

**PARUL UNIVERSITY**  
**FACULTY OF APPLIED SCIENCE**  
**M.Sc., Summer 2018-19 Examination**

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

**Date: 03/04/2019**  
**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) Essay type (Each of 04 marks) (08)**

- (a) Explain in detail any one method to achieve asymmetric synthesis.
- (b) What is resolution? What are the different methods to achieve it?

**Q.1. B) Answer the following questions (Any two)**

- (a) Short note (Each of 02 marks) (04)
  1. Explain the concept of angle strain.
  2. What is epimerization?
- (b) Explain optical inactivity by internal compensation with an example. (04)
- (c) Give one example of Curtin–Hammett principle (04)

**Q.2. A) Answer the following questions.**

- (a) Short note (Each of 02 marks) (04)
  1. Draw the axial and equatorial hydrogens in cyclohexane molecule.
  2. Why boat conformation of cyclohexane is more energetic than the chair 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)**

- (a) Do as directed. (Each of 01 marks) (03)
  1. For a compound containing 3 chiral centers, number of optical isomers are  
 (A) 4                      (B) 6                      (C) 8                      (D) 12
  2. Give one example of conformationally rigid diastereomer.
  3. What is meso tartaric acid?
- (b)? Differentiate between enantiomers and diastereomers (03)
- (c) With the help of diagram, explain the structure of Progesterone and Testosterone. (03)

**Q.3. A) Essay type (Each of 04 marks) (08)**

- (a) Write two positive and two negative synthons and their synthetic equivalents.
- (b) Explain Functional Group Interconversion with one example.

**Q.3. B) Answer the following questions (Any two)**

- (a) Short note (Each of 02 marks) (04)
  1. Define synthons and synthetic equivalents?
  2. Explain activating group with one example.
- (b) Explain why formaldehyde cannot be used for Aldol condensation. (04)
- (c) Perform a disconnection on 3-hydroxy ester. (04)

**Q.4. A) Answer the following questions.**

- (a) Short note (Each of 02 marks) **(04)**
1. Perform a valid disconnection on phenyl acetic acid.
  2. Explain Regiospecific and regioselective reactions.
- (b) Write a note on Diels-Alder reaction and disconnection of the reaction product. **(04)**

**Q.4. B) Answer the following questions (Any two)**

- (a) Short note (Each of 01 marks) **(03)**
1. Disconnection approach is also known as  
(A) Retrosynthesis (B) Retroanalysis (C) Interconversion (D) Rearrangement
  2. In cyclopentane ring, number of “endo” carbons are  
(A) 1 (B) 2 (C) 3 (D) 4
  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)**

