

M.Sc. (Chemistry) (NEP Pattern) Semester-IV  
**STPG04CHE01 - Special-III : Organic Chemistry**

P. Pages : 2

Time : Three Hours



**GUG/S/25/16326**

Max. Marks : 80

- Notes : 1. All questions are compulsory and carry equal marks.  
2. Use of calculator is permitted.

1. a) Discuss the following reaction with suitable examples. 8  
i) Baylis-Hilman reactions ii) Favorskii reaction  
b) Explain O-metalation of arenes using organolithium compounds. 8

**OR**

- c) Give the mechanism of Knoevenagal condensation reaction. 4  
d) Explain the stereochemistry of Grignard addition to carbonyl compound. 4  
e) Explain Dickmann reaction with mechanism. 4  
f) Write a note on organolithium compounds with application. 4  
2. a) Explain the role of organocopper reagent in C-C bond forming reaction. Discuss Gillman's Reagent. 8  
b) Explain the following- 8  
i) Sonogashira reaction ii) Suzuki Coupling reaction

**OR**

- c) Explain Simon-Smith Reaction.  
d) Give method of preparation and two applications of Organocopper reagent.  
e) Discuss Stille-Coupling reaction with example.  
f) Write note on Wilkinson Catalyst.  
3. a) Explain protection and deprotection reaction involve in carbonyl and hydroxyl group. 8  
b) Discuss conformation of sugar. 8

**OR**

- c) Write a note on Re-Si face concept. 4  
d) Discuss deprotection of carboxylic group. 4

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| e)    | Write a note on enantiomer and diastereomers.  | 4 |
| f)    | Explain solid phase peptide synthesis with suitable example.   | 4 |
| 4. a) | Explain role of 1-3 disfunctionalized compounds in two group C-C disconnection in organic synthesis. | 8 |
| b)    | Discuss various guideline for choosing disconnection approach in organic synthesis.                  | 8 |

**OR**

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|----|---|---|
| c) | Explain two group C-C disconnections in Robinson ring annelation. | 4 |
| d) | Discuss one group C-C disconnection in carbonyl compounds.        | 4 |
| e) | Write a note on Diels-Alder Reaction?                             | 4 |
| f) | Give any two examples of cyclisation reaction.                    | 4 |
| 5. | <b>Solve any eight.</b>   |   |
| a) | Write Mannich reaction.   | 2 |
| b) | Give any two application of Organo magnesium reagent.             | 2 |
| c) | Give the preparation of organozinc compound.                      | 2 |
| d) | Write about 16-18 rule?   | 2 |
| e) | What do you mean by Homotopic and heterotopic ligand.             | 2 |
| f) | Give one method of protection of amino group.                     | 2 |
| g) | Explain term regioselectivity.                                    | 2 |
| h) | What is meant by synthons and synthetic equivalents.              | 2 |
| i) | Explain Mannich reaction.   | 2 |
| j) | Write structure of Noyori catalyst.                               | 2 |

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