

Section B

Part (i)

Ionization Energy

The minimum amount of energy required to remove an electron from gaseous atom to form an anion.

Reason :-

Ionization Energy OF Phosphorus is higher :-

Ionization energy of phosphorus is higher than Sulphur because

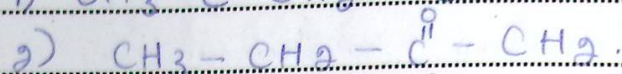
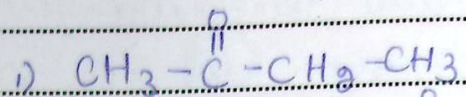
because down the group atomic size increases, nuclear charge increases or also shielding effect also increases due to which the force of attraction between nucleus and outer most electron is greater. So it will become easy to remove electron from sulphur or difficult to remove electron from phosphorus and have high ionization energy.

Part No iii

Metamerism

The type of isomerism in which the molecule have same molecular formula but there is difference in position of functional group

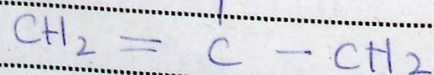
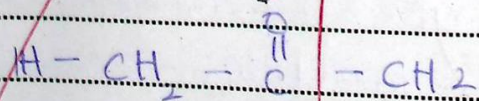
Example :-



Tautomerism:

The type of isomerism in which there is a shifting of proton from one molecule to other. The proton is transferred from one molecule to other.

Example



propanone

propen-2-ol

Part No xi

Uses OF poly Vinyl Chloride :-

Medical Equipment

The polyvinyl chloride (PVC) is used in many medical equipments like medical tools.

Bottle Making

The PVC is also used in (PVC) Bottle making, also used in shoes making.

Rexins

PVC is transformed into a Rexin like texture material.

leather material

The PVC is also used in leather materials - like leather jackets, leather shoes etc.

It is also used in wires electrical wires.

Resistant to heat and durable

Part (V)

Geometrical Isomerism

The type of isomer in which molecules have same molecular formula and

Connectivity of atoms but there is difference in arrangement of atoms

Conditions For geometrical Isomerism

There should be restriction of double bond of carbon atom.

The carbon that is bonded by double bond should have two separate or different groups attached to it.

Part No X

Effect of Temperature

The enzyme is protein in nature and its activity is very disturbed or effected by temperature.

Every enzyme has a special type of value at which enzyme work best is called optimum temp. When temperature is increased or decreased the enzyme activity is disturbed. When temp is increased the enzyme activity is decreased or at certain value the activity becomes zero.

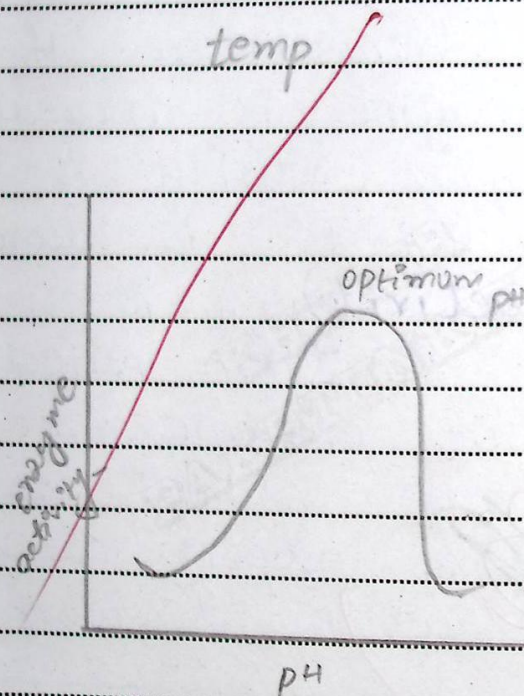
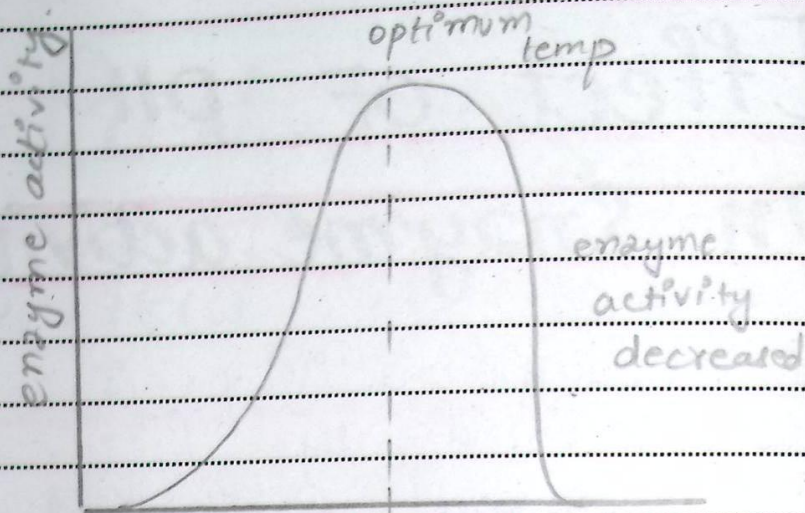
Effect of pH On Enzyme activity

The enzyme activity is also affected by pH.

The enzyme work best at optimum temperature. If pH of enzyme is increased the enzyme activity is decreased. If pH is decreased

enzyme activity is disturbed. So for perfect working of enzyme the pH must be kept const.

The pH of pepsin is 0.2 at which it work best.



Part No xiii

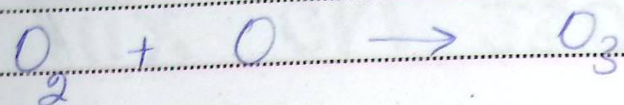
Photochemical

Smog :-

Photochemical smog is produced by reaction of harmful substances released by industries in atmosphere. It produced black or brown fumes in atmosphere.

Production :-

It is mainly composed of Ozone. Ozone is main component of photochemical smog.



Nitrates :-

It is also produced by nitrates exposure to UV light.

Part Xiii

Applications OF IR Spectroscopy

Medical use

IR spectroscopy are used in medical machinery.

Fingerprinting

It is also used in finger printing for detection of finger prints in crime cases.

Detection OF Impurities :-

It is used in detection of impurities in a compound.

Diagnosis disease

It is used to diagnose the diseases. Helpful in medical terms.

Part No ii

Typical transition Metals :-

It is a type of transition in which it shows properties of transition and it possesses partially filled d-orbital.

Example :-

Iron
manganese

Non typical transition Metal

The type of transition metals in which it possesses completely filled d-orbital.

Example

→ Zinc
→ calcium

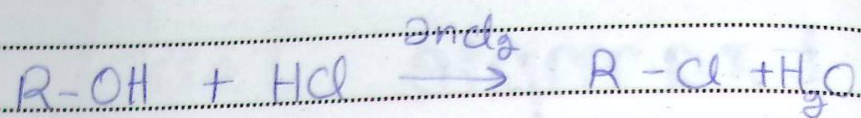
Part (vii)

Lucas Test :-

It is used to distinguish primary, secondary or tertiary alcohols.

Lucas Reagent

lucas Reagent form chlorides which causes cloudiness in test tube.



The time taken for cloudiness to appear corresponds to reactivity of alcohol & therefore distinguish primary, secondary or tertiary alcohols.

3° Alcohols react with Lucas reagent immediately.

2° Alcohols react after some time.

1° alcohol doesn't react with Lucas Reagent.

Part No VI

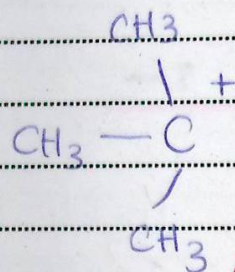
Tertiary alkyl halide in S_N mechanism :-

The Tertiary alkyl halide is used in S_N mechanism. Because S_N mechanism is one step mechanism.

Due to Electron donating Effect :-

Due to presence of three alkyl groups. These alkyl groups increase the electrons on alkyl halide.

Electron donating group
Makes the alkyl halide
electron rich and thus
Nucleophile attacks the
tertiary alkyl halide
easily.



tertiary
carbocation

Long Question

Question No 3

Solubility of Hydroxides :-

The solubility of alkaline
earth metals increases
down the group.

Magnesium Hydroxide :-

The magnesium Hydroxide
is insoluble in water
but as we dissolve the
mg hydroxide in water there
are Hydroxyl ions in

So this means that magnesium Hydroxide is sparingly soluble in water.

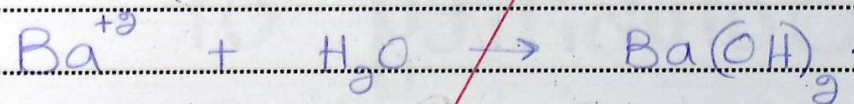
Solubility OF Calcium Hydroxide

The calcium Hydroxide is soluble in water to a small extent. IF we dissolve the calcium hydroxide in water the hydroxyl ions dissolve in water will be more as compared to magnesium hydroxide.

Solubility OF Barium Hydroxide

The Barium Hydroxide is

highly soluble in water. IF we dissolve Barium Hydroxide the concentration of hydroxyl ions are 0.01 mol at room temperature. This shows that the Barium hydroxide is highly soluble in water.



Solubility OF Sulphates :-

The solubility of sulphates depend on whether the compound is hydrated or not. The anhydrous barium sulphate is insoluble in water.

or hydrated barium sulphate
is soluble in water.

The solubility of magnesium
or calcium also depends
on whether the magnesium
or calcium are hydrated
or anhydrous.

Solubility of Carbonates :-

The solubility of carbonates
decreases down the group.
But at down the group
the trend is disturbed
because barium carbonate
has higher solubility
than strontium carbonate
this is because of the
down the group atomic size

increases and ions become
distant from each other
the force between ions
become weaker it will
become easy to soluble
the compound. So in
this way the solubility
of carbonate increases
down the group.

But if we go down the
group the size of ion
becomes larger and
water molecule will not
attract the ion easily.
and solvation energy
falls. Due to which
solubility decreases down
the group. The effect
of solvation will dominate
over lattice energy. So

solubility of carbonates decreases down the group.

Question No 8

Grignard's Reagent :-

When the metal is attached to a compound. The compounds will be called organo-metallic compound. The general formula is $R-MgX$.

General Formula

$R-MgX$
where R represent alkyl group or X represent alkyl halide.

$CH_3-Mg-Cl$
methyl magnesium chloride.

Preparation :-

It is very difficult to produce Grignard reagent because it is very stable. So it is prepared by using etheral solution.

So it is very important to add ethyl solution for its preparation. The preparation of grignard reagent depends upon alkyl group or alkyl halide.

Alkyl Halide

The alkyl halide affects the preparation of grignard reagent. Fluorine or chlorine are not used to prepare grignard reagent. The alkyl iodide is very reactive but still it is not used. So Bromine is used because it is inexpensive and easy to be used.

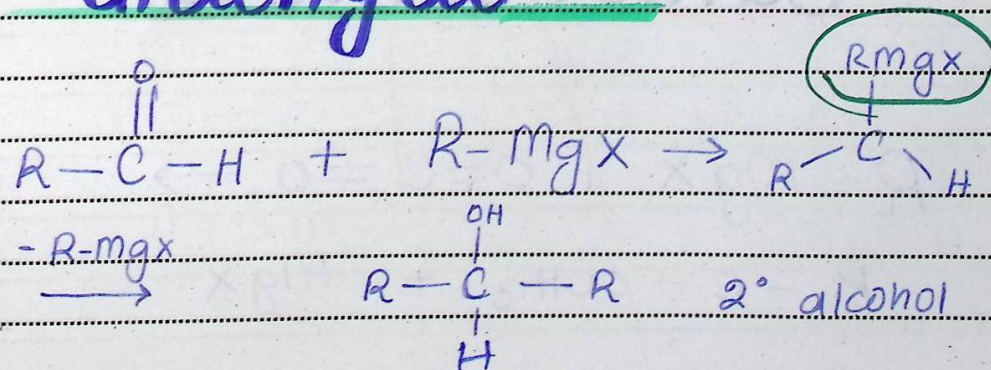


Alkyl group:-

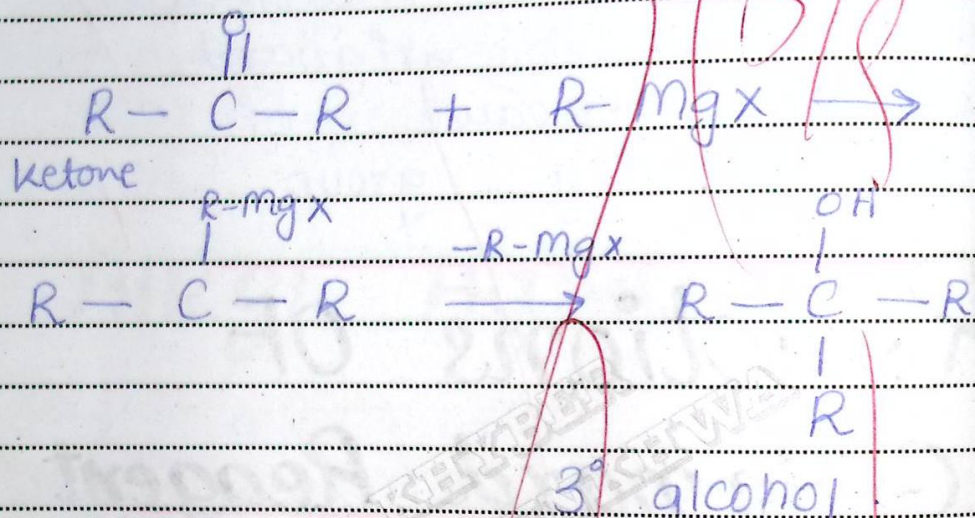
The more alkyl group the more will be difficult to prepare grignard reagent because of electron donating group.

Reactions OF Grignard Reagent

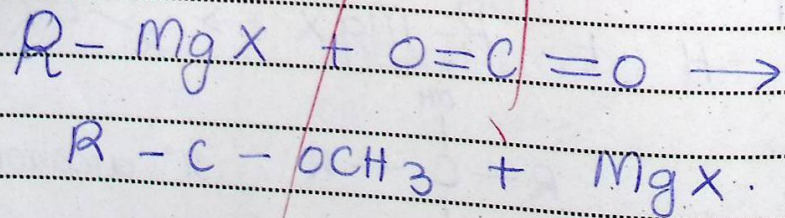
Reactions with aldehyde



Reaction with ketone :-



Reaction with Carbondioxide

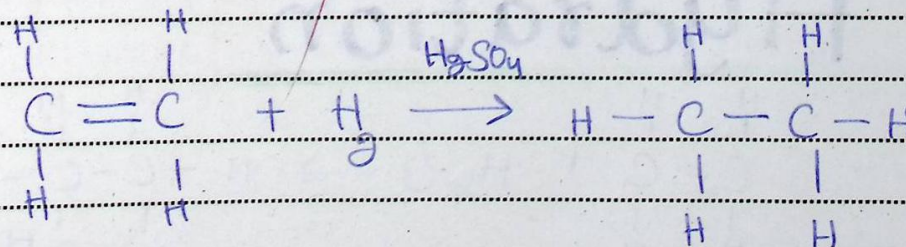


Question 4

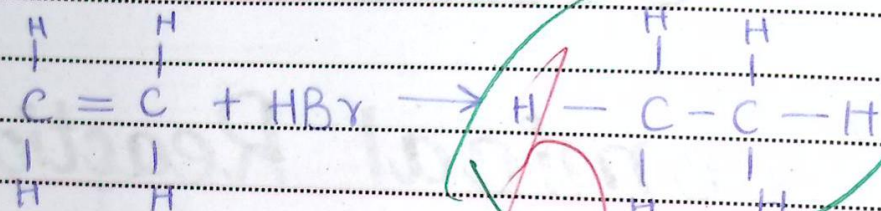
Chemical Reactions OF Alkenes :-

The following important chemical reactions are as follows :-

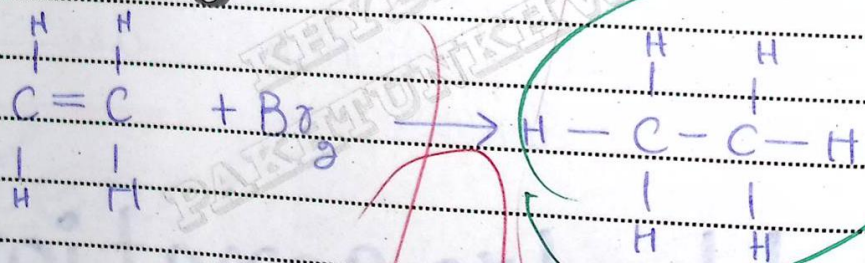
Hydrogenation



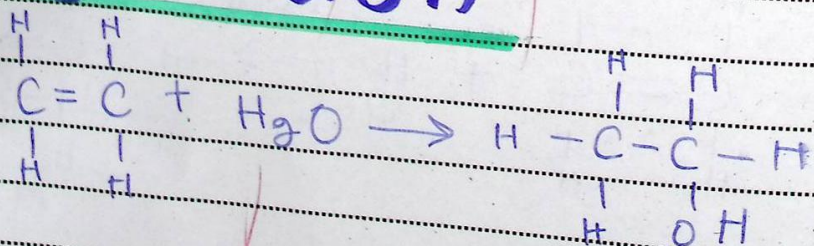
Halohydratation



Halogenation



Hydration



Ozonolysis

