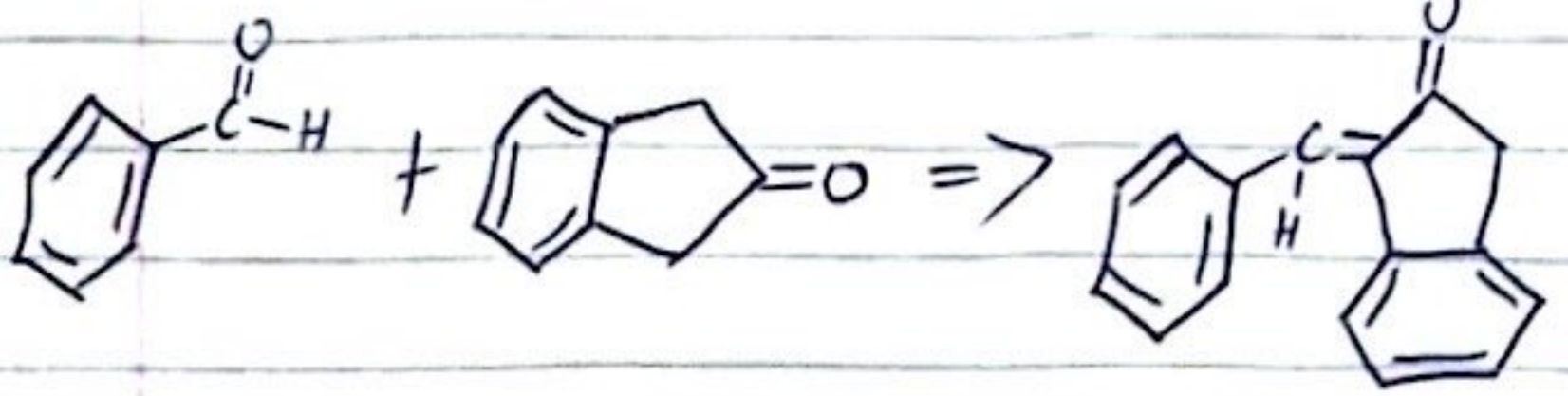
2 a]

i) 

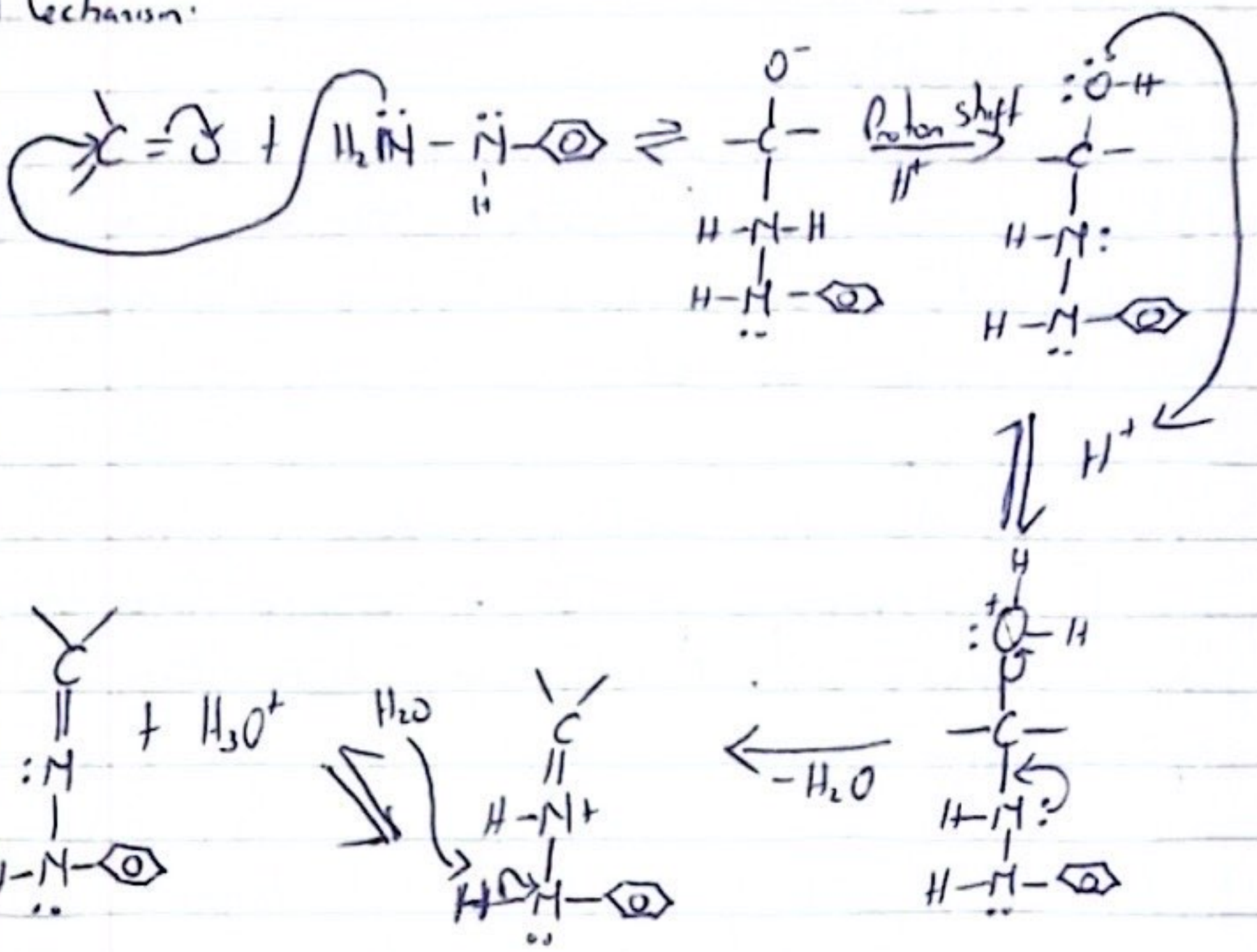
ii] 

iii] 

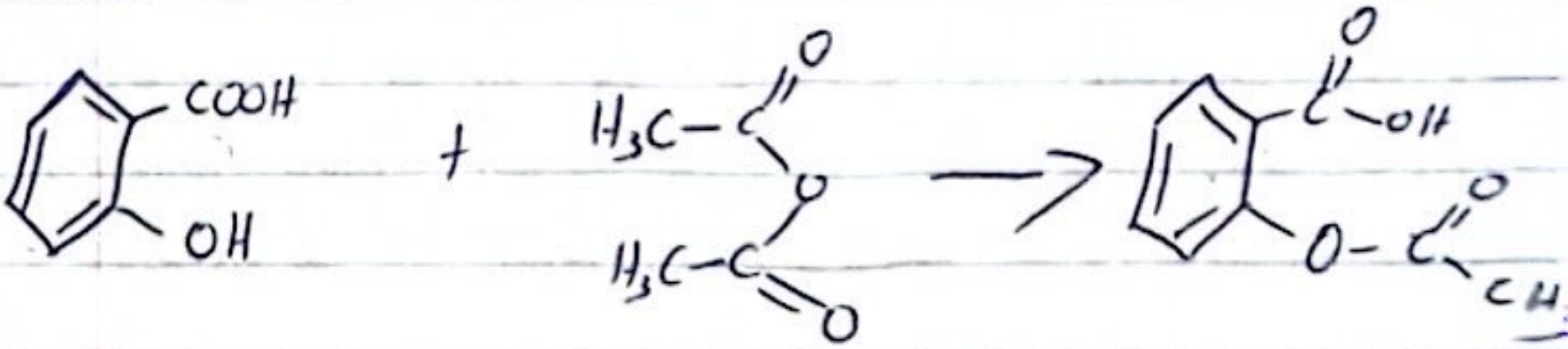
iv] 

v] 

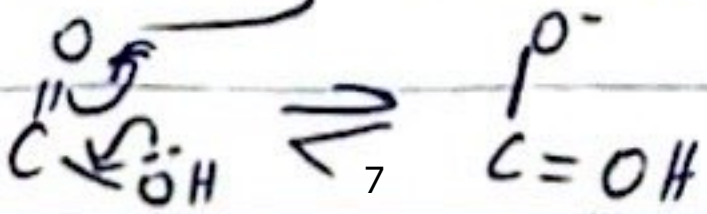
iv. Mechanism:



Question 2



i) The phenolic OH group is preferred to the carboxylic OH for acetylation bcos the oxygen lone pair present in the carboxylic OH is not readily available due to resonance stabilization

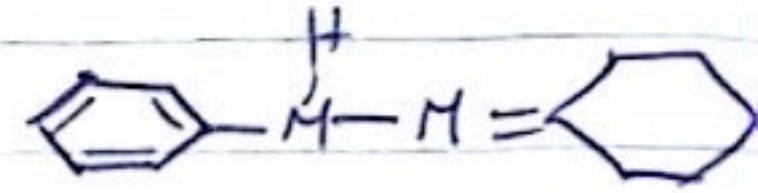


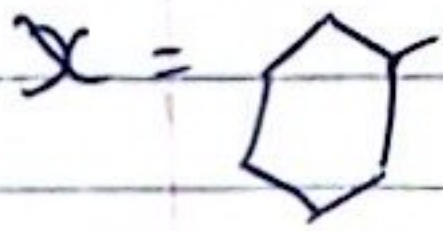
Question 4

i Jones reagent is a chemical reagent used for the oxidation of primary and secondary alcohols to carboxylic acids and ketones respectively. It is an aqueous solution of Chromium trioxide in dilute Sulphuric acid

E.g $Na_2Cr_2O_7/H_2SO_4$, $K_2Cr_2O_7/H_2SO_4$

ii

a $X \xrightarrow[H_2SO_4]{[O]} Y \xrightarrow{NH_2-NH-C_6H_5}$ 

$X =$  cyclohexanol

b I don taya, make person do ham