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Total No. of Printed Pages: [01]

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B.Sc. (Hons.) Chemistry (Semester – 2nd)

ORGANIC CHEMISTRY-I

Subject Code: BCHMS1201

Paper ID: [19131609]

Time: 03 Hours

Maximum Marks: 60

Instruction for candidates:

1. Section A is compulsory. It consists of 10 parts of two marks each.
2. Section B consist of 5 questions of 5 marks each. The student has to attempt any 4 questions out of it.
3. Section C consist of 3 questions of 10 marks each. The student has to attempt any 2 questions.

Section – A

(2 marks each)

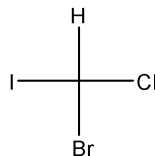
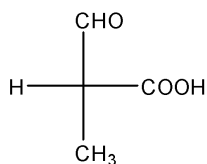
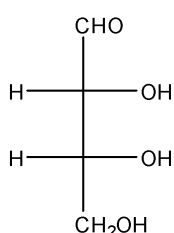
Q1. Attempt the following:

- a) What is racemic mixture?
- b) Which conformation of n-butane is least stable and why?
- c) Is halogenation of alkanes a rearrangement reaction? Write reason in support of your answer.
- d) What are homolytic and heterolytic cleavages?
- e) Draw the E- & Z- isomers of 2-butene.
- f) What are R and S configurations? Is it absolute or relative system?
- g) Differentiate Inductive effect and Electromeric effect.
- h) Define bond energy. What is the order of C-H bond energies in ethane, ethene and ethyne.
- i) State Saytzeff's rule.
- j) Define Enantiomers and Diastereomers and give two examples for each.

Section – B

(5 marks each)

- Q2. How E1 and E1cB reaction mechanisms are different? Explain.
- Q3. Explain any two methods of formation of alkanes.
- Q4. Out of the following which compounds are aromatic or not
Furan, cyclopentadienyl-anion and cyclooctatetraene.
Explain on the basis of Huckle's Rule.
- Q5. Assign R/S configuration to the following:



- Q6. Explain electrophilic and nucleophilic addition reactions in unsaturated compounds.

Section – C

(10 marks each)

- Q7. a) What are carbanions? How they are generated. Explain their structure, also explain stability order among primary secondary and tertiary carbon free radicals.
b) What is hyperconjugation? 6+4
- Q8. a) Draw the Chair, Boat and Twist boat forms; Relative stability with energy diagrams.
b) Why chlorobenzene is ortho-para directive in nature in Electrophilic aromatic substitution. 6+4
- Q9. a) Write the mechanism for following reaction
i) Oxymercuration-demercuration
ii) Hydroborationoxidation
b) Explain 1,2-and 1,4-addition reactions in conjugated dienes with suitable examples.

