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

PSCCHT02 - Paper-II : Organic Chemistry

P. Pages : 4 **GUG/S/23/11184**

Time : Three Hours * 1 3 6 2 * Max. Marks : 80

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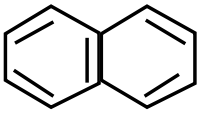
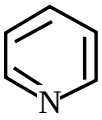
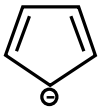
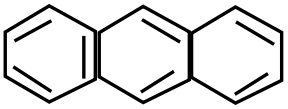
1. a) Explain the term aromaticity and discuss the aromatic character of following compounds. **8**

i) 

ii) 

iii) 

iv) 

v) 

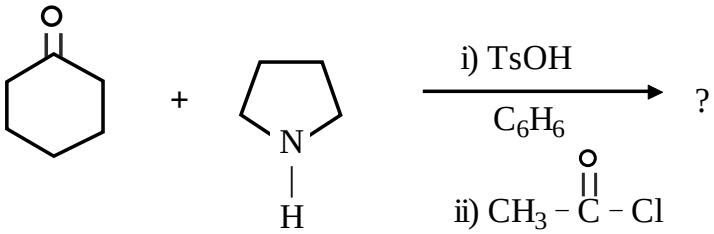
b) What are enamines? Give synthetic applications of enamines. **8**

OR

c) Explain the aromatic behaviour of Annulenes. **4**

d) Explain the role of phase transfer catalyst in organic synthesis. **4**

e) **4**



Complete the above reaction with mechanism.

f) Discuss the following with example **4**

i) Homoaromaticity

ii) Antiaromaticity

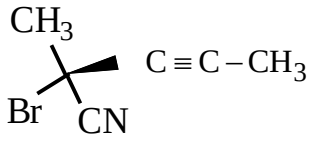
2. a) Explain the optical activity of allenes and biphenyl compounds. **8**

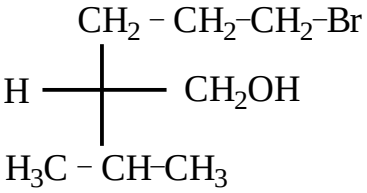
b) Write the chemical reactions of **8**

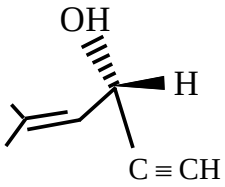
i) Carbenes ii) Nitrene

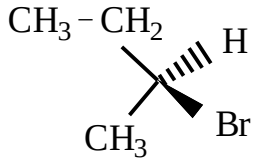
OR

c) Give the R & S nomenclature of the following compound. **4**

i) 

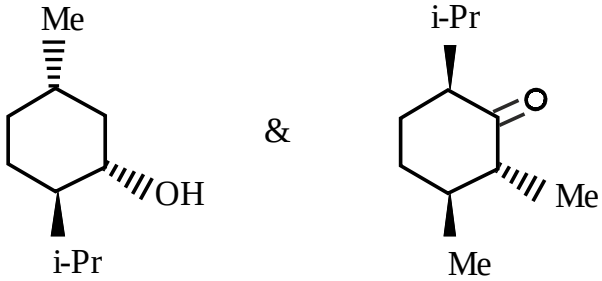
ii) 

iii) 

iv) 

d) Explain structure & stability of carbocation. **4**

e) Draw and explain the stable conformation of following compound. **4**

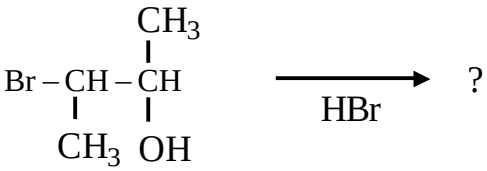


f) Discuss generation & reactions of singlet oxygen. **4**

3. a) What is the Hammett equation. Derive the Hammett equation and explain the term substituent and reaction constant. **8**

b) What is mean by NGP. Explain the NGP in the following reaction with suitable mechanism. **8**

i) 

ii) 

OR

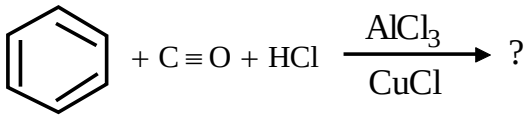
c) Explain carbocation rearrangement in neighbouring group participation. **4**

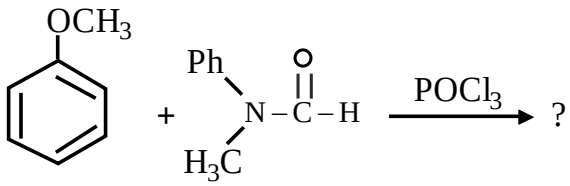
d) Describe the Taft equation. **4**

e) Explain Curtin-Hammetts principle with potential energy diagram. **4**

f) Explain the concept of neighbouring group participation with mechanism. **4**

4. a) Identify and complete the following reaction with mechanism. **8**

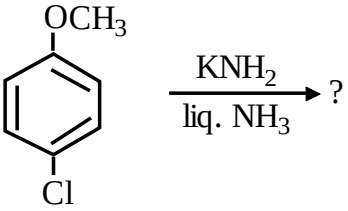
i) 

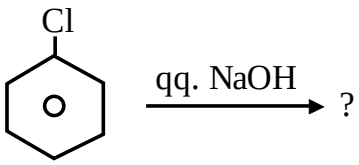
ii) 

b) Explain: **8**
i) Ambient nucleophile
ii) Ambient substrate

OR

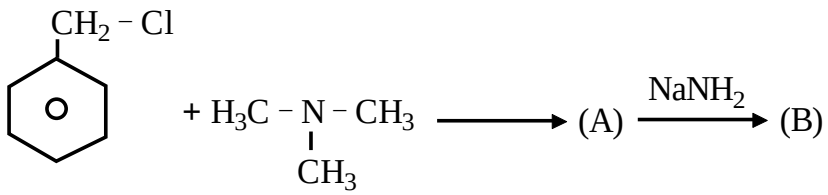
c) Complete the following reaction with mechanism. **4**

i) 

ii) 

d) Discuss SN^2 mechanism with its stereochemistry and neighbouring group participation in SN^2 reaction. **4**

e) Identify and write following reaction with the compound (A) and (B) **4**

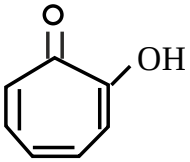


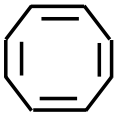
f) Explain substitution reaction at Allylic carbon. **4**

5. a) What is crown ether. **2**

b) Write the following compounds are aromatic, non-aromatic or antiaromatic. **2**

i) 

ii) 

iii) 

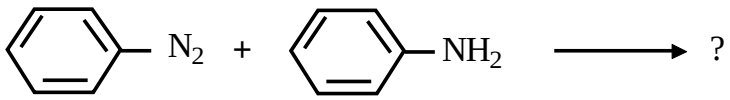
iv) 

c) Explain singlet and triplet carbene. **2**

d) Explain the term prochirality. **2**

e) What is mean by classical and non-classical carbocation. **2**

f) Define Hard and Soft acid and bases. **2**

g)  **2**

h) What is mean by ipsoattack? **2**

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