Give Short Answer

QI: What are alkyl halides?

Answer

Alkyl halides are the compounds in which one hydrogen atom of alkanes has been replaced by one halogen atom.

Q2: What are primary alkyl halides? Give examples.

Answer

Alkyl halides in which halogen atom is attached with primary carbon are called primary halides.

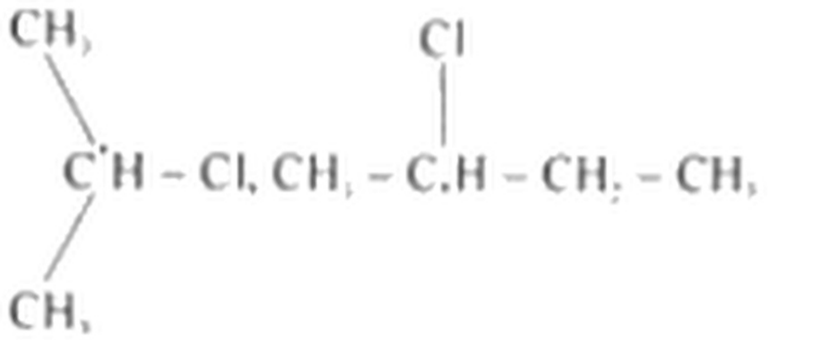
Example: CH_3 - Cl, CH_3 - CH_2 - Cl

Q3: What are secondary alkyl halides? Give examples.

Answer

Alkyl halides in which halogen atom is attached with a secondary carbon atom is called secondary alkyl halide.

Example:



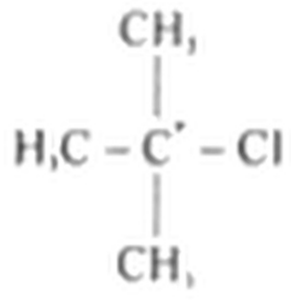
2 — Chloropropane 2 — Chlorobutane

Q4: What is tertiary alkyl halide? Give example.

Answer

Alkyl halide in which halogen atom is attached to a tertiary carbon is called tertiary alkyl halide.

Example:



t — Butyl chloride

Q5: Why alkyl halides have higher melting & Boiling points compared to alkanes?

Answer

Because of the presence of polar bond which creates a molecular dipole that raises the melting and boiling points compared to alkanes.

Q6: Give reaction which illustrate the conversion of alcohols into the alkyl halides.

Answer

$$CH_3 - CH_2 - OH + HX \xrightarrow{Z.ncl} CH_3 - CH_2 - X + H_2O$$

Ethylhalide

Q7: What are the factors which control the reactivity of alkyl halides.

Answer

There are two main factors which control the reactivity of alkyl halides, these are:

i — Bond polarity of C — X bond

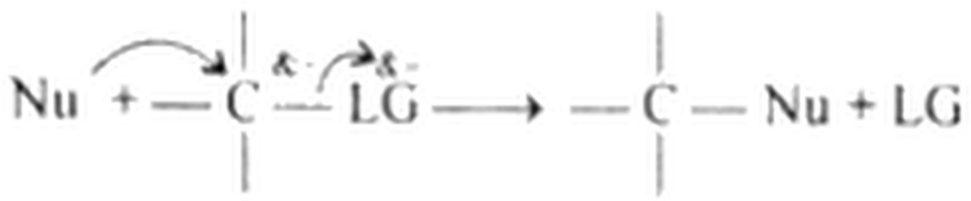
ii — Bond energy of C — X bond

Q8: Briefly explain "Nucleophilic substitution reaction".

Answer

Nucleophilic substitution reaction occurs when an electron rich species, the nucleophile reacts at an electrophilic C-atom attached to an electronegative group.

i.e



Q9: What are two fundamental events in a nucleophilic substitution reactions?

Answer

These are as follows

i. Formation of new s bond to the nucleophile.

ii. Breaking of the living group.

Q 10: What are nucleophiles? Give examples.

Answer

The species which are rich in electron have unshared pair of electrons available for bonding and negatively or nature charged is called nucleophile. Example: HO- C2H50- , Hs-, H20

Q11: Define substrate?

Answer

The alkyl halide molecule on which a nucleophile attacks is called a substrate molecule.

Q12: What is leaving group?

Answer

The group which departs with an unshared pair of electrons is called leaving group.

Q13: What are good leaving groups and poor leaving groups? Give examples.

Answer

The incoming nucleophile must be stronger than the departing one good leaving groups.

Examples: Cl-, Br-, r.etc

The groups in which the incoming nucleophile are not stronger than the departing one are poor leaving groups

Examples: Off, OR, NH2- etc

Q14: What is SNI Mechanism?

Answer

It is substitution nucleophilic bimolecular two step reaction.

$$R - X \underset{\text{slow}}{\rightleftharpoons} R^{+} + X^{-}$$

$$R^{+} - Nu \xrightarrow{\text{Fast}} R - Nu$$

Q15: What is SN_2 Mechanism?

Answer

It substitution nucleophilic bimolecular reaction which occurs in one step.

$$Nu + CH_3 - X \longrightarrow Nu - CH_3 + X$$

Q16: What are elimination reactions?

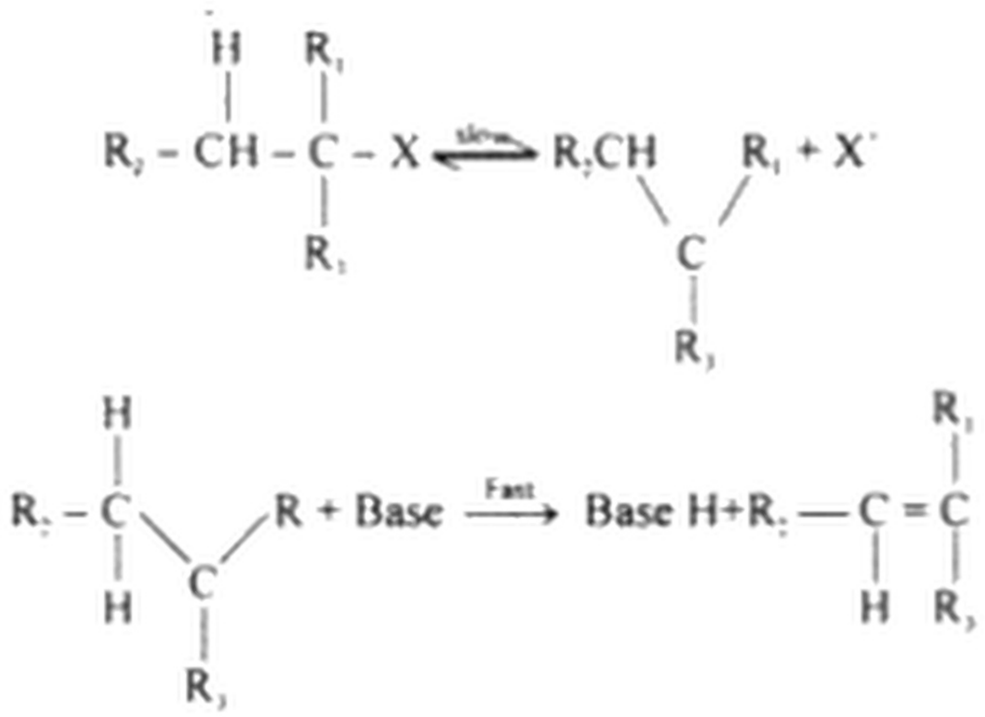
Answer

The chemical reaction in which two groups are eliminated from two adjacent atom is called elimination reaction. Since ß-hydrogen is necessary (or eliminations. it is called P-elimination.

Q17: What is Er mechanism?

Answer

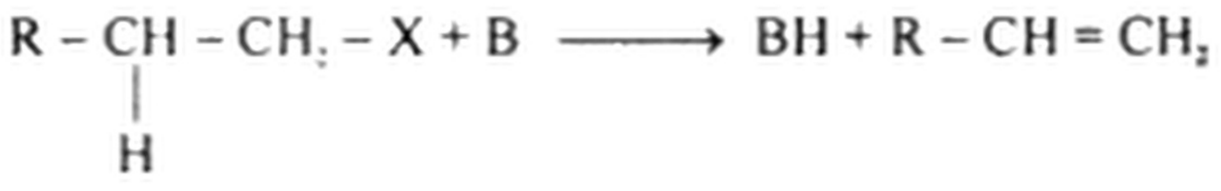
It is unimolecular two step elimination reactions



Q18: What is Ez mechanism?

Answer

It is bimolecular one step elimination reaction



Q19: Under which condition the elimination reaction occurs?

Answer

Elimination reaction occurs only when the substance has ß-hydrogen.

Q20: What is sp^3 hybridized?

Answer

The process in which three-p orbitals and one-s orbital combine together to give sp3 hybrid orbital this is called sp^3 hybridization.

Q21: Define Bond energy?

Answer

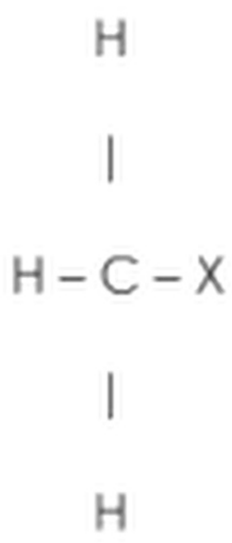
The energy which is required to form a bond is called bond energy.

Q22: What are monohaloalkanes? Give example.

Answer

Those alkanes which have single or when halogen group attached to it are called monohaloalkanes.

Example:



Q23: How Grignard's reagents are prepared?

Answer

Magnesium metal cut into small pieces is added to a solution on of an alkyl halide or aryl halide in only dry either. The reaction mixture is heated with electric heater in a round bottom flask fitted with condenser and other arrangement to avoid the contact of moisture or oxygen.

$$R - X + Mg \xrightarrow[Ether]{\Delta} RMgX$$

Q24: Why Grignard reagents are nucleophile?

Answer

Grignard reagents are nucleophile because of the presence of partial negative charge on the carbon of alkyl group.

Q25: What are Amines? Give example.

Answer

Alkyl or aryl radicals having amine group are called Amines

Example: $CH_2 - CH_2 - NH_2$

Ethylamine

Q26: Why Amines are polar?

Answer

Amines are the polar substance because of the polar nature of bond which results in formation of hydrogen bonds with other H-bonding systems.

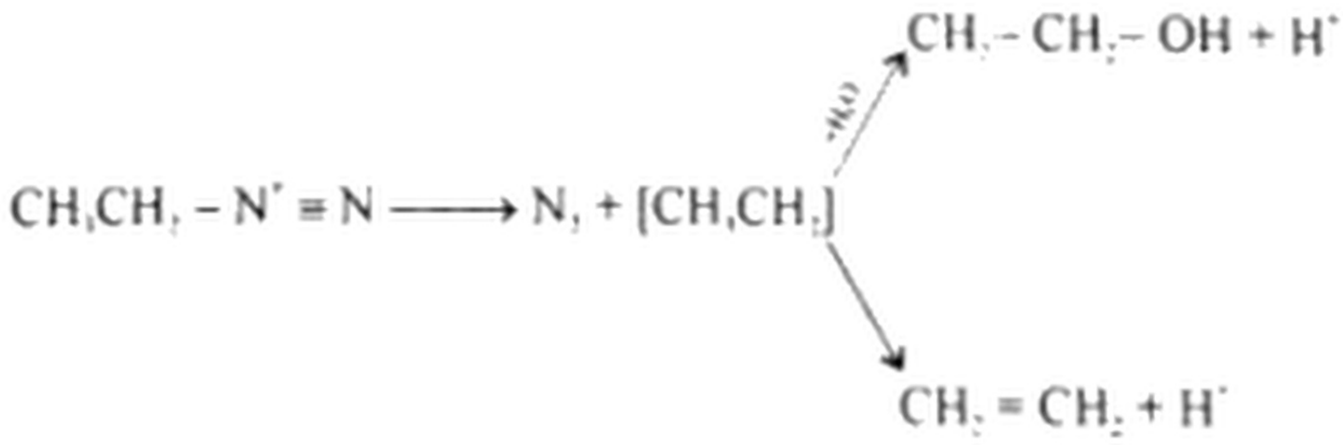
Q27: What is Diazonium salt?

Answer

When amines react with nitrous acid, diazonium, compound is formed.

$$RNH_2 + HNO_2 \rightarrow R - N \equiv N - OH + H_2O$$

The diazonium group is rather unstable, it decomposes



Q28: What 'is the use of arena and cyclopentadienyl?

Answer

They are kinetically inert and used for the design of new radiopharmaceuticals.

Q29: What is use of Thermersal?

Answer

It is an antifungal and antiseptic agent and used as a vaccine preservative in immunoglobulin preparations and rasal products.

Q30: What is haemoglobin

Answer

Haemoglobin is the oxygen carrier pigment found in the blood of animals and humans.

Q31: What is chlorophyll?

Answer

Chlorophyll is the green pigment in plants which is receptor of light energy during photosynthesis.