

-(SECTION-B)-

-(QUESTION-2)-

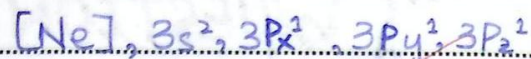
-(PART-1)-

IONIZATION ENERGY:

The minimum amount of energy require to liberate valance electrons from the outer most shell of an atom is called an ionization energy.

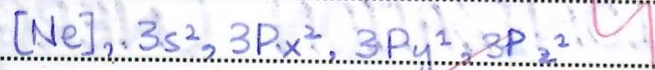
IONIZATION ENERGY OF PHOSPHOROUS AND SULPHER:-

The electronic configuration of phosphorous (P) is



As p-orbitals are half filled they are more stable.

Now the electronic configuration of sulphur (S) is:-



As the p-orbitals are partially filled of sulphur, so it is unstable.

Therefore, sulphur is unstable than phosphorous due to its electronic configuration. So Phosphorous ionization is higher than sulphur.

→ (QUESTION-2) →

→ (PART II) →

TYPICAL TRANSITION

METAL:-

The transition metal in d-block of periodic table is called typical transition metal.

The valance electrons of typical transition metal reside in d-subshell of valance of valance shell. They have varying oxidation states. They are divided in to ten groups.

EXAMPLE:-

Zn, V etc.

NON-TYPICAL TRANSITION

METALS:

The transition metals in the f-block of periodic table are called non-typical transition metal.

The valance electrons of the non typical transition metals reside in f-subshell of the valance shell.

EXAMPLE:-

Lanthanides series and Actinides series are the examples of non typical transition metals.

→ (PART - X) →

ENZYMES:-

Enzymes are biological catalysts which take part in

a reaction without getting consumed. Enzymes speeds up the rate of the reaction.

EFFECT OF PH:-

Some of the enzymes have their own acidic and basic levels. The optimum PH for enzymes is 7-8. When the PH exceeds or decreases than the optimum PH, enzymes donot perform their function properly.

EFFECT OF TEMPRATURE

Every body does its metabolism on a specific temperature range. When the temprature range is disturbed

the body will not perform their function properly. Enzymes have also their optimum temperature, when disturbed from that they do not perform their function properly.

-(PART - VIII)-

LUCAS REAGENT:-

The mixture of concentrated HCl and anhydrous Zinc chloride is called Lucas reagent.

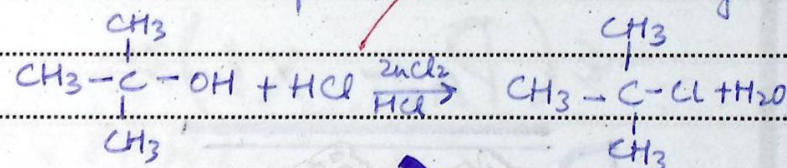
LUCAS TEST:-

It is a test in which Lucas reagent is

used to distinguish between various types of alcohols through cloudiness.

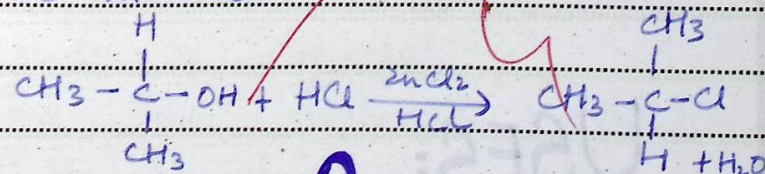
TERTIARY ALCOHOLS:-

When Lucas reagent reacts with tertiary alcohols cloudiness appears immediately.



SECONDARY ALCOHOLS:-

When Lucas reagent reacts with secondary alcohols cloudiness moderately after 5-10 minutes.



PRIMARY ALCOHOLS:-

Primary alcohols does not reacts with Lucas reagents.

CONCLUSION:-

This is how we can distinguish different types of alcohols.

-(PART XI)-

PVC:-

PVC is a light weight object. It is commonly used by people. It is safe from erosion, and rust.

USES:-

- 1- The pipes used for water system in our houses

are made up of PVC.

The window frames are made up of PVCs.

It used in storing blood i.e blood bags are made up of PVCs.

It is used as an insulators in our houses, industries etc.

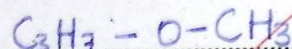
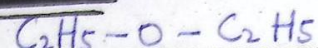
-(PART IV)-

METAMERISM:-

The functional group in which the arrangement of carbon atoms around the molecule is different.

The two metamers having same functional group they can exist separately.

EXAMPLE:-

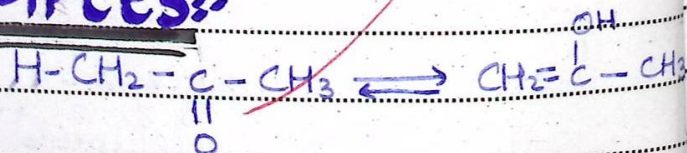


TAUTOMERISM:-

In tautomerism two isomers are different from each other by the position of proton

Tautomers have different functional groups and they exist in equilibrium with each other

EXAMPLES:-



-(PART XII)-

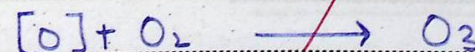
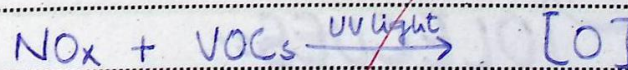
PHOTOCHEMICAL SMOG:-

The smog which is formed due to air pollution in each other.

FORMATION:-

In initial process (NO_x) and (VOC) volatile organic compounds react in the presence of UV light and atomic (nascent oxygen) - is formed which reacts with Oxygen molecule O₂ forms O₃.

REACTION:-



CONCLUSION:-

Hence photochemical
smog is formed in this
way.

QUESTION-2

-(PART XIII)-

QUANTITATIVE ANALYSIS

IR spectroscopy can be
used to find the quantitative
analysis of molecules.

CONFIGURATION OF MOLECULES:-

IR can be used to find
the configuration of molecules.

CONJUGATION OF MOLECULES:-

It can be used to
find conjugation of molecules.

STRUCTURE ANALYSIS:-

It can be used to
find structure analysis of molecule.

-(PART III)-

First of All it was considered
that organic compounds were
derived from the vital force in
the living organisms known as

vital force theory.

WOHLER'S WORK:-

He rejected vital force theory by synthesizing urea from heating ammonia cyanate in laboratory.

REACTION:-



IMPORTANCE:-

It's importance is that it proved and paved the way that organic compounds can be obtained in the laboratory.

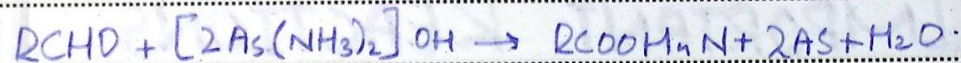
-(PART VIII)-

TOLLENS TEST:-

It is a test used

for detection of aldehyde - The reagent used is ammoniacal silver nitrate. Silver mirroring is done at ends, Ag atoms are deposited and causing silver mirror.

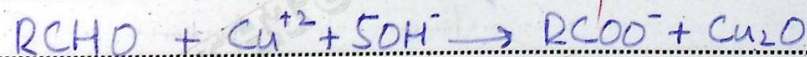
REACTION:-



FEHLING SOLUTION:-

In this Cu^{+2} cupric ion solution is used in tartrate solution for the aldehyde test.

REACTION:-



IMPORTANCE:-

By these tests we can easily determine the presence of aldehydes.

-(SECTION-C)-

-(QUESTION-4)-

IMPORTANT REACTIONS OF ALKENES:-

Some of the important reactions of alkenes are given below:-

HYDROGENATION:-

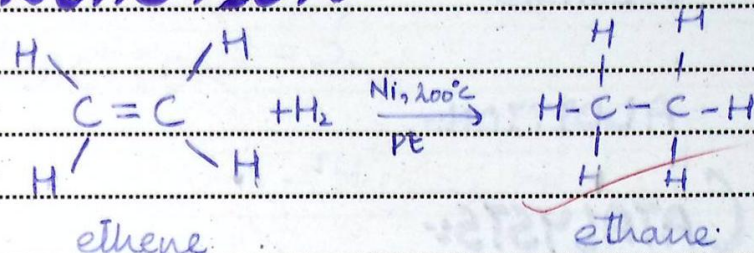
The addition of hydrogen molecule to carbon-carbon double bond is called hydrogenation.

CATALYST:-

In this reaction we use Pt catalyst at RTP

or Ni at 200°C.

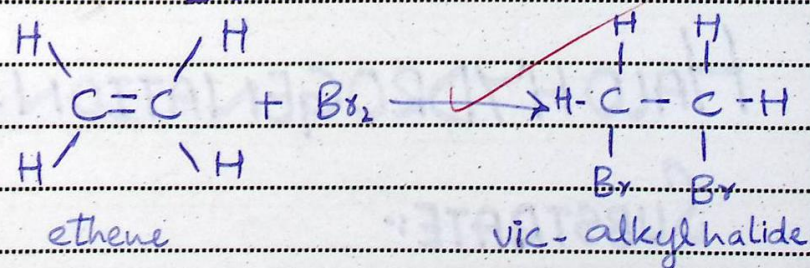
REACTION:-



HALOGENATION:-

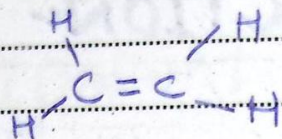
The reaction in which halide ion is added in to carbon-carbon double bond.

REACTION:-

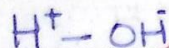


HYDRATION:-

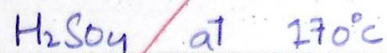
Substrate:-



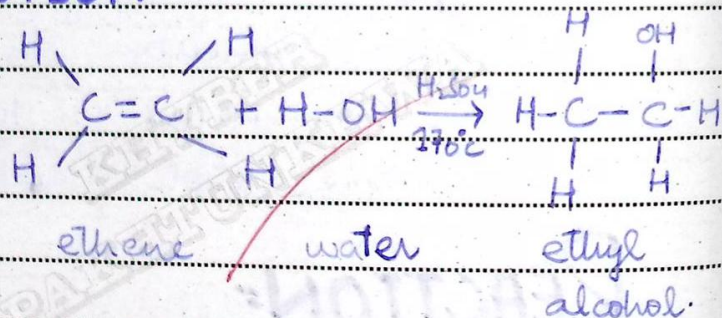
ADDITION:-



CATALYSTS:-

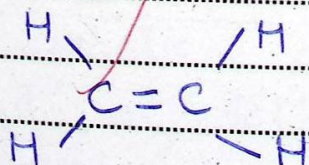


REACTION:-

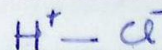


HALO HYDROGENATION:-

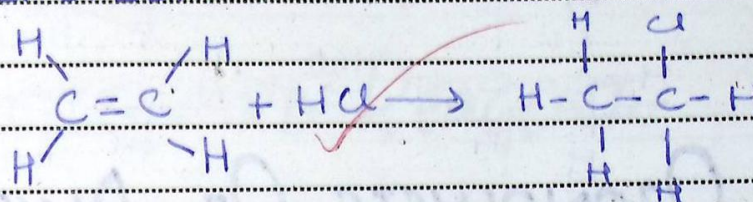
SUBSTRATE:-



ADDITION:-



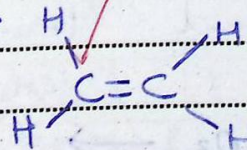
REACTION:-



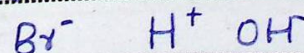
HALO HYDRATION:-

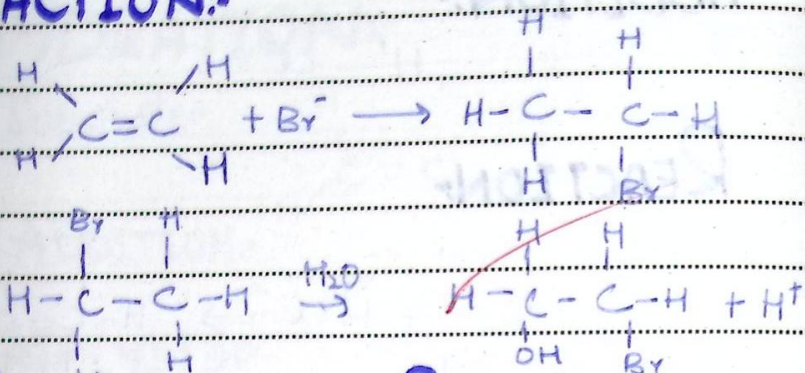
In this reaction firstly halogen atom is added to alkene to form cyclonium ion and upon H_2O work product is formed.

SUBSTRATE:-



Addition:-

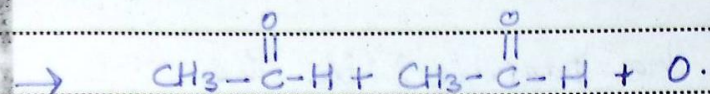
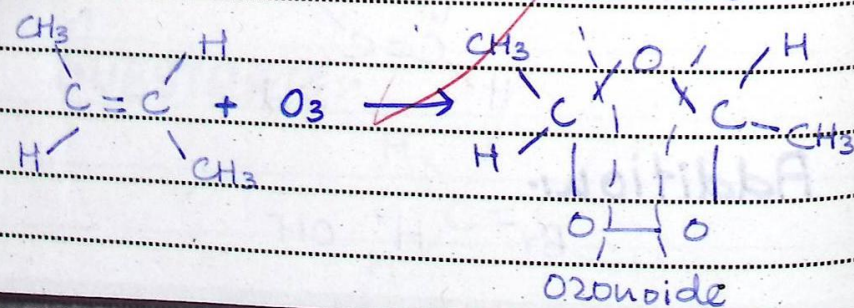


REACTION:-**OZONOLYSIS OF ALKENES:**

Ozone is an allotropic form of oxygen. It reacts with alkene to form an unstable intermediate which directly breaks into two carbonyl compounds.

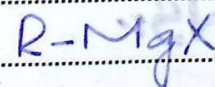
REACTION:-

Consider the reaction between Ozone O_3 and trans-but-ene.

**(QUESTION-5)****GRIGNARD REAGENT:-**

Alkyl or aryl magnesium halides are called grignard reagents.

They contain at least one carbon metal bond in their structures.

GENERAL FORMULA:-**PREPARATION:-**

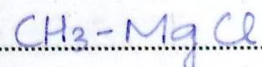
Grignard reagents

e/6p

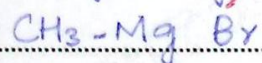
(صرف پروہ کا استعمال کیلئے) آمیزہ ادویہاں کی دیکھیں

can be prepared in the laboratory by the action of alkyl or aryl halide on freshly prepared magnesium so that the end product will give the Grignard reagent.

EXAMPLES: WITH



alkyl magnesium chloride



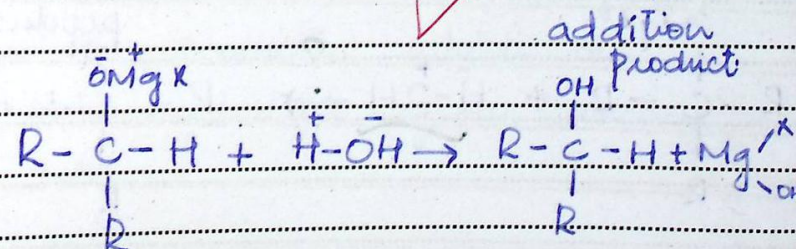
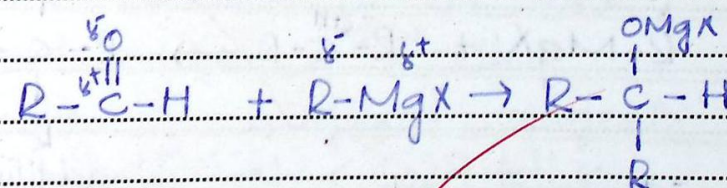
alkyl magnesium bromide

REACTIONS:

WITH ALDEHYDE:-

Grignard reagents reacts with aldehydes to give an addition product which on acid hydrolysis gives secondary alcohols.

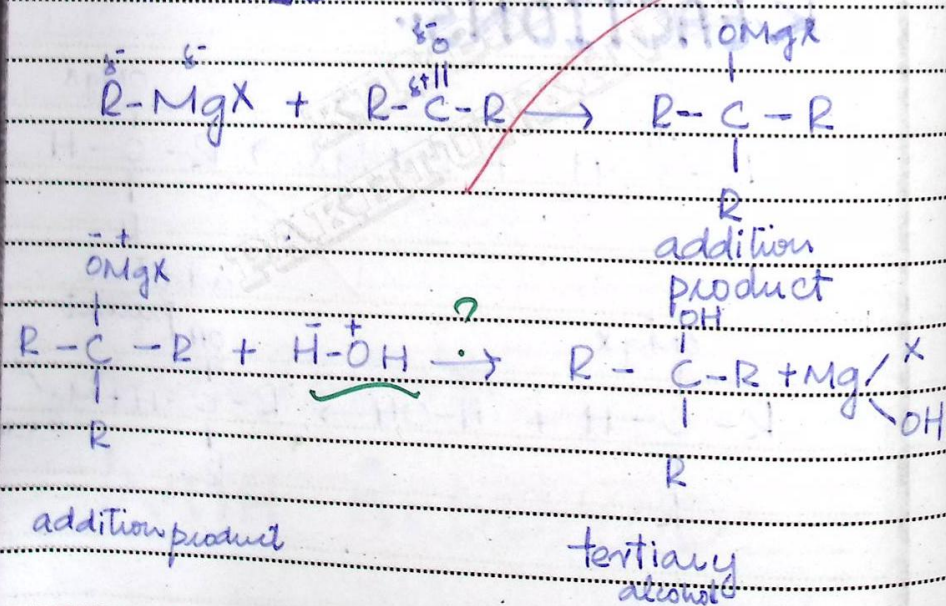
REACTIONS:



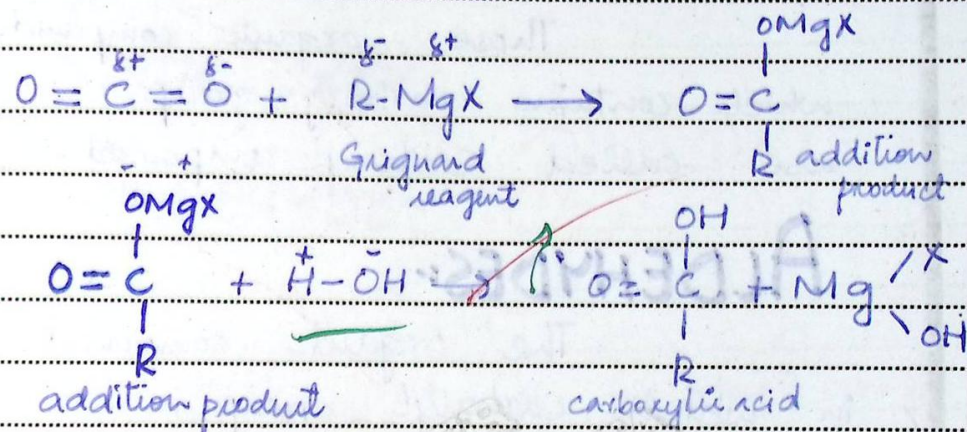
REACTION WITH KETONES:-

Grignard reagent reacts with ketones to give an addition product which on acid hydrolysis gives tertiary alcohols.

REACTION:-



REACTION WITH CO₂:- REACTION:-



The reaction of CO₂ with Grignard reagent is called catenation of Grignard reagent.

It reacts with CO₂ to give addition product which on acid hydrolysis gives carboxylic acid.

QUESTION NO 6:-

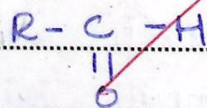
CARBONYL COMPOUNDS:-

Those organic compounds which contains carbonyl group are called carbonyl compounds.

ALDEHYDES:-

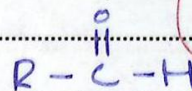
The organic compound in which carbonyl group is attached with one alkyl and one hydrogen atom.

GENERAL FORMULA:-

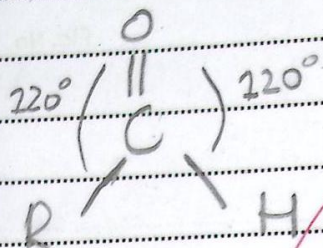


STRUCTURE:-

ALDEHYDE:-

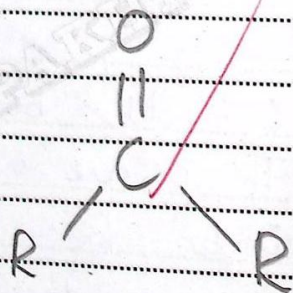


Aldehydes consists of functional group carbonyl group. Both carbon and oxygen atoms are sp^2 hybridized in aldehydes. Oxygen atom also have lone pair of electrons. $\text{O}-\text{C}-\text{R}$ and $\text{O}-\text{C}-\text{H}$ bond angles are 120° . They are more reactive than a ketones because they have less steric hindrance than ketones.



STRUCTURE OF KETONE-

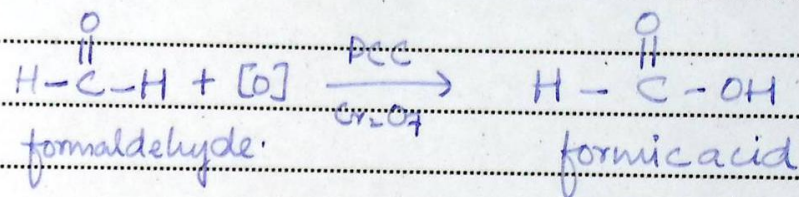
In ketones carbon is attached to alkyl groups on b.s. Its functional group is carbonyl group. It is less reactive than aldehyde due to steric hindrance and electronic effect.



OXIDATION OF ALDEHYDES:-

Aldehydes can be oxidized in the presence of strong oxidizing agents like Cr_2O_7 or PCC.

REACTION:-



OXIDATION OF KETONES:-

Ketones can be oxidized in the presence of strong oxidizing agent unlike aldehydes Cr_2O_7 or PCC.

