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**PG CBCS**  
**M.Sc. Semester-III Examination, 2020**  
**CHEMISTRY**  
 PAPER: CEM-302  
 (Organic Special)

**Full Marks: 40****Time: 2 Hours****Answer any four questions:****10X4=40**

1. What do you mean by cheletropic reactions? What is 'ene' reaction? What are the characteristic features of a cycloaddition reaction? Write down the Woodward-Hoffmann selection rule for cycloaddition reaction. 2.5+2.5+2.5+2.5
2. Thermal [1,3]-sigmatropic shift of carbon occurs with inversion of configuration, whereas thermal [1,5]-shift of carbon occurs with retention of configuration in the migrating group. The stereochemical outcome of photochemical reactions is exactly opposite to that of thermal reactions. Explain these observations by FMO approach. 5+5
3. What is oxy-Cope rearrangement? Give an example. What is Claisen rearrangement? Give an example. 5+5
4. Write down the Linear free energy relationships with special reference to Hammett.  
Write down its Taft modification explaining the significance of the parameters. 5+5
5. Write down the MO of Ferrocene. 10
6. Write the orbital correlation diagram of the following reaction in thermal condition. 10
7. Describe the oxidative addition and reductive elimination reaction in organometallic reaction. 10
8. (a) What is organometallic insertion reaction? Explain with an example. (b) Write a note on Suzuki coupling reaction. 5+5
9. Write a note on Suzuki coupling reaction Sonogashira coupling and Negishi coupling reaction. 5+5
10. Write a note on Suzuki coupling reaction Stille cross coupling and Negishi coupling reaction. 5+5