**ASSIGNMENT SEM-III**

 **Addition Reaction with alkene & alkyne**

1. Explain why alkynes are less reactive than alkenes towards addition of bromine .
2. Why are dihalocarbenes singlet in the ground state ?
3. Outline a general mechanism for the radical addition of HBr in presence of peroxide to CH3-CH=CH2  .
4. How can you prove that cis- and trans- but-2-ene are constitutionally identical but stereochemically different .
5. Carry out the following conversion and give plausible mechanism :

 Cyclohexene → trans- Cyclohaxane-1,2-diol

1. Give the product of the following reaction with mechanism :

 

1. Discuss the mechanism of the following reduction of an alkayne that lead to a trans –alkene .

 

1. What are the products when allene is treated with HBr .
2. Give the product of the following reaction with mechanism –

 

 10. How will you convert the following , explain with mechanism using boron reagent .

 

 11. Explain the lack of reactivity of dimethoxy carbene towards isobutene.

 12. What is the product obtained by the reaction of HBr with vinyl bromide. Explain with mechanism.

 13. How would you carry out the following transformation—

 

 14. Why peroxide effect is only shown by HBr with alkene ?

 15. Why does ozone undergo ready 1,3-dipolar addition to a carbon- carbon multiple bond ?

 16. Why are additions to carbon – carbon double bond mostly electrophilic in nature ?

 17. Justify the observation that addition of bromine to maleic acid gives (±) – 2,3-dibromosuccinic

 acid whereas addition of bromine to fumeric acid gives meso-2,3- dibromosuccinic acid .

 18. On bromination cis – 2-butene gives only dl-2,3-dibromobutane and trans-2-butene gives only

 the meso-dibromide. Give the mechanism and stereochemistry of addition of bromine to these

 isomeric 2-butenes .

19. At low temperature, addition of Br2 with alkene is possible . – Explain

 20. HBr adds to ethylene but HCN does not . Explain

 21. Ethylene does not react with HCl gas but reacts in the presence of AlCl3 . Explain .

 22. Stereospecificity of addition of bromine to cyclohexene is more than that of chlorine . Explain

 23. Explain the mode of mechanism of addition of HCl to an alkene at 0℃ in ether medium and addition of

 HCl to an alkene at 0℃ in CH2Cl2 as solvent .

 24. Show the