

PARUL UNIVERSITY
FACULTY OF APPLIED SCIENCE
M.Sc. Summer 2017-18 Examination

Semester: 4
Subject Code: 11205252
Subject Name: Stereochemistry and Disconnection Approach

Date: 10/05/2018
Time: 02:00 pm to 04:30 pm
Total Marks: 60

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

- Q.1. A) Brief note (4x2) (Each of 04 marks) (08)**
 (a) Describe any two methods to achieve asymmetric synthesis.
 (b) What is racemization? Explain any one mechanism for racemization.
- Q.1. B) Answer the following questions (Any two) (04)**
 (a) Short note (Each of 02 marks)
 1. What is internal and external compensation in optical isomerism?
 2. What is epimer?
 (b) What are the different methods available for resolution? Explain any one. (04)
 (c) Differentiate between enantiomers and diastereomers. (04)
- Q.2. A) Answer the following questions. (04)**
 (a) Brief note. (Each of 02 marks)
 1. Explain ring inversion in cyclohexane molecule.
 2. Why chair conformation of cyclohexane is more stable than the boat form?
 (b) Why propane is more stable in staggered condition while propene prefers eclipsed condition? (04)
- Q.2. B) Answer the following questions (Any two) (03)**
 (a) Short note. (Each of 01 marks)
 1. Draw the axial and equatorial hydrogens in cyclohexane molecule.
 2. Give one example of conformationally rigid diastereomers.
 3. Explain Regiospecific reactions.
 (b) What is the concept of angle strain? (03)
 (c) Explain Winstein-Elieil equations with an example. (03)
- Q.3. A) Brief note (Each of 04 marks) (08)**
 (a) What is Functional Group Interconversion? Give one example.
 (b) Perform a disconnection analysis on phenyl acetic acid and synthesize it as per analysis.
- Q.3. B) Answer the following questions (Any two) (04)**
 (a) Brief note (Each of 02 marks)
 1. Write one positive and one negative synthons and their synthetic equivalents.
 2. What is an activating group? Give one example.
 (b) Why formaldehyde cannot be used for Aldol condensation? Explain with example. (04)
 (c) Perform a disconnection for α,β -unsaturated carbonyl compounds. (04)
- Q.4. A) Answer the following questions. (04)**
 (a) Brief note. (Each of 02 marks)
 1. What are synthons?
 2. Give an example of molecule showing optical inactivity by internal compensation.
 (b) Write a note on Diels-Alder reaction and disconnection of the reaction product. (04)
- Q.4. B) Answer the following questions (Any two) (03)**
 (a) Short note. (Each of 01 marks)
 1. What are synthetic equivalents?
 2. How many 'endo' carbons are present in cyclopentane ring?
 3. Draw a structure of simple decalin.
 (b) Write the dehydration mechanism under acidic conditions in Aldol condensation. (03)
 (c) Why intramolecular Aldol reaction is not possible by deprotonation at B site? (03)

