

SECTION - B

SHORT QUESTIONS AND ANSWERS

Question - NO: X

Answer:

Effect of PH on
Activity of Enzyme:

Enzymes are known as biocatalyst which speeds up the chemical reaction without being used. PH is a component which has a high effect on the activity of enzyme. Every enzyme has a optimum temperature at which it works properly. When the PH falls or disturbs from the required optimum temperature then it really disturbs the activity of enzyme. Due to which the whole system disturbs and may fail to perform properly. So, PH has a great effect on the activity of enzyme.

Effect of Temperature on the Activity of Enzyme:-

As PH has an effect on the activity of an enzyme. Similarly, temperature had also a great effect on the activity of an enzyme. When the temperature gets high and low from its given or optimum temperature then it destroy the performance of an enzyme. When the temperature elevate from the normal temperature than it destroy the activity of enzyme.

Question: no: IV

Answer:-

Definition
of Metamerism

Metamerism have same functional group

An metamerism the two metamer are different from Carbon atom at the side of functional group.

Definition
of Tautomerism

Tautomerism have different functional group.

An tautomerism the two tatomers are different from relative position of Carbon atom.

Metamorphism exists
separately.

Σ

Tatmerism exists
equilibrium.

Σ

Question No: 1

Answer:-

Ionization Energy:-

Definition: " Ionization energy is the energy which is required to remove an electron from the outer most shell of

a molecule."

1st Ionization Energy:-

" The energy required to remove 1st electron from the outer most shell is called 1st ionization energy."

2nd Ionization Energy:-

" The energy required to remove 2nd electron from the outer most shell is called 2nd ionization energy."

Reason Why Ionization Energy of Phosphorus is high than Sulphur:

This is because in Sulphur the outer electrons are present in partially 'p' filled orbital which is less stable as compare to half filled "p" orbital of Phosphorus.

Question : no: xi

Answer:

Uses of Polyvinyl Chloride:

PVC :- "Polyvinyl is a type of plastic used in numerous industries. It is durable, inexpensive and resistant to heat, water and chemicals."

Uses of PVC:

PVC plastic is manipulated to create a leather like material called rexine.

PVC are used for pipes. These pipes are strong, light weighted and low reactive. It does not wear, enter rust, and are dependable and affordable material.

PVC plastic is used for the insulating material on electrical wires.

PVC plastic is used as plastic bags which are used for shopping.

Other uses of PVC include medical tubing and in a Medical field. And it also uses in pipes of water and also in drainage system of water.

PVC are plastic that's why it can be used to form pipes which we can use in gas pipes.

Example: Polyethylene and some other.

Question : NO: VI

Answer:

Reason:-

(i) In the S_N1 mechanism (Substitution Nucleophilic Unimolecular)

(ii) The leaving group departs, forming a carbocation as an intermediate.

The nucleophile attacks on the carbocation.

Tertiary Alkyl halides form highly stable carbocation.

(ii) Inductive effect of surrounding alkyl groups.

(ii) Hyperconjugation stabilizing the positive charge.

Result: Therefore they prefer S_N1 reaction mechanism, which proceeds via this carbocation formation.

Question: no: 5

Sufficient Condition
for Geometrical
Isomerism:-

Some necessary and sufficient condition for geometrical isomerism are given

following.

A molecule can show geometrical isomerism if:

(i) There is restricted rotation, typically due to a $C=C$ double bond.

(ii) Each carbon of double bond is attached to two different groups to it.

Cis Isomer: Same groups on the same side of the double bond.

Trans Isomer: Same groups on different side of double bond.

Example:

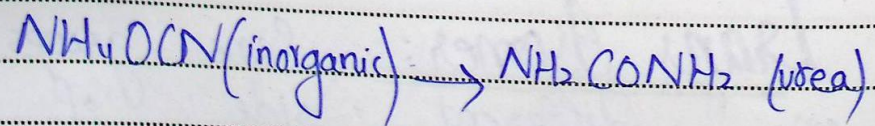
But-2-ene $\rightarrow$ cis but-2-ene
and trans but-2-ene.

Question: no: iii

Answer

Wohler's Work:

In 1828, Friedrich Wohler
accidentally synthesized urea
(an organic compound) from
ammonium cyanate (an
inorganic compound).



Importance:

This experiment disproved the
"vital force theory", which
claimed organic compounds
could only be produced
by living animals.

Marked the beginning of
organic chemistry as a
science, showing that
organic compounds should
be synthesized in laboratory.

Question: no: ii

Answer:

Non-Typical Transition Elements:

"Elements which does not possess all the properties of transition elements are called non-typical transition elements."

Elements of IIB ~~are~~ and III B are non typical transition elements.

Typical Transition Elements:

"Elements which possesses all the properties of transition elements are called typically transition

elements".

Elements of IB, IVB, VB, VIB, VII B and VIII B are the examples of typical transition elements.

Question: no: XII

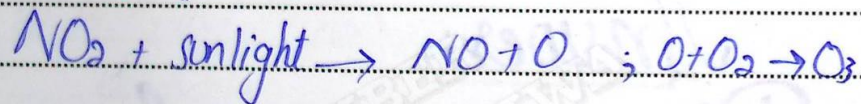
Answer: Photochemical Smog:

Photochemical smog is a type of air pollution formed when sunlight reacts with nitrogen oxides and hydrocarbons in the atmosphere.

This reaction produces secondary pollutants like.

Ozone
Peroxyacetyl nitrate
Formaldehyde and other oxidants

Example:



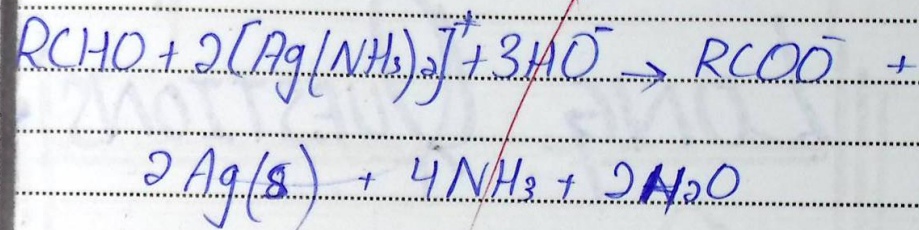
Question no: VIII

Answer:

Tollen's Test:

Uses ammoniacal silver nitrate (AgNO_3).

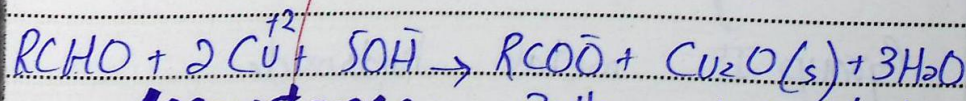
Aldehydes reduce Ag^+ to metallic Ag $\rightarrow$ Silver mirror
forms



Fehling's Test:

Uses Alkaline Cu^{2+} solution
(Fehling A) + (Fehling B)

Aldehyde reduces Cu^{2+} to Cu_2O
 $\rightarrow$ form brick red precipitate.



Importance: Both tests help distinguish aldehydes from ketones, as ketone generally not react

SECTION - C

LONG QUESTIONS

Question: no: 3

Answer:

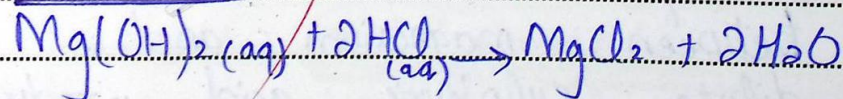
Solubility of the Hydroxides:-

Group II metal hydroxide become more soluble in water as we go down the column:

Magnesium hydroxide appears to be insoluble in water. However if it is shaken in water and filtered, the solution is slightly basic (PH=9.0). This indicates that some hydroxide ion must therefore be present. This is because some magnesium hydroxide has dissolved.

Magnesium hydroxide is used in medicine to neutralize excess acid in stomach and to treat constipation.

Reaction:



Calcium hydroxide is classed as partially soluble in water. A suspension of calcium hydroxide in water

will appear more alkaline than magnesium hydroxide as it is more soluble.

Solubility of Sulphates:-

Group IIA sulphates become less soluble as we down the group. BaSO_4 is the least soluble.

A similar reaction is that between magnesium and dilute sulphuric acid producing hydrogen gas and a colourless solution of magnesium sulphate.

Barium Sulphate exists as a white precipitate indicates the barium sulphate is insoluble.

Solubility of Carbonates:-

The carbonates become less soluble down the group. All the group II carbonates are very sparingly soluble. Magnesium carbonate For Example:- has a solubility of about 0.02 g per 100 g of water at room temperature.

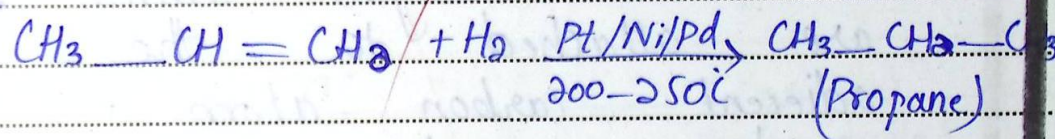
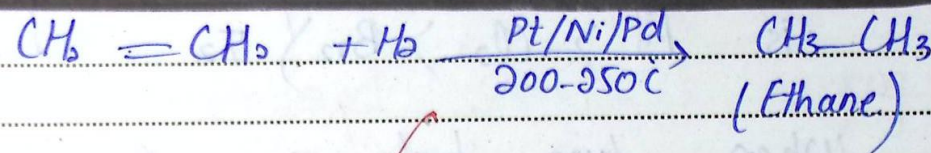
Question: no: 4

Answer:

Important Chemical Reactions of Alkenes:

1) Addition of Hydrogen:

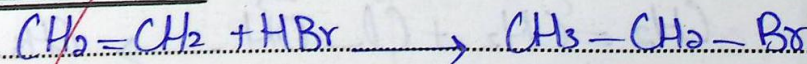
Alkenes reacts with hydrogen in the presence of catalyst such as nickle, and platinum at temperature $200^{\circ}\text{C} - 250^{\circ}\text{C}$ under 1.5 atm .



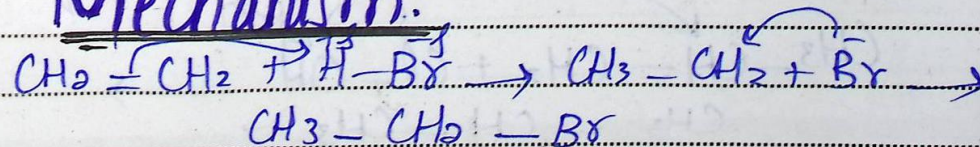
2) Hydrohalogenation:

Alkenes reacts with halogen acid (HCl , HBr , HI) and form alkyl halides.

Reaction:



Mechanism:

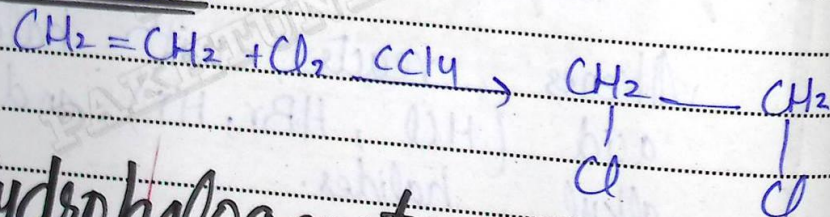


3) Halogenation:

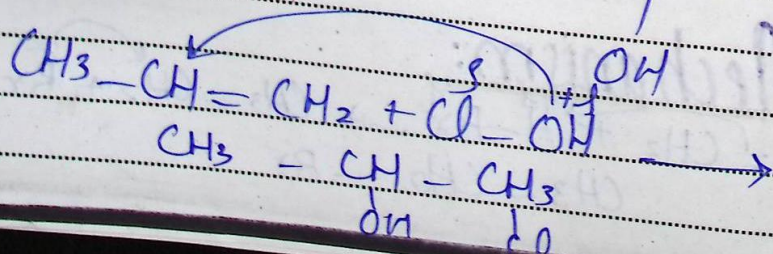
Reactivity order of halogens is $F_2 > Cl_2 > Br_2 > I_2$

When two halogens are attached to adjacent carbon atoms, such compounds are called "vicinal dihalide".

Reaction:



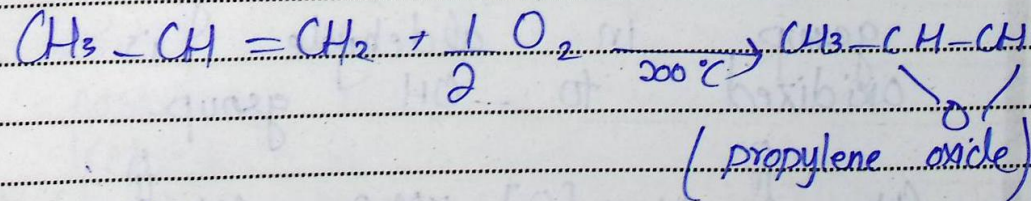
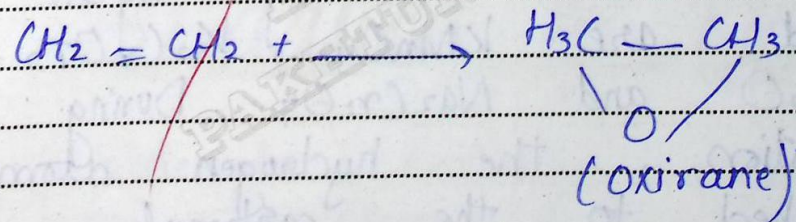
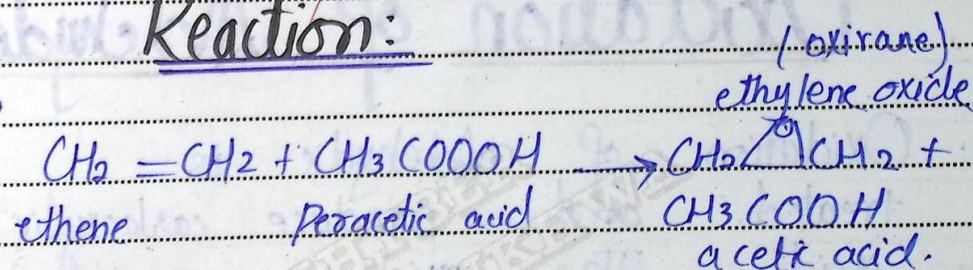
4) Hydrohalogenation:



5) Epoxidation:

Cyclic compounds in which hetero atom is oxygen in the three membered ring is called Epoxidation.

Reaction:

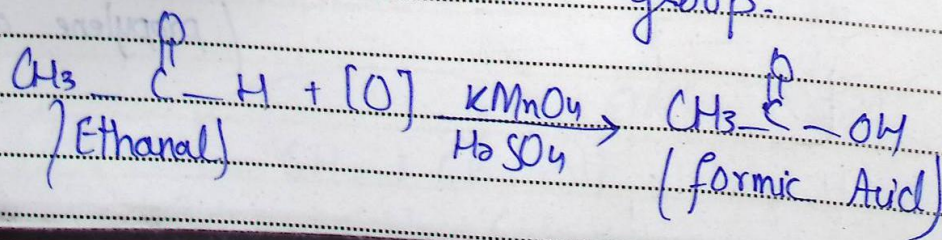


Question : no: 6

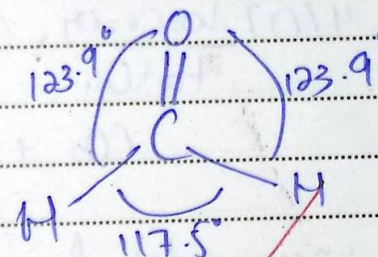
Answer:

Oxidation of Aldehyde:

Oxidation of aldehyde is treated and produce carboxylic acid. The oxidizing agent used are KMnO_4 , $\text{K}_2\text{Cr}_2\text{O}_7$, Ag_2O and $\text{Na}_2\text{Cr}_2\text{O}_7$. During oxidation, the hydrogen atom attached to the carbonyl group in aldehyde is oxidized to $-\text{OH}$ group.



Structure:

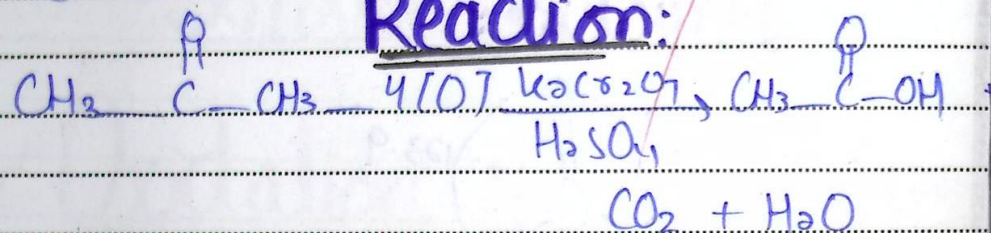


Oxidation of Ketone:

In aldehydes, oxidation involves hydrogen atom that is directly attached to carbonyl carbon, but in case of ketones no such hydrogen exists. Ketones having α -carbon can be oxidized in the

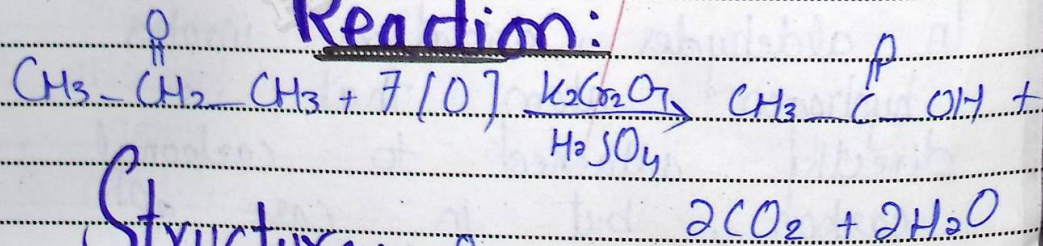
presence of strong oxidizing agent such as $K_2Cr_2O_7$ / H_2SO_4 and conc HNO_3 , which involves breaking of C-C bond.

Reaction:



In case of unsymmetrical ketones, the carbonyl group, remain with smaller alkyl group, as oxidation takes place at this side.

Reaction:



Structure:

