

B.Sc. (CBCS Pattern) Semester-V  
**USCCHT09 - Chemistry Paper-I - Organic Chemistry**

P. Pages : 2

Time : Three Hours



**GUG/W/24/13089(S)**

Max. Marks : 50

- Notes : 1. All questions are compulsory.  
2. All questions carry equal marks.

1. a) Discuss the following. 5  
i) Spin-Spin Splitting ii) Coupling Constant.
- b) Explain the NMR Spectra of Acetophenone and Ethanol. 5
- OR**
- c) What is TMS? Explain its significance in NMR Spectroscopy. 2½
- d) Explain Chemical Shift. 2½
- e) Discuss equivalent and non equivalent protons. 2½
- f) A compound with molecular formula C<sub>7</sub>H<sub>6</sub>O<sub>2</sub> gives 2½  
Following NMR data.  
i) Multiplet,  $\delta$  7.27 (5H) ii) Singlet,  $\delta$  10.95 (1H)  
Deduce the structure of the compound.
2. a) Explain following. 5  
i) Claisen condensation. ii) Synthesis of Di ethyl malonate.
- b) Explain: 5  
i) Keto-enol tautomerism ii) Synthesis of glycine.
- OR**
- c) Write a note on Active Methylene compound. 2½
- d) Write a note on acidity of alpha hydrogen. 2½
- e) Give preparation of 4-methyl Uracil. 2½
- f) Give preparation of monoketone from Aceto acetic ester. 2½
3. a) Explain addition and substitution polymerization reaction with example. 5
- b) Give the preparation of 5  
i) Buna-S ii) Neoprene
- OR**
- c) How will you prepare Nylon 6,6? 2½
- d) Explain Vulcanization of Rubber. 2½

- e) What is natural rubber? 2½
- f) Give preparation and applications of conductive polymer. 2½
- 4. a) Discuss twelve principles of Green chemistry. 5
- b) Explain: 5
  - i) Green chemistry and sustainable development.
  - ii) Designing products under the Holistic approach: Cradle to cradle.

**OR**

- c) Discuss alternative feedstock in green chemistry. 2½
- d) Explain green synthesis of Adipic acid. 2½
- e) Explain green synthesis of Furfural from biomass. 2½
- f) Discuss commercial applications of  $\text{TiO}_2$ . 2½
- 5. Attempt **any ten**. 10
  - a) Define coupling constant.
  - b) Define nuclear shielding.
  - c) Give number of signals in following molecules.
    - i)  $\text{CH}_3 - \text{OH}$
    - ii)  $\text{CH}_3 - \text{CH}_2 - \text{NH}_2$
  - d) What are enolates?
  - e) What is meant by alpha hydrogen?
  - f) Draw structure of Succinic anhydride.
  - g) what is PVC?
  - h) Draw structure of Chloroprene.
  - i) What are animal fibres?
  - j) Define green chemistry.
  - k) Give formula of atom economy.
  - l) What is photochemistry?

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