

Enrollment No: _____ Exam Seat No: _____

C.U.SHAH UNIVERSITY

Summer Examination-2017

Subject Name: Stereochemistry in Organic Synthesis

Subject Code: 4LS02CHM1

Branch: B.Sc. (Microbiology)

Semester: 2

Date: 16/05/2017

Time: 02.00 To 05.00

Marks: 70

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
- (2) Instructions written on main answer book are strictly to be obeyed.
- (3) Draw neat diagrams and figures (if necessary) at right places.
- (4) Assume suitable data if needed.

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- Q-1** **Attempt the following questions** **(14)**
- A.** Homolytic fission of covalent bond between carbon atoms will produce. 01
- Two carbonium ions
 - Two molecules
 - Free radicals
 - Carbonium ion and carbanion
- B.** The order of stability of carbanions is ? 01
- Primary secondary tertiary
 - Secondary tertiary Primary
 - Tertiary secondary Primary
 - Tertiary Primary secondary
- C.** Which of the following is not an electrophile? 01
- NH₃
 - Br⁺
 - NO₂⁺
 - AlCl₃
- D.** A molecule is said to be chiral. 01
- If it contains plane of symmetry
 - If it contains centre of symmetry
 - If it can't be superimposed on its mirror image
 - If it can be superimposed on its mirror image
- E.** What is the possible number of optical isomers for a compound containing n dissimilar asymmetric carbon atom ? 01
- N²
 - 2ⁿ
 - n + 1



- (d) $n+2$
- F. Carbon-carbon double bonds consist of : 01
 (a) One σ bond, one π bond
 (b) Two σ bonds, one π bond
 (c) One σ , two π bonds
 (d) Two σ bonds, two π bonds
- G. Compound in which carbons use only sp^3 hybrid orbitals for bond formation is. 01
 (a) CH_4
 (b) $CH_2 = CH_2$
 (c) $CH_3C\equiv CH$
 (d) $CH_3CH=CH_2$
- H. Gives difference between homolytic heterolytic bond fission 01
- I. Define Substitution reaction 01
- J. Draw the structure of lactic acid 01
- K. Define isomerism 01
- L. An object that is not superimposable on its mirror image is called _____ . 01
- M. How many number of hybrid orbitals present in sp hybridization? 01
- N. Define of Bond length 01

Attempt any four questions from Q-2 to Q-8

- Q-2 Attempt all questions (14)**
 A. Explain the relative stability of alkyl carbocation and alkyl carbanions 07
 B. Discuss the reaction mechanism of E1 and E2 reactions? 07
- Q-3 Attempt all questions (14)**
 A. Draw the reaction scheme and explain different steps involved in the reaction mechanism of halogenations of benzene 07
 B. Write a note on rate of reaction and discuss the energy profile of chemical reaction 07
- Q-4 Attempt all questions (14)**
 A. What is hybridization? Explain sp^3 hybridization with proper example 07
 B. Write a note on Inductive effect 07
- Q-5 Attempt all questions (14)**
 A. Discuss the applications of Huckel's rules and aromaticity 07
 B. Write a note on 07
 1. Acidic character of carboxylic acids
 2. Racemic modification
- Q-6 Attempt all questions (14)**
 A. Explain with example different steps involved in assigning R,S nomenclature to organic compounds. 07



- B.** Write a note on **07**
1. Optical activity
 2. Specific rotation
- Q-7** **Attempt all questions** **(14)**
- A.** Write a note on **07**
1. Geometrical isomerism
 2. Structural isomerism
- B.** What is conformation? Discuss the conformation of ethane **07**
- Q-8** **Attempt all questions** **(14)**
- A.** What is Elimination reaction? Discuss the unimolecular S_N1 reaction with proper mechanism **07**
- B.** Discuss the reaction with proper mechanism **07**
1. Saytzeff elimination reaction
 2. Hofmann elimination reaction

