Chemistry - 12th Class Chemistry Chapter 10 Short Questions Preparation

Q1. Explain terms Leaving Group and Electrophile.

Ans 1: Leaving group:leaving group is nucleophile which leave during substitution reaction of alkyl halide,It departs with an unshared pair of electron If we wish a $S_n$reaction to proceed in the forward direction the incoming nucleophile must be stronger than the departing one,Cl,Br,I are goof nucleophile as well as a goof leaving group.
Electrophile: It is a specie which attracts electrons.The carbon atom of an alkyl group attaches with the halogen atom and bearing a partial positive charged is called an electrophile center,An electrophile may be neutral or positively charged.

Q2. Give general mechanism pattern of S_n2 reaction?

Ans 1: In nucleophilic substitution bimolecular the reaction of attack of the attaching nucleophile is from the side which is opposite to the leaving group.In order to give the nucleophile enough room to attack the substrate carbons atom changes its state of hybridization from tetrahedral to planner sp^2.

Q3. Why does SN_2mechanism give a product with inversion of configuration?

Ans 1: In nucleophilic substitution bimolecular the direction of attack of the attaching nucleophile is from the side which is opposite to the leaving group .In order to give the the nucleophile enough room to attack ,the substrate carbon atom changes it state of hybridization from tetrahedral to planner sp^2.

Q4. Give mechanism of E1 elimination reaction in two steps.

Ans 1: .In E1 mechanism the first step is the slow ionization of the substrate to give a carbocation.In the second step the nucleophile attacks on hydrogen to give an alkene as a product.

Q5. Write down the main factors on which reactivity of Alkyl halides depends.

Ans 1: There are two main factors which govern the reactivity of R-X bond.
C-X bonds: Strength of bond in compound would be the most reactive one while fluro compound will be the least reactive.
C-X bond polarity:The greatest electronegativity difference between carbon and fluorine atoms in alkyl fluorides,If an electrophile is the attaching reagent then this difference suggest that alkyl fluorides would be the most reactive alkyl halides.

Q6. Reaction of ethyl bromide with OH nucleophile is S_n2 justify?

Ans 1: In nucleophilic substitution bimolecular the direction of attack of OH^-,the attaching nucleophile is from the side which is opposite to the leaving group ,in order to give to the nucleophile enough room to attack on ethyl bromide the substrate carbon atom changes its state of hybridization from tetrahedral.

Q7. Give importance of Grignard reagents?

Ans 1: Grignard reagents is so important in organic synthesis that almost almost all the classes of organic compound can be prepared from them.,Due to their importance and application Victor Grignared was awarded Nobel Prize in chemistry.

Q8. Why the reactivity of Alkyl halides depend upon Bind Energy.

Ans 1: The strength of bond shows that iodo compound with the weakest bonds would be the most reactive one whlefluor compound will be the leat reactive i.e the order of reactivity of alkyl halid should be R-I>R-Br>R-Cl>R-F

Q9. Give reason for reactivity Grignard reagent?

Ans 1: The reactivity of Grignard reagent is due to the nature of C-mg Bond which is highly polar,Magnesium is more electropositive than carbons and the C-mg bond though covalent is highly polar ,giving alkyl carbons the partial negative charge,This negative charge is unusual character which makes the alkyl group highly reactive towards electrophile center. Mostly reaction shown by Grignard reagent are exothermic.

Q10. Write a note on R-Mg-X.

Ans 1: R-Mg-X are known are Grignard reagent,These are derivatives of alkyl halides belonging to class of organo metallic compounds,Grignard reagent is so important in organic synthesis that almost all the classes of organic compounds can be prepared from them,Due to their importance and application Victor Grignard was awarded Noble Prize in Chemistry.
