Code No. 8702

FACULTY OF SCIENCE

M.Sc. III-Semester Examination, December 2013

Subject : Organic Chemistry

Paper - III : Modern Organic Synthesis

Time : 3 hours **Max. Marks : 80**

Note : Answer all questions from Part-A and Part-B. Each question carries 8 marks in Part-A and 12 marks in Part-B.

PART – A (4 x 8 = 32 Marks)

(Short Answer Type)

1.a) Describe the methods of conversion of alkenes to diols by using provost and Woodward oxidation methods.

b) Illustrate the methods of reduction by using the nucleophilic metal hydrides $LiAlH_4$ & $NaBH_4$.

2.a) Explain the reactions involved in the synthesis of organoboranes in C-C bond formation.

b) Describe the Mannich reaction with suitable examples.

3.a) Illustrate the following new synthetic reactions with examples.

i) Baylis-Hillman reaction ii) Ugi reaction

b) Explain the differences involved in Stille coupling and Sonogishira coupling.

4.a) Explain Baldwin rules with example.

b) Describe the new techniques involved in solid phase peptide synthesis.

PART – B (4 x 12 = 48 Marks)

(Essay Answer Type)

5.a) Explain the techniques involved in the oxidation of allylic and benzylic C-H bonds with DDQ and SeO_2.

b) Describe the mechanism involved in homogenous and heterogenous catalytic reduction.

OR

c) Give emphasis on the method of hydrogenolysis by using n-buthyl tin hydride.

d) How do you protect the 1, 2 – diols by using acetals and ketals?

6.a) Write briefly on the following with examples.

i) Robinson annulation ii) Shapiro reaction

b) Explain the utility of trimethyl silyl halides in organo silicon reagents.

OR

c) Illustrate the usage of cyanides and triflates in organo silicon reagents.

d) Describe briefly on the following reactions with examples.

i) Stork-enamine reaction ii) Peterson olefination

7.a) Write briefly on :

i) RCM Olefin metathesis ii) Suziki coupling reactions

b) Describe briefly on Eishenmoscher-Tanabe fragmentation.

OR

c) Write briefly on :

i) Mc Murrey reaction ii) Aza-cope and Aza-witting reaction

d) Illustrate the BINAL and BINAP assisted reactions with examples.

8.a) Describe the following :

i) Kahne glycosidation ii) Tandem synthesis

b) How do you determine the absolute configuration using Moscher's method and Felkin-Anhmodel?

OR

c) Explain the main techniques involved in the solid phase Oligonucleotide synthesis with examples.

d) Illustrate the following with examples.

i) Chiron approach in synthesis

ii) Transformations using esterases and lipases

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