B.Sc.- III (CBCS Pattern) Sem-V

USCCHT09 - Chemistry Paper-I - Organic Chemistry

P. Pages : 2 **GUG/W/23/13089 (S)**

Time : Three Hours * 8 3 2 1 * Max. Marks : 50

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1. a) Write note on: **5**

i) Equivalent and Non-equivalent proton's in NMR spectroscopy.

ii) Spin-spin coupling.

b) Discuss the principle of NMR spectroscopy. Elucidate the structure of organic compound having molecular formula C_3H_6O showing following NMR data- **5**

i) 3H, t, 1·5δ

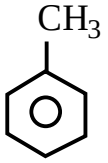
ii) 2H, q, 2·5δ

iii) 1H, s, 2·6δ

OR

c) Discuss Nuclear shielding and de-shielding in NMR spectroscopy. **2½**

d) Find out number of NMR signals obtained in following organic compounds. **2½**

i) 

ii) $CH_3-CH_2-\overset{\overset{O}{\|}}{C}-H$

e) Explain the role of TMS in NMR spectroscopy. **2½**

f) Write short note on coupling constant (J). **2½**

2. a) How will you prepare succinic acid and adipic acid from diethyl malonic ester. **5**

b) Explain Claisen condensation with mechanism for preparation of acetoacetic ester. **5**

OR

c) Explain Keto-enol tautomerism with example. **2½**

d) Give the preparation of Barbituric acid. **2½**

e) What are active methylene compound? Explain the acidity of α-hydrogen. **2½**

f) Write a short note on ketonic hydrolysis. **2½**

3. a) Explain Addition and substitution polymerization reason with example. **5**

b) Discuss natural and synthetic polymer. How will you prepare chloroprene? **5**

OR

c) What is mean by polymer? Give the classification of polymer, including di-block and tri-block polymer. **2½**

d) Write short note on conducting polymer with example. **2½**

e) Explain vulcanization of rubber. **2½**

f) Explain the term thermosetting polymer with example. **2½**

4. a) What is green chemistry? Discuss the green solvents in green chemistry. **5**

b) Explain the twelve principles of green chemistry. **5**

OR

c) Discuss the term cardle – to cardle in green chemistry. **2½**

d) Write about green synthesis approach for preparation of p-nitrophenol. **2½**

e) Write a short note on reduction of solvent toxicity in green chemistry. **2½**

f) Discuss the alternative methods in green chemistry. **2½**

5. Attempt **any ten.** **10**

1) How many NMR signal obtained in Acetone?

2) What is the relation between τ and δ value?

3) Define the term chemical shift.

4) What is acidic hydrolysis?

5) Write any two examples containing reactive methylene group.

6) Draw the structure of 4-methyl uracil.

7) What is PVC?

8) Draw the structure of phenol-farmoldehyde polymer.

9) Define the term cross-linking polymer.

10) Give any two examples of catalyst used in green chemistry.

11) Write two advantage of green chemistry.

12) Define term feed stock in green chemistry.

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