

(SECTION-B)

(SHORT Questions)

{ Question: 2 }

ANSWER:

(i) TYPICAL TRANSITION METALS:

In d-block elements some are typical and transition elements and some are non-typical and non-transition elements. Typical transition elements are those in which d-orbital is partially filled in its atomic or any common oxidation state. Typical elements are those which are colored.

Example:

In d-block group IVB to IB all are typical and transition elements.

(ii) NON-TYPICAL TRANSITION METALS:

Non-typical transition metals are those which contain complete filled or totally empty d-orbital in its atomic or any other stable oxidation state. They are colorless.

Example:

In d-block Group IIB and III B contains non-typical transition elements.

-(Question: 5)-

ANSWER:

ISOMERISM:

Isomerism is the phenomenon in which compound have same Molecular formula but different structural formula.

CONDITION FOR GEOMETRICAL ISOMERISM:

The necessary and sufficient conditions for Geometrical Isomerism is that compound should have a double Bond and atoms attach to double Bond contains different atoms. If they have same

atoms Attached then there will be no geometrical Isomerism.

EXAMPLE:

Alkenes and cycloalkanes undergo geometrical Isomerism. But there is exception of Propene which don't undergo geometrical Isomerism.

-(Question: 7)-

ANSWER:

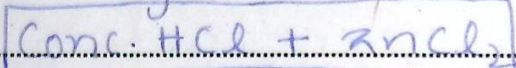
LUCAS TEST:

Lucas test is that test in which we differentiate Primary, Secondary

and tertiary Alcohols.

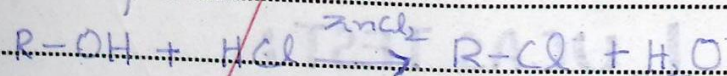
LUCAS REAGENT:

Lucas reagent is concentrated HCl and $ZnCl_2$. They both combine and make Lucas reagent.



HOW TO DISTINGUISH BETWEEN ALCOHOLS:

When we react tertiary Alcohol with Lucas reagent, it will show cloudiness (white ppt) with greater speed.



When we react secondary Alcohol with Lucas reagent, it will show cloudiness and take less

time.

When we react Primary Alcohol with Lucas reagent, it will not show cloudiness for a longer time.

-(Question: 8)-

ANSWER:

Tollen's test and fehling test is used to detect Aldehyde and ketone.

TOLLEN'S TEST:

Firstly we have to prepare tollens's reagent. Take a test tube add $AgNO_3$ in it, then add NaOH it will

form brownish ppt then add NH_3 in it, it will clear the solution.

Tollen's reagent is mild oxidizing agent it will oxidize only

Aldehyde. Take Tollen's reagent in tube and add compound that contain Aldehyde. Aldehyde will be oxidized by $[\text{Ag}(\text{NH}_3)_2]^+$ and Ag ions get reduced to silver atoms and sticks on glass tube appear like silver mirror. It is also called Silver Mirror test.

FEHLING SOLUTION TEST:

Fehling reagent contain cupric ions with citrate ions. Cupric ion will oxidize the Aldehyde form Carboxylate ions and cupric ions will form cuprous oxide.

IMPORTANCE:

These tests are important because with these we can differentiate between Aldehyde and ketone. Aldehyde are oxidized easily by mild oxidizing agent and these test contain mild oxidizing agents. Aldehyde give these three tests positive and ketone doesnot give these tests +ve.

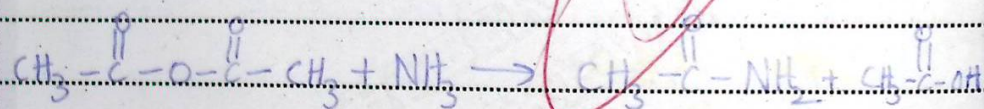
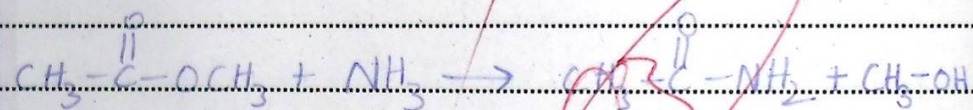
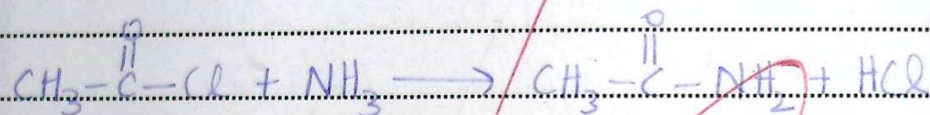
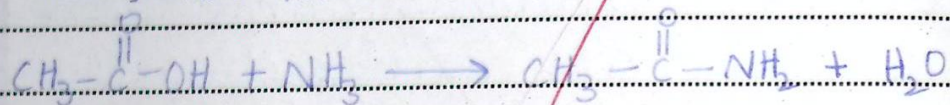
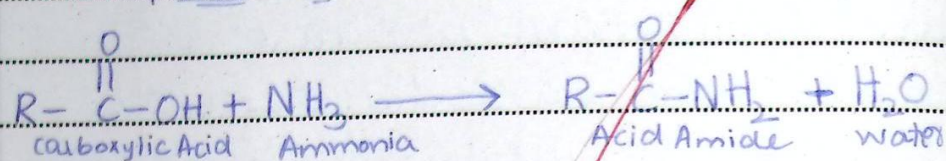
-(Question: 9)-

ANSWER:

CONVERSION OF CARBOXYLIC ACID TO ACID AMIDE:

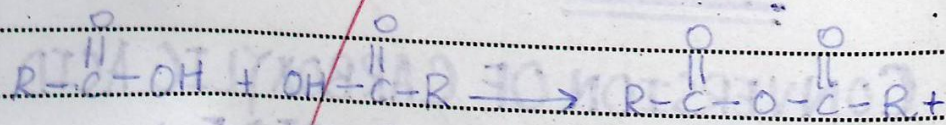
Reaction

General Rxn:



CONVERSION OF CARBOXYLIC-ACID TO ANHYDRIDE:

General Rxn:

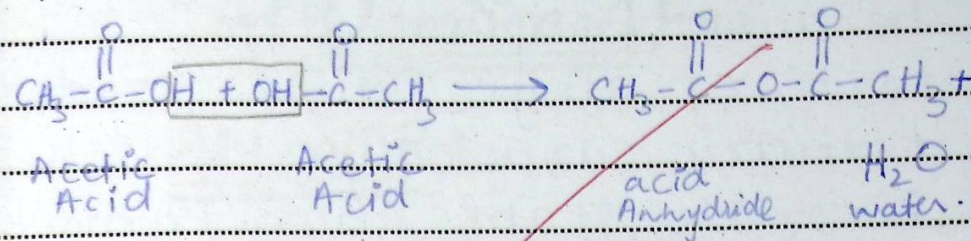


Carboxylic Acid

carboxylic Acid

Acid Anhydride

H₂O water



(Question: 6)

ANSWER:

SN¹ REACTION:

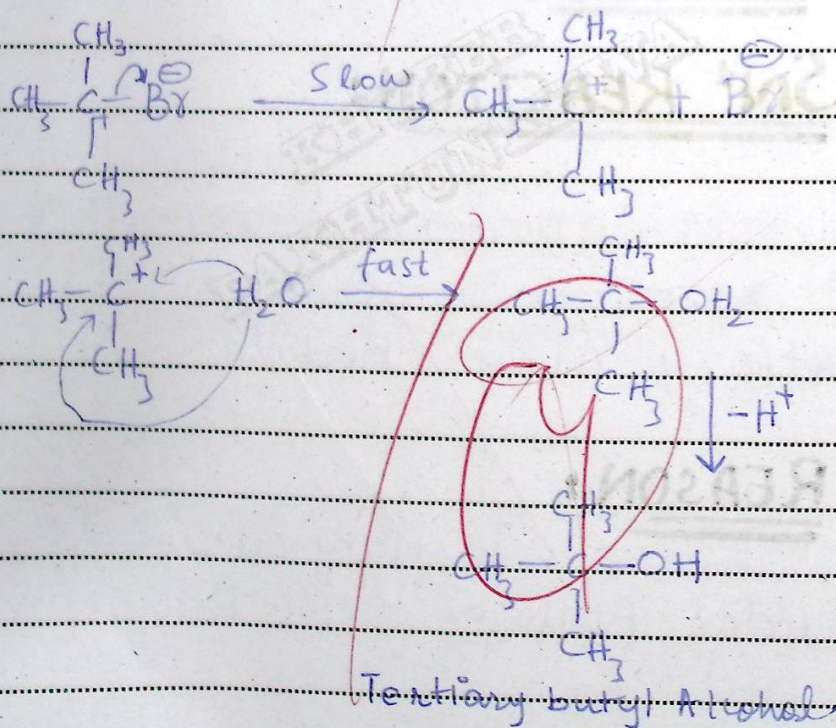
Substitution Nucleophilic unimolecular- This SN¹ reaction is followed by tertiary Alkyl halide.

REASON:

Tertiary alkyl halides follow SN¹ Reaction

because in first step tertiary alkyl halide made tertiary carbocation which is more stable than Primary and secondary alkyl halide. The More stable the carbocation the more will S_N1 reaction proceeds.

Reaction



-(Question: 1)-

ANSWER:

IONIZATION ENERGY:

The energy required to remove e^- from outermost shell of gaseous atom to form a gaseous cation is known as ionization energy.

REASON:

The Ionization energy of Phosphorus is E.C higher than Sulphur because Phosphorus d-orbital or Valence orbital is completely filled and is stable. While Sulphur has partial filled d-orbital or valence orbital.

and is unstable-

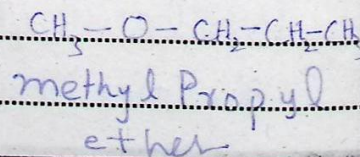
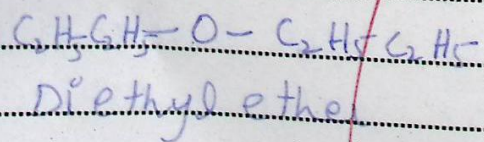
-(Question: 4)-

ANSWER:

METAMERISM:

Metamerism is the type of Isomerism in which one compound is symmetrical and other is Asymmetrical. They have same Molecular formula But different structural formula.

Example:

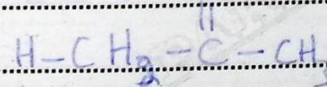


TAUTOMERISM:

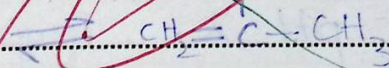
When two different molecules only differ by some atoms or double Bond is are tautomers and Phenomenon is known as Tautomerism. They can interconvert into each other.

Example:

Keto & enols are tautomers of each other.



(Keto form)



(enol form)

-(Question: 10)-

ANSWER:

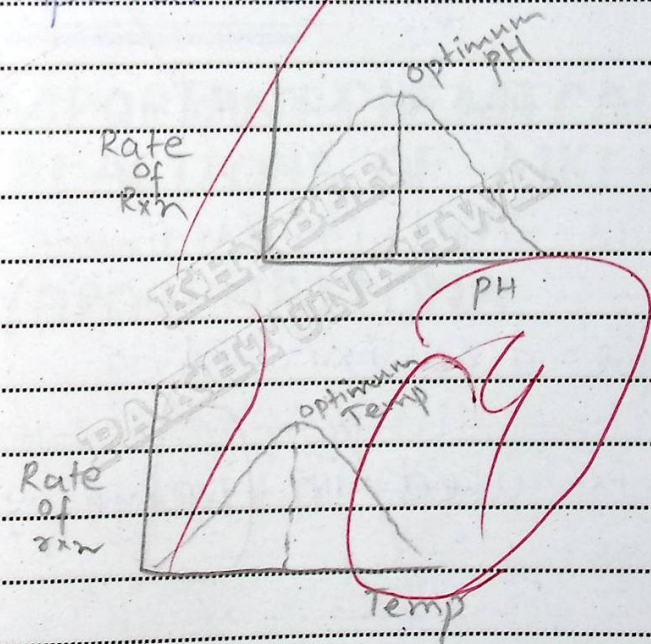
EFFECT OF pH ON ENZYME ACTIVITY:

Some enzyme work best in acidic pH some work best in basic pH. The pH which is required for the maximum activity of enzyme is optimum pH. Enzyme Pepsin work best at pH 2. Trypsin work at pH of 8-9.

EFFECT OF TEMPERATURE ON ENZYME ACTIVITY:

The

temperature which is required for maximum activity of enzyme is optimum temperature. Human enzyme required temperature of 37°C . Wheat enzyme of plant require 60°C optimum temperature.



(Question: 11)

ANSWER:

USES OF PVC:

Uses of PVC are given below:

1. It is used in pipes.
2. It is used in drainage system.
3. It is used in wiring.
4. It is used in polyethylene bags.

(SECTION-C)

LONG Questions.

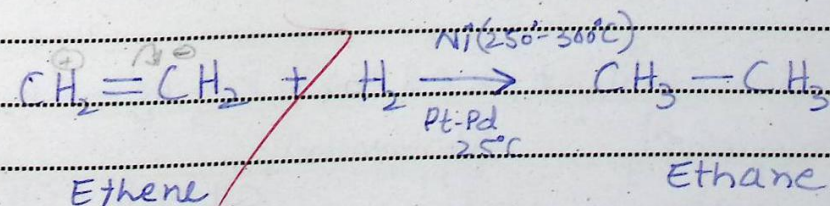
(Question: 4)

ANSWER:

IMPORTANT CHEMICAL REACTIONS OF ALKENE:

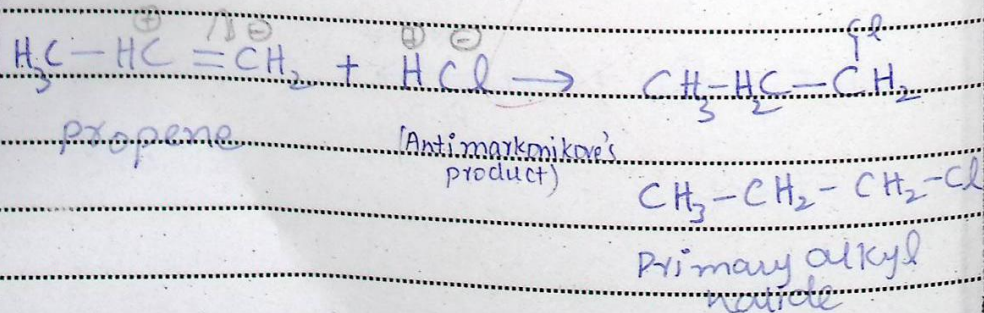
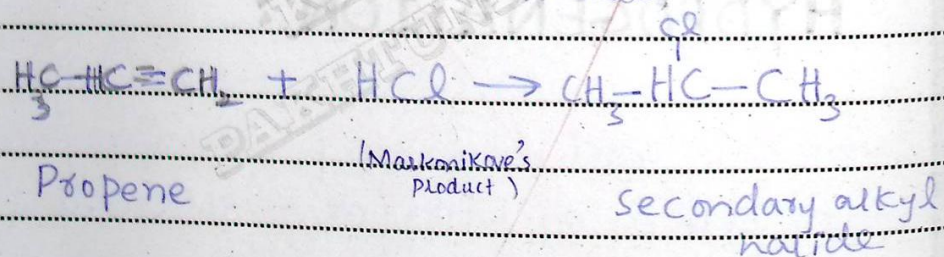
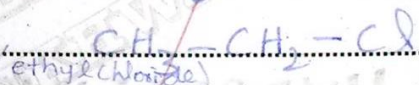
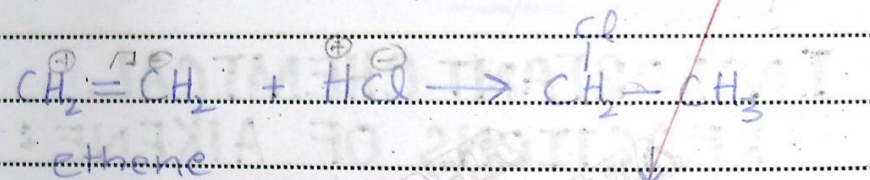
HYDROGENATION:

Hydrogenation means addition of Hydrogen to alkene will form alkane.

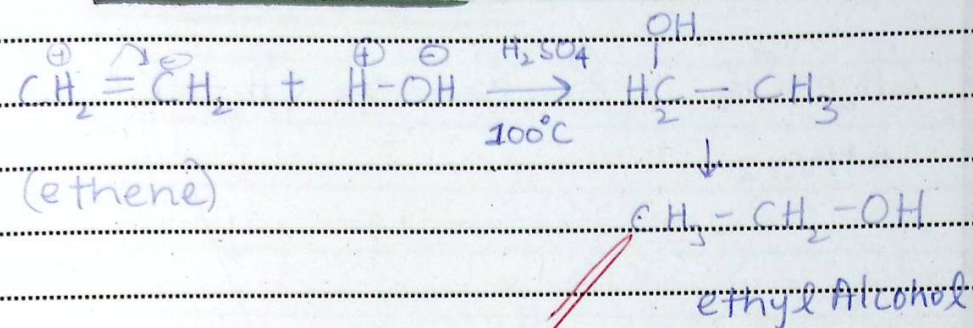


HYDROHALOGENATION:

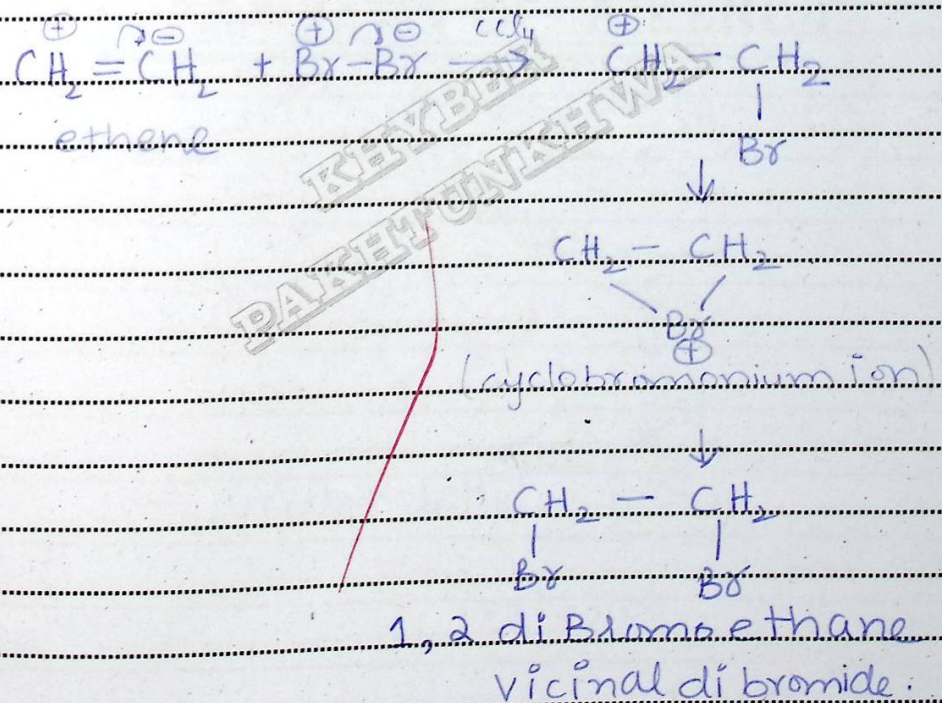
Hydrohalogenation means addition of Hydrogen halide. For unsymmetrical alkene follows Markonikov's rule. For symmetrical don't follow Markonikove's rule.



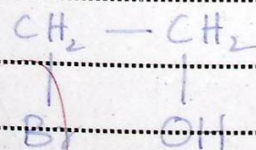
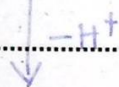
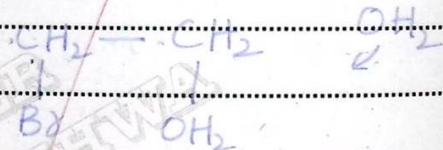
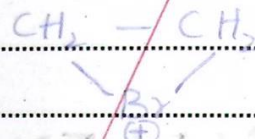
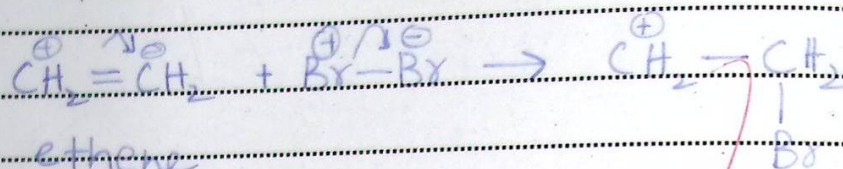
HYDRATION:



HALOGENATION:

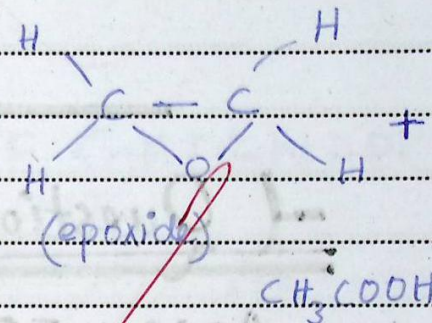
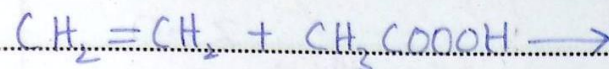


HALOHYDRATION:

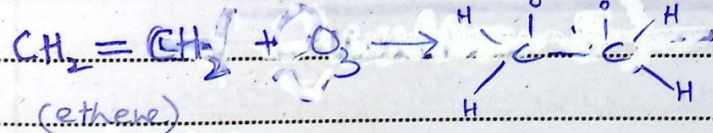


(Halohydrin)

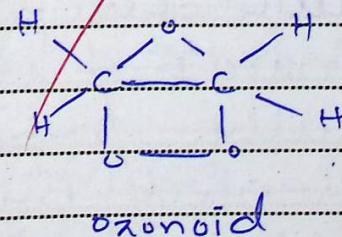
EPOXIDATION:

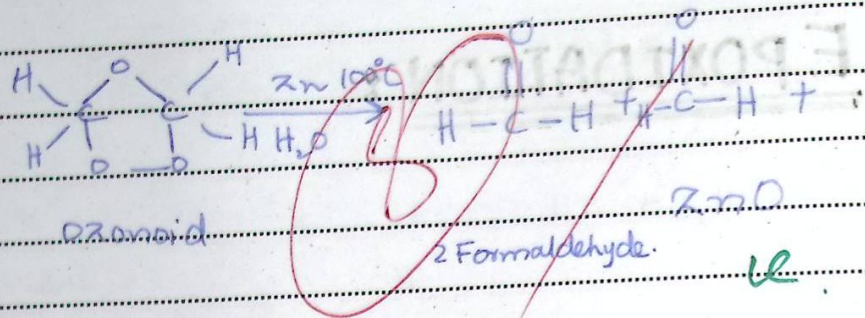


OZONOLYSIS OF ALKENE:



Molozonoid





-(Question: 5)-

ANSWER:

GRIGNARD'S REAGENT:

When Metal atom is attached to any organic compound this is called organo-metallic compound. Grignard's reagent is Actually organometallic. Represented by $\text{R}-\text{Mg}-\text{X}$.



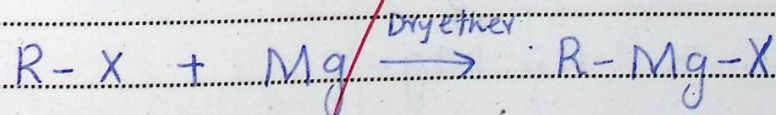
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PREPARATION OF GRIGNARD REAGENT:

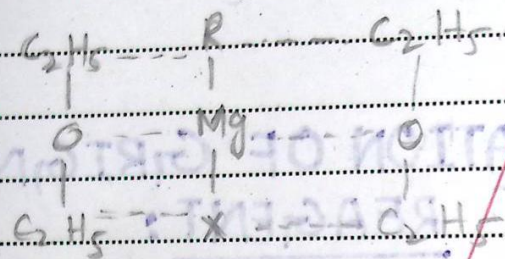
Grignard reagent is prepared when we react alkyl halide with Magnesium Metal in the presence of Dry ether.

Reaction:



Dry ether provides Medium and also act as solvation. We will use here alkyl

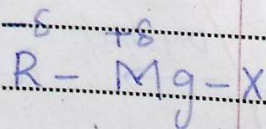
Bromide because of its intermediate reactivity-



Reactivity:

Grignard reagent is highly reactive. It cannot be isolated from its ethereal solution.

Alkyl group is highly electronegative and Metals are more positive.



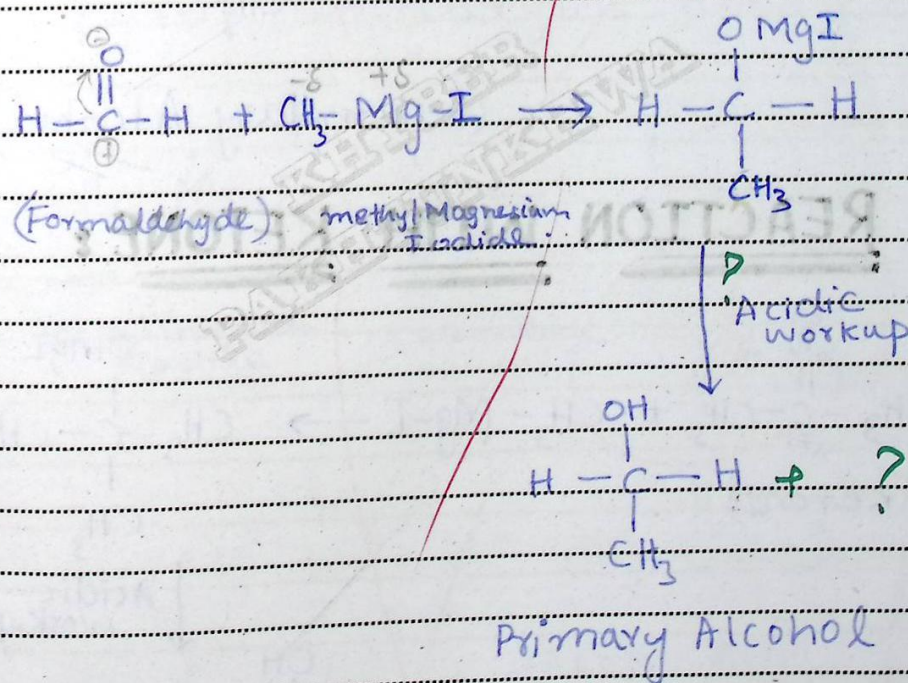
REACTIONS OF GRIGNARD'S REAGENT:

Chemical

Reactions of Grignard reagent are given below:

REACTION WITH ALDEHYDE:

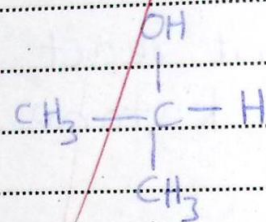
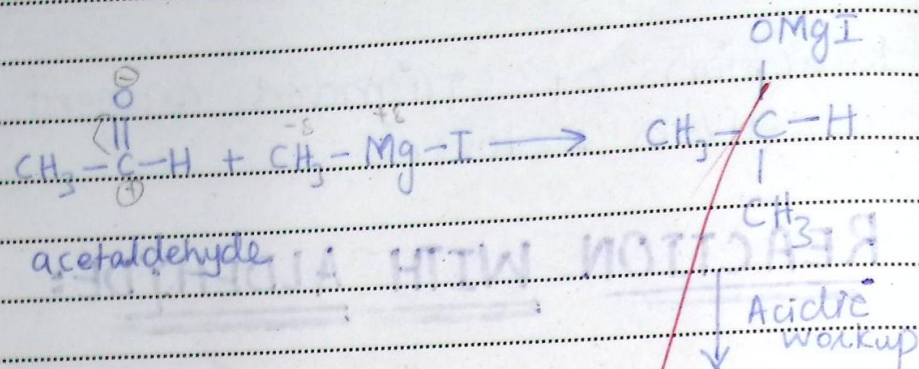
Grignard reagent react with Aldehyde and ketone to give Alcohols.



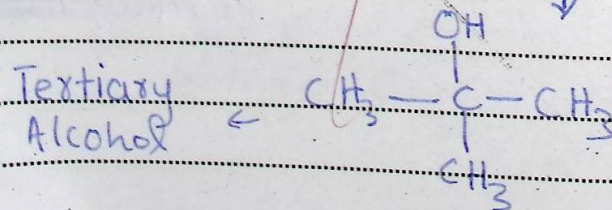
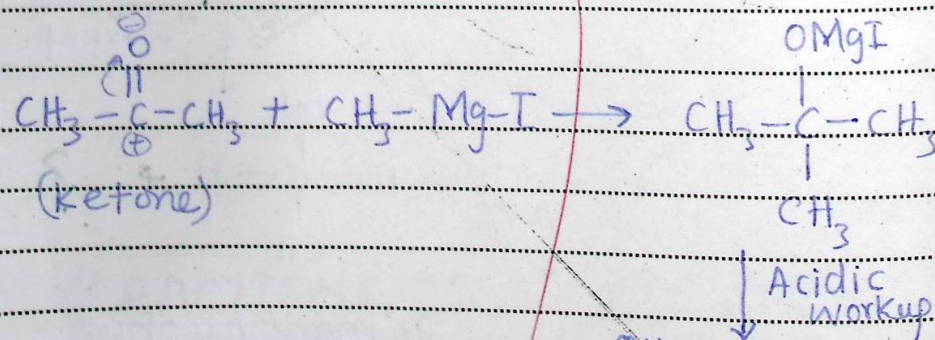


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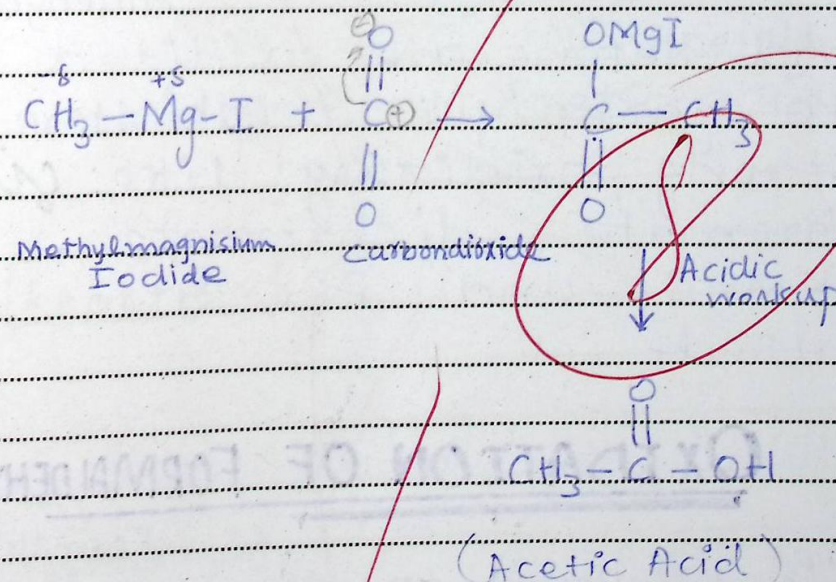
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(Secondary Alcohol)

REACTION WITH KETONE:REACTION WITH CO₂:

Grignard reagent react with CO₂ to form Carboxylic Acid.



-(Question: 6)-

ANSWER:

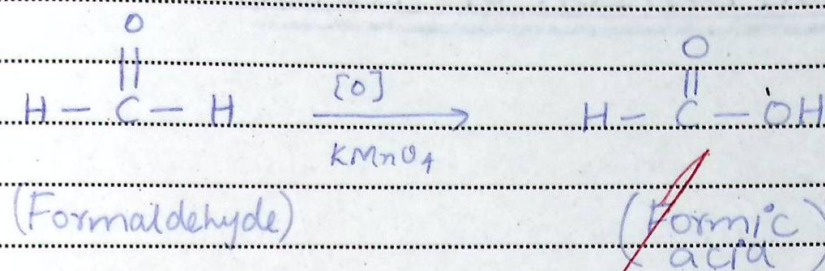
OXIDATION REACTION OF ALDEHYDE AND KETONE:

Aldehyde and ketone are oxidized to carboxylic acids. Here strong oxidizing like *CrO₃* chromate, dichromate, KMnO_4 and PCC are used.

OXIDATION OF FORMALDEHYDE

Formaldehyde is oxidized to Formic acid in the presence of oxidizing agent.

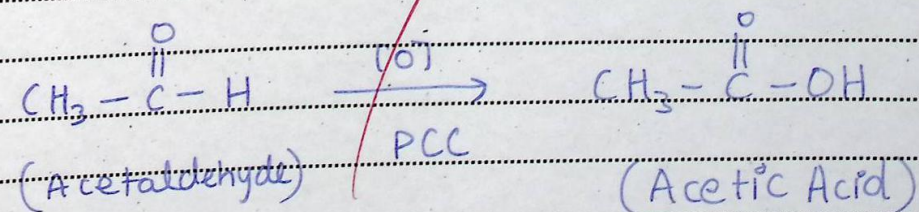
Reaction



OXIDATION OF ACETALDEHYDE

Acetaldehyde is oxidized to Acetic acid in the presence of PCC.

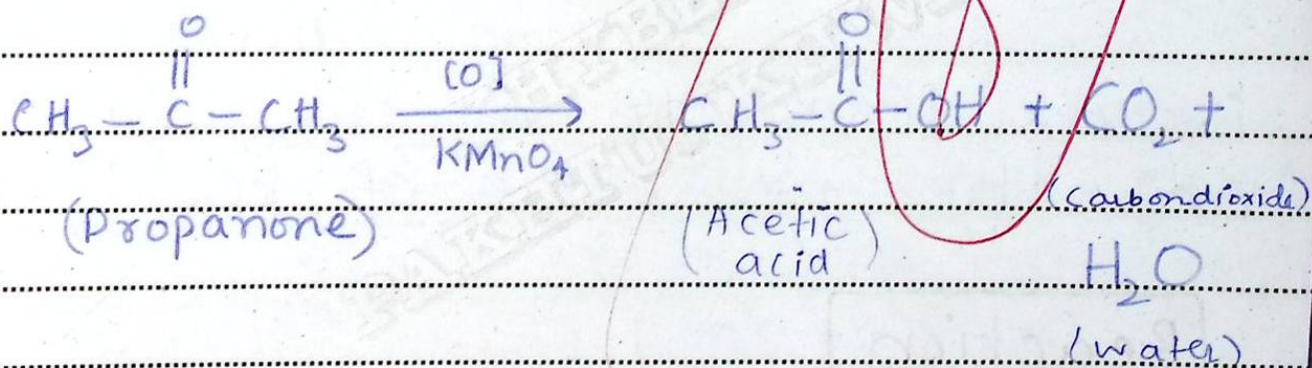
Reaction



OXIDATION OF KETONE:

Ketone is oxidized to Acetic Acid in the presence of strong oxidizing agent.

Reaction



Ketone requires strong oxidizing agent because it is not oxidized by mild oxidizing agent. Ketone is oxidized to acetic acid, CO_2 and water.