Exam. Code : 210403
Subject Code : 4833

M.Sc. Chemistry 3rd Semester

ORGANIC SYNTHESIS

Paper—Course-XVII

Time Allowed—Three Hours] [Maximum Marks—50

Note :— Candidates are to attempt **FIVE** questions, **ONE** from each Section. **Fifth** question may be attempted from any Section. All questions carry equal marks.

SECTION—A

1. (a) Give mechanism and evidence supporting Arndt-Eistert rearrangement. Give synthetic utility of the reaction.

   (b) Discuss with examples Beckmann rearrangement with special emphasis on memory effects. 5,5

2. (a) Discuss the mechanism of Schmidt rearrangement by taking two examples. Provide evidence in support of mechanism.

   (b) Discuss the importance of nature of migration in deciding mechanistic pathway by taking suitable examples. 5,5

SECTION—B

3. (a) What do you understand by molecular recognition ? Explain. Can you design a molecular receptor selective for anions ?

   (b) Preorganization is a prerequisite for designing new receptors. Explain it.

   (c) What is kinetic selectivity ? 4,3,3

4. (a) Make a comparative study of aromatic behavior of *ortho* and *peri*-fused polynuclear hydrocarbons. 4

   (b) Discuss the synthesis of catenoids and muscone. 3,3

SECTION—C

5. (a) List the reagents employed for preparation of coumarins. Compare the reactivity of benzopyrylium and quinolizinium salts.

   (b) Give two methods for the preparation of azepines and three rearrangement reactions given by oxepines. 4,6

6. (a) How will you synthesize pyrones ? Compare the reactivity of pyrones with pyridines.

   (b) Give two methods for the preparation of azetidines and three reactions given by thietanes. 4,6

SECTION—D

7. (a) Discuss synthetic applications of LDA.

   (b) What are phase transfer catalysts ? How they differ from other catalytic systems in their mode of reactions ?

   (c) Discuss with examples synthetic utility of dicyclohexylcarbodimide. 4,3,3

8. (a) How Wilkinson's catalyst can be used for the hydrogenation of an alkenes ? Explain with mechanism.

   (b) Discuss the following :

   (i) Selenium dioxide

   (ii) Peterson's synthesis. 4,3,3