

Manipal University, Manipal Department of Sciences

Reg. No.

I SEMESTER M. Sc (CHEMISTRY)

END SEMESTER EXAMINATIONS, NOV/DEC 2015

SUBJECT: ORGANIC CHEMISTRY [CHM 603]

REVISED CREDIT SYSTEM

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- ✤ Answer ANY FIVE FULL the questions.
- ✤ Write chemical reactions wherever necessary
- 1A. i) Describe the E2-mechanism using a suitable example.ii) Identify the product and describe the mechanism for the following;

ii)
$$CH_3$$
 Cl
+ NH_2 NH_3 (liq.) ?

1B. Give reason for the following:

i) Amino acids are amphoteric.

- ii) No acid stronger than H_3O^+ and no base stronger than OH^- can survive in H_2O .
- iii)Guanidine is more basic than ammonia
- iv) Addition reaction between HBr and styrene yields anti-Markownikov's product in the presence of benzoyl peroxide
- **1C.** Describe the free radical polymerization mechanism of ethylene.

4+4+2

- 2A. i) Describe the mechanism of Friedel Craft alkylation reaction using an example.ii) Distinguish between the followings:
 - a) Nucleophilic and electrophilic substitution reactions
 - b) Monosaccharides and disaccharides
- **2B.** Describe any four chemical properties of glucose.
- **2C.** Define the following terms and write their significance:

a) Iodine value ii) Invert sugar

3A. State modern rule of aromaticity. Discuss the aromaticity of the following compounds;



3B. Describe the mechanism of addition of Br_2 to ethylene molecule in the presence of LiCl and H_2O .

3C.	What are lipids? Describe their clinical importance.	4+4+2
4A.	Explain frontier orbital theory. Illustrate [4+2] cycloaddition reaction using FMO approach.	
4B.	Describe the mechanism 1,3-sigmatropic shift of H and CH_3 group.	
4C.	Give reasons;	
	i) One of the reactant is considered to be in excited state whereas second is reactant in ground state during photochemical cycloaddition reactions.	
	ii) Diels-Alder reaction always occur under thermal conditions.	4+4+2
5A.	Explain the [2+2] cycloaddition reaction using Woodward-Hoffmann correlation diagram.	
5B.	Explain how Crams rule allow the prediction of major product during 1,2-asymmetric induction reaction?	
5C.	Describe two methods used to distinguish geometrical isomers.	4+4+2
6A.	Describe the suprafacial and antarafacial migration of CH ₃ group	
6B.	Derive Weinstein-Eliel equation for conformers under equilibrium. Explain an application of this equation	
6C.	 Justify the following statements; i) Axial haloketone rule helps to assign molecular conformations. ii) Asymmetric induction reaction is effective when the chiral center in the reactant is closer to the newer stereogenic center. 	4+4+2
