

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

P. Pages : 2

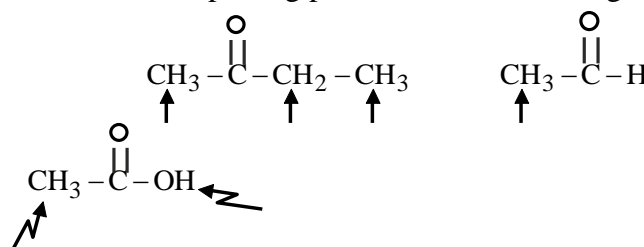
Time : Three Hours



**GUG/W/23/13089**

Max. Marks : 50

1. a) Discuss principle of NMR spectroscopy. 5  
b) Give the chemical shift values and splitting patterns in the following indicates protons. 5



**OR**

- c) Write note on number of signals in NMR spectroscopy. 2½  
d) Explain the term shielding and deshielding. 2½  
e) Deduce the structure from NMR data. 2½  
Mol. formula  $C_4H_8O$   
 $\delta = 2.1$  s 3H  
 $\delta = 2.2$  q 2H  
 $\delta = 1.1$  t 3H  
f) Which solvent is used in NMR? What is TMS? State its significance. 2½
2. a) What are active methylene group? Give the synthesis of Aceto Acetic ester by claisen condensation. 5  
b) What is tautomerisms? Give the preparation of glycine from diethyl malonate. 5

**OR**

- c) Explain Acidic properties of  $\alpha$ -protons in active methylene compounds. 2½  
d) Give the preparation monoketone and diketone from Acetoacetic ester. 2½  
e) Give the preparation of Barbituric acid. 2½  
f) Give the synthesis of malonic ester. 2½
3. a) Explain addition and substitution polymerization reaction with example. 5  
b) Discuss natural and synthetic polymer. How will you prepare Buna-s? 5

**OR**

- c) Explain vulcanization of Rubber. 2½
- d) Write short notes on conducting polymers. 2½
- e) What are biodegradable polymers? 2½
- f) Give the classification of polymers. 2½
- 4. a) Explain the principles of green chemistry. 5
- b) What is Green chemistry? Discuss the solvents in green chemistry. 5

**OR**

- c) Explain the term green chemistry and sustainable development. 2½
- d) Explain holistic approach “Cradle to Cradle”. 2½
- e) Give alternative feedstock in green chemistry. 2½
- f) Give synthesis of furfural from biomass. 2½
- 5. Attempt **any ten**. 10
- a) Give number of signal in ethyl bromide.
- b) What is chemical shift value of aromatic protons?
- c) Name the solvents used in NMR.
- d) Which enolate is stable from the following.
  - i)  $\text{CH}_3 - \overset{\text{O}}{\parallel} \text{C} - \overset{\ominus}{\text{CH}} - \overset{\text{O}}{\parallel} \text{C} - \text{CH}_3$
  - ii)  $\text{CH}_3 - \overset{\text{O}}{\parallel} \text{C} - \overset{\ominus}{\text{CH}_2}$
- e) Give structure of 4-methyl uracil.
- f) Explain the term acidity of  $\alpha$  –hydrogen.
- g) What is PVC?
- h) Which of the following is natural polymer?
  - 1) Protein
  - 2) Polyethylene
- i) Define cross linked polymer.
- j) Give name of green solvent.
- k) What is atom economy?
- l) Give the role of catalyst in green chemistry.

\*\*\*\*\*