

# Chemistry - 12th Class Chemistry Chapter 8 Short Questions Preparation

### Q1. Define Hydrogenation,

**Ans 1:** Hydrogenation is a process in which molecule of hydrogen added to an alkene in the presence of a catalyst and at moderate pressure (1-5 atm ) to give a saturated compound.

### Q2. Distinguish between ethane & ethyne by a chemical test?

**Ans 1:** When ethyne passed through ammonical solution of AgNO<sub>3</sub>, it forms white precipitate of di-silver acetylide, while ethene does not give this test.

CH=CH + 2AgNO<sub>3</sub>+2NH<sub>4</sub>OH---->AgC=CAg + 2NH<sub>4</sub>NO<sub>3</sub>+ 2H<sub>2</sub>O

#### Q3. Alkanes are less reactive than alkenes. Comment?

**Ans 1:** The alkanes or paraffins(Latin: parum=little,affins=affinity) under ordinary condition are inert towards acids,alkalis,oxidizing and reducing agents. The un-reactivity of alkanes can also be explained on the basis of inertness of a o-bond. In a o-bond the electrons are very tightly held between the nuclei which makes it is very stable bond. A lot of energy is required to break it.

**Ans 2:** On the other hand alkenes contains sigma-bond, having partially filled p-orbitals overlap in a parallel fashion.sigma-electron are less firmly held between the nulei. In alkenes a sigma-bond is, therefore, a weak bond as compared to a o-bond.

### Q4. Why Alkynes are less reactive than alkenes towards Electrophilic Regents?

**Ans 1:** A sigma-bond in alkenes is not only weak but its electrons are more expose to an attack by an electrophilic reagent. Both these acts make the alkenes a very reactive class of compounds. Alkynes although contain two sigma-bond are less reactive than alkenes towards electrophilic reagents this is because the bond distance between the two triple bonded carbon atoms is very short and hence the sigma-electrons are not available to be attacked by electrophilic reagents.

## Q5. What is heat of combustion?

**Ans 1:** Burning of alkane in presence of oxygen is known as combustion, Complete combustion of an alkene yield CO<sub>2</sub>, H<sub>2</sub>O and heat. The amount to heat evolved when one mole of a hydrocarbon is brunt to CO<sub>2</sub> and H<sub>2</sub>O is called heat of combustion.

### Q6. Describe nitration of methane.

**Ans 1:** It is substitution reaction of alkanes in which a hydrogen atom of an alkane is replaced by nitro group .Alkanes undergo vapour -phase nitration under dractic condition to give nitroalkanes.

#### Ans 1:

- · Methane is used as fuel as an illuminating gas.
- used for the preparation of methyl chloride ,methylene chloride,chloroform.
- for the preparation of carbon black used in paints ,prints printing inks and automobiles tyres.
- Q8. Explain Markovnikov rule with one example,
  - **Ans 1:** In the addition of an unsymmetrical reagent to an unsymmetrical alkene the negative part of the adding reagent goes to that carbon, constituting the double bond which has least number of hydrogen atom is called Markovnikov rule.
- Q9. Why pie bond is more reactive than alpha bond?
  - **Ans 1:** In the formation of pie bond, the partially filled p-orbitals overlap in a parallel fashion, the probability of finding electron is thus away from the line joining the two nuclei, due to this reason pei electron are less fimely helf between the nuclei.
- Q10. Describe a test for the presence of unsaturation in organic molecules.
  - **Ans 1:** When alkenes are treated with mild oxidizing reagents like dilute alkaline KMnO<sub>4</sub>solution (Bayer's Reagent) at low temperature, hydroxylation of double bond occur resulting in the formation of dihydroxy compounds known as vicinal glycols. The pink colouration of KMnO<sub>4</sub>solution is discharged.

 $3CH_2=CH_2+2KMnO_4+4H_2O---->HO-CH_2-CH_2-OH+2MnO_2+2KOH$