Roll No. .....

91052

B. Sc. Bio-Technology 1st Semester

w. e. f. 2012-13

Examination – November, 2019

ORGANIC CHEMISTRY

Paper : BTC - 107

Time : Three Hours] *[Maximum Marks : 40*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt *five* questions in all, selecting *one* question from each Section. Question No. **1** is ***compulsory***.

1. (a) Draw different resonating structure of benzene.

(b) Draw position isomers in chloropropane.

(c) Draw the structure of 2 - hydroxypropanoic acid and put asterik(*) on chiral carbon atom.

(d) Why boron trifluoride is an electrophile ?

(e) Name the reaction intermediate which is neutral and divalent ?

(f) Draw the structure of 2,2-dimethylpropane.

(g) Calculate the angle of strain in cyclopropane.

(h) Define localized chemical bond. 1 × 8 = 8

SECTION – I

2. (a) Explain the following term with example : 4

(i) Metamers

(ii) Tautomers

(iii) Plane of symmetry

(iv) Centre of symmetry

(b) Which of the following are optically active. Give reason. 4

(i) Lactic acid or ethanoic acid

(ii) 2-chlorobutane or l-chlorobutane

3. (a) Which has longer bond length between Carbon atoms. Give reason. 4

(i) alkane or Alkene

(ii) Alkene or benzene

(b) How many pia(π) electrons are present in : 2

(i) Benzene

(ii) Methyl benzene.

(c) Draw the different possible hyper-conjugated structures in $CH_3CH_2^+$. 2

SECTION – II

4. (a) Which of the following can show geometrical isomerism. Give reason.

(i) But-2-ene or But-1-ene

(ii) Pent-2-ene or ethane

(b) Explain the stability order among the different conformation of cyclohexane. 4

5. (a) Explain the stability order among the different Newmann conformation of butane. 4

(b) Explain the 'R' and 'S' system of nomenclature to determine the configuration. 4

SECTION – III

6. (a) Give differences between Homolytic fission and Heterolytic fission. 3

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(b) Why benzene shows electrophilic substitution reaction ? 3

(c) Explain the term Electrophile with example. 2

7. (a) Give differences between Carbocation and Carbanion. 3

(b) Explain the stability order among primary, secondary and tertiary carbocation. 3

(c) Give any *two* methods for the formation of carbocation. 2

SECTION – IV

8. (a) Give any two methods for the preparation of Ethane. 2

(b) Explain the following reaction : 4

(i) Simmon's Smith reaction

(ii) Kolbe's electrolytic reaction.

(c) Which lowest alkane can show : 2

(i) Conformational isomerism

(ii) Chain isomerism

9. Explain the following : 4, 4

(a) Baeyer's strain theory

(b) Reactivity Selectivity principle