

**Dr.B.R.AMBEDKAR OPEN UNIVERSITY**  
**FACULTY OF SCIENCE**  
**M.Sc. II year -CHEMISTRY (2017-18)**  
**COURSE – 5: ORGANIC REACTION MECHANISM-II, PERICYCLIC REACTIONS,**  
**ORGANIC PHOTOCHEMISTRY, STEREO CHEMISTRY-II**

**FIRST ASSIGNMENT**

Maximum Marks – 15  
Minimum Marks – 06

**Section – A**  
**(Essay Type) - 1X10=10**

*Answer any one question from the following two questions*

1. Discuss about the following
  - a. Carbonium ion, b. Free radicals, c. Carbene, d. Arynes, e. Orientation of elimination reaction.
2. a. Predict the reaction conditions for various stereochemical modes of  $[\pi^2 + \pi^2]$  and  $[\pi^4 + \pi^2]$  cyclo addition reactions by PMO and FMO method.

**Section –B**  
**(Short Type) - 1X5=5**

*Answer any one question from the following Two questions*

1. Write the mechanisms of the following reactions.
  - a. Phenacol -Phenacolone, b. Benzoin Condensation, c. Beckmann rearrangement, d. Bayer Villiger oxidation, e. Curtius Rearrangement.
2. What are the pericyclic reactions? Explain their salient features and stereochemistry of each type.

**SECOND ASSIGNMENT**

Maximum Marks – 15  
Minimum Marks – 06

**Section – A**  
**(Essay Type) -1X10=10**

*Answer any One question from the following Two questions.*

1. Write a note on
  - a. Photochemistry of Conjugate dienes
  - b. photochemistry of Benzene & its derivatives
2. Discuss the relative stability of the following
  - a. Ethyl chlorohydrins.
  - b. Cyclohexane and Substituted Cyclo Hexane.

**Section –B**  
**(Short Type) -1X5=5**

*Answer any one question from the following Two questions.*

1. a. Write a brief note on the Electronic transition olefins and carbonyls  
b. Write note on Norrish Cleavages.
2. Discuss about the conformational structures of
  - a. Cyclooctane
  - b. Decalin

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**COURSE – 6: SYNTHETIC ORGANIC CHEMISTRY**

**FIRST ASSIGNMENT**

Maximum Marks – 15  
Minimum Marks – 06

**SECTION --A**

(Essay Type) - 1x10=10

Answer any **One** question from the following Two questions.

1. Write short notes on:
  - a) Oxidation of alcohols with manganese dioxide, Collins reagent, DMSO-DCC, DDQ and  $\text{AgCO}_3$ .
  - b) Reduction with  $\text{LiAlH}_4$ ,  $\text{NaBH}_4$ , DIBAL, Clemmensen reduction and Bouveault-blanc reduction.
2. Write a short note on:
  - a. Michael addition.
  - b. Stork enamine synthesis
  - c. Suzuki Coupling
  - d. Shapiro reaction
  - e. Give any two methods of protection and deprotection of alcohols, ketones and amines.

**SECTION – B 1x5=5**

(Short Type)

Answer any **One** question from the following Two questions.

1. What is catalytic hydrogenation? Discuss briefly about
  - a. Heterogeneous hydrogenation.
  - b. Homogeneous hydrogenation.
2. Discuss synthetic applications of Hydroboration, Paterson synthesis and Nazarov cyclization.

**SECOND ASSIGNMENT**

Maximum Marks – 15  
Minimum Marks – 06

**SECTION --A**

(Essay Type) - 1x10=10

Answer any **One** question from the following Two questions.

1. Discuss the following.
  - a. Order of the events in the synthesis of aromatic compounds.
  - b. One group C-C Disconnection
  - c. Consecutive synthesis and convergent synthesis.
2. a. Explain Stereoselectivity in Asymmetric synthesis.  
b. Write a note on Felkin-anh model, ii. Cram's dipolar model.  
c. Explain any two Chiral catalyst controlled methods.

**SECTION – B 1x5=5**

(Short Type)

Answer any **One** question from the following Two questions

1. Describe the terms with suitable example.
  - a. Reversal of Polarity
  - b. Strategies in Cyclization reaction.
2. a. Explain the following with suitable examples. i. Homotopic units, ii. Heterotopic Units, iii. Homomorphc ligangs, iv. Homomorphc faces, v. Prochirality.

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**M.Sc II Year – CHEMISTRY (2017-18)**  
**COURSE – 7: NATURAL PRODUCTS, HETROCYCLES, BIOGENSIS AND**  
**SPECTROSCOPY**

**FIRST ASSIGNMENT**

Maximum Marks – 15  
Minimum Marks – 06

**SECTION --A**

(Essay Type) - 1x10=10

*Answer any One question from the following Two questions.*

1. a) Write a short note on structure determination and synthesis of Reserpine and Oestrone.  
b) What are the physiological activities and structure of vitamins?
2. Write a note on
  - a. Factors affecting the enzymatic catalysis.
  - b. Enzyme immobilization.
  - c. Feeding experiments,
  - d. Biosynthesis of aromatic compounds by Shikimic acid pathway.

**SECTION – B**

(Short Type) -- 1x5=5

*Answer any One question from the following Two questions.*

1. Discuss the structure elucidation of PGE<sub>1</sub>α, PGE<sub>2</sub>α, PGE<sub>3</sub>α and give their synthesis and biosynthesis.
2. a) Write a note on biosynthesis of Terpenoids by Mevlonate pathway.  
b) Describe Metabolism of Proteins.

**SECOND ASSIGNMENT**

Maximum Marks – 15  
Minimum Marks – 06

**SECTION --A**

(Essay Type) - 1x10=10

*Answer any One question from the following Two questions.*

1. Discuss any three methods of synthesis and reactions of Oxazole, triazole, Aziridine and Purine bases.
2. Discuss the following.
  - a. Couplings in <sup>13</sup>C NMR spectroscopy.
  - b. Applications of <sup>31</sup>P NMR.
  - c. <sup>13</sup>C NMR spectra editing techniques.

**SECTION – B**

(Short Type) - 1x5=5

*Answer any One question from the following Two question.*

1. Discuss the following
  - a. Synthesis and reactivity of Azetidene, imidazole and pyrazines.
  - b. Three methods of synthesis and three chemical reactions of uracil, adenine and Caffeine.
2. Write short notes on,
  - a. COSY, HET COSY spectra.
  - b. Octane rule, ORD curve and application of octane rule.

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**M.Sc II Year – CHEMISTRY (2017-18)**  
**COURSE – 8 : DRUGS & PHARMACEUTICALS**

**FIRST ASSIGNMENT**

Maximum Marks – 15  
Minimum Marks – 06

**SECTION --A**

(Essay Type) - 1x10=10

*Answer any One question from the following Two questions.*

1. Write a note on,
  - a. Non random screening.
  - b. Receptors.
  - c. Development of Salbutamol.
  - d. Binding role of functional groups.
2.
  - a. What are resins and linkers used in combinatorial synthesis?
  - b. Discuss about linear and non linear relationship between log p and biological activity .

**SECTION – B**

(Short Type) - 1x5=5

*Answer any One question from the following Two questions.*

1.
  - a) Write the structures of captopril, cimetidine and oxammiquine.
  - b) Explain the development of sulphanilamide.
2.
  - a. What is Prodrug? Explain the principles of prodrug design.
  - b. Write a short note on  $\beta$ -Lactamase inhibitors.

**SECOND ASSIGNMENT**

Maximum Marks – 15  
Minimum Marks – 06

**SECTION --A**

(Essay Type) - 1x10=10

*Answer any One question from the following Two questions.*

1. Write a brief note on
  - a. Ace inhibitor
  - b. Carbonic anhydrase enzyme inhibitor
  - c. Anti cholinergic antagonist
  - d. Histamine receptor antagonist.
2. What are ion channels? Discuss about the drugs acting on Sodium ion channels and Calcium ion Channels.

**SECTION – B**

(Short Type) - 1x5=5

*Answer any One question from the following Two questions.*

1.
  - a. Write a short note on classification of nervous system.
  - b. Discuss about DNA Intercalating agents and DNA polymerase.
2. Explain the following.
  - a. Pfeiffer's rule
  - b. Quality control methods in Drug analysis.
  - c. Genetic engineering