

**End Semester Examinations - 2015-16 Even Semester - May 2016**

**15CH3003 Organic Reaction Mechanism and Stereochemistry**

**Set A**

**Time : 3 hrs**  
**Total Marks: 100**

- 
1. i) Derive Hammett Equation. (10)  
ii) Differentiate between primary and secondary kinetic isotopic effect (4)  
iii) Discuss on the aromaticity of [14] annulene and pyrrole (6)
- OR**
2. i) What are the significance of reaction constant and substituent constant in Hammett equation (8)  
ii) What is Huckel's rule?. Predict the aromaticity of the following compounds based on Huckel's rule (12)  
a) cyclopropenyl anion b) Trophylum cation c) cyclo octa tetraene d) Azulene
3. i) Discuss on the stereochemistry of the products in  $S_N1$ ,  $S_N2$ , and  $S_Ni$  reactions with neat mechanism (12)  
ii) How do the following groups increase the rate of the reaction by involving in neighboring group participation. Give suitable example (8)  
a) Alkene b) acetate c) phenyl
- OR**
4. i) Explain  $S_N1$  and  $S_N2$  mechanisms. What are the effects of substrate, solvents, nucleophile and base. (14)  
ii) Explain the following rules with suitable examples (6)  
a) Saytzev rule, ii) Brett's rule
5. i) Discuss on addition-elimination and elimination-addition mechanism (12)  
ii) Predict all the possible products using mechanism in the reaction of  $NaNH_2$  with the following compounds (8)  
a) 2-bromo anisole b) 3-bromo anisole
- OR**
6. i) Write an essay on Fridel-Crafts acylation. (10)  
ii) What are the synthetic application of diazonium salts? (10)
7. i) Give all the stereoisomers of tartaric acid and assign R and S configuration for the chiral centres (10)  
ii) Explain the following terms with examples (10)  
a. Enantiomers b) Diastereomers c) chirality d) meso compounds
- OR**
8. i) How will you give priority employing Cahn –Ingold-Prelog rule (10)  
ii) Give the structure for the following compounds (6)  
a) (E)-but-2-ene b) (E)-methyl but-2-enoate c) (Z)-prop-1-en-1-ylbenzene  
iii) Differentiate between enatiomers and diastereomers (4)

9. i) Define conformation and conformers. Give all the conformers of butane (10)
- ii) Explain chirality in a) hexahelicene b) allenes (10)

---

**Wishing you All the Best**

---