M.Sc. - I (Chemistry) (CBCS Pattern) Semester-I

PSCCHT02 - Paper-II : Organic Chemistry

P. Pages : 2 **GUG/S/25/11184**

Time : Three Hours * 1 2 5 7 * Max. Marks : 80

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1. a) Discuss aromaticity in benzenoid and non-benzenoid compounds with suitable example. **8**

b) What are enamines? Give synthetic application of enamines? **8**

OR

c) Write a note on Crown – Ether **4**

d) Explain role of imines in organic synthesis. **4**

e) Draw and discuss about Inclusion compounds. **4**

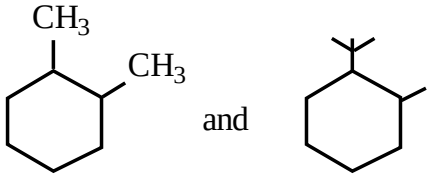
f) Explain aromaticity of tropylium cation **4**

2. a) Describe Cahn-Ingold-Prelog system of configuration with suitable example. **8**

b) What are carbanions? Explain structure and reactivity of carbanions. **8**

OR

c) Draw and explain the stable conformation of following cyclic molecule. **4**



d) Define & explain **4**
i) Meso compounds ii) Prochirality

e) Write the generation and chemical reaction of carbocation. **4**

f) Discuss formation, and reactions of free radicals. **4**

3. a) Discuss following methods of determining reaction mechanism. **8**
i) Isotopic Labelling ii) Kinetic Evidence

b) Explain neighbouring group participation of sigma bond with example. **8**

OR

c) State and explain Hammond Postulate. **4**

d) Discuss Hard and soft acids and bases. **4**

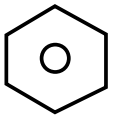
e) Explain classical & non-classical carbocations. **4**

f) Explain role of oxygen and Sulphur as neighbouring group in neighbouring group participation. **4**

4. a) Discuss the SN^1 reaction with suitable example and draw energy profile diagram. Explain effect of leaving group on SN^1 reaction. **8**

b) Write mechanism and draw energy profile diagram of following reactions. **8**

i)  $\xrightarrow[\text{Con. } H_2SO_4]{\text{Con. } HNO_3}$?

ii)  $+ CH_3 - \overset{\overset{O}{\|}}{C} - Cl \xrightarrow{AlCl_3}$?

OR

c) Explain SN^2 Reaction. **4**

d) Explain smiles rearrangement reaction. **4**

e) Explain Benzyne mechanism. **4**

f) Discuss Gatterman Koch reaction. **4**

5. a) Define hyper conjugation with suitable example. **2**

b) Write a short note on graphenes. **2**

c) What is essential condition for the compound to be optically active. **2**

d) What are nitrenes? Explain singlet and triplet state. **2**

e) State Curtin-Hammett principle. **2**

f) What is mean by migratory aptitude. **2**

g) What is mean by ambient nucleophile? Give an example. **2**

h) Write a note on ortho - para ratio. **2**

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