

Dr.B.R.AMBEDKAR OPEN UNIVERSITY
FACULTY OF SCIENCE
M.Sc. II year -CHEMISTRY (2022-2023)
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. a. Discuss the stability and formation of carbonium ions, carbanion, carbene and nitrene.
b. Explain the Mechanism, stereochemistry and orientation of E_1 , E_2 and E_1CB reactions.
2. a. What are pericyclic reactions? Classify them with suitable examples.
b. Give orbital symmetry correlation diagram for $4n+2$ Electrocyclization and $\pi^2+\pi^2$ cycloaddition reaction.

Section –B 1X5=5
(Short Type)

Answer any one question from the following Two questions

1. Discuss the mechanism of
 - a. Wagner-Meerwein rearrangement.
 - b. Pinacol Pinacolone rearrangement.
 - c. Bayer-Villiger oxidation.
 - d. Hoffman. Lossen, Curtius rearrangements
 - e. Beckmann rearrangement.
2. a. Draw the π -molecular orbitals for the 1,3,5-hexatriene.
b. Predict the reaction conditions for $[\pi^4+\pi^2]$ cycloaddition by FMO method.

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 short note on:
 - a. Norrish cleavages.
 - b. Paterno-Buchi reaction.
 - c. Di- π -methane rearrangement.
 - d. Phosphorescence.
 - e. Fluorescence.
 - f. Barton reaction
2. Discuss the conformations of Meso-butane 2,3-diol, 2L,3D-butane-2,3-diol, Cyclohexane cyclohexanone, quinolizidine, and decalins .

Section –B
(Short Type) -- 1X5=5

(Answer any one question from the following Two questions)

1. Explain the following.
 - a. Cis-trans Isomerisation of Alkenes:
 - b. Photo Isomerisation of benzene & photo substitution reactions of benzene.
 - c. Photo chemistry of Azo compounds
2. Write short note on:
 - a) Pitzer strain.
 - b) 2-alkyl and 3- alkyl ketone effect.
 - c) Curtian-Hammett principle

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M.Sc II Year - CHEMISTRY (2022-2023)
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) Swern Oxidation
 - b) Oxidation with manganese dioxide
 - c) Oppenauer Oxidation
 - d) Oxidation with DDQ and AgCO₃.
 - e) Reduction with LiAlH₄, NaBH₄, DIBAL.
 - f) Clemmensen reduction and Bouveault-Blanc reduction.
2. Write a short note on:
 - a. Michael addition.
 - b. Robinson annulation.
 - c. Knoevenagel condensation
 - d. Stork enamine synthesis
 - e. Suzuki Coupling
 - f. Wittig reaction
 - g. Shapiro reaction
 - h. Give 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
 - a. Heterogeneous hydrogenation.
 - b. Homogeneous hydrogenation.
2. Discuss synthetic applications of trimethyl silyl enol and ketene acetals.

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. Fictionalization, Functional group interconversion, Synthons, Synthetic equivalent, Transform and Retron.
 - b. One group C-X Disconnection
 - c. Two group C-X Disconnection.
2. a. Explain the following with suitable examples. i. Homotopic units, ii. Heterotopic Units, iii. Homomeric ligands, iv. Homomeric faces.
b. Write a note on Felkin-Anh model, ii. Cram's dipolar model.

SECTION – B 1x5=5

(Short Type)

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

1. Write the retrosynthetic analysis and synthesis of Disparlure and Z-Jasmone.
2. Write a note on i. Enantioselective differentiation reactions, ii. Enantio face differentiation reactions.

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FACULTY OF SCIENCE, DEPARTMENT OF CHEMISTREY
M.Sc II Year – CHEMISTRY (2022-2023)
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 cholesterol and Rotenone.
b) What are the physiological activities and structure of vitamins?
2. Write a note on a. Enzyme inhibition. b. factors effecting the enzymatic catalysis. 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 PGE₁α, PGE₂α, PGE₃α and give their synthesis and bio synthesis.
2. a) What is enzyme immobilization? Discuss the process of immobilization and mention cases.
b) Metabolism of carbohydrates.

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 imidazole, thiazole, sydnonones and pyrimidines.
2. Discuss the following.
 - a. Couplings in ¹³C NMR spectroscopy.
 - b. Applications of ³¹P NMR.
 - c. ¹³C NMR spectra editing techniques.

SECTION – B

(Short Type) - 1x5=5

Answer any One question from the following Two question.

1. Discuss the following
 - a. Dimroth rearrangement
 - 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.

Dr. B. R. AMBEDKAR OPEN UNIVERSITY
FACULTY OF SCIENCE
M.Sc II Year – CHEMISTRY (2022-2023)
COURSE – 8: DRUGS & PHARMACEUTICALS

FIRST ASSIGNMENT

Maximum Marks -- 15
Minimum Marks – 06

SECTION --A – [1x10=10]

(Essay Type)

(Answer any ***one*** question from the following ***two*** questions)

1. Write the names and structures of at least two compounds obtained from the following sources,
 - a. Plant sources.
 - b. Animal sources.
 - c. Microbial sources.
 - d. Marine life.
 - e. Venoms and toxins
2.
 - a) What are the methods involving in the parallel synthesis? And Explain briefly about the Houghton's Tea Bag procedure.
 - b) What are the linkers and resins? Explain.

SECTION – B [1x5=5]

(Short Type)

(Answer any ***one*** question from the following ***two*** questions)

1.
 - a) Write the structures of captopril, cimetidine and oxammiquine.
 - b) Explain the development of Salbutamol by taking adrenaline as lead.
2.
 - a) Write a short note on the mechanism of action of penicillin. And Describe the Structural features of penicillins.
3. Explain briefly about Craig plot and Hansch analysis.

SECOND ASSIGNMENT

Maximum Marks -- 15
Minimum Marks – 06

SECTION --A – [1x10=10]

(Essay Type)

(Answer any ***one*** question from the following ***two*** questions)

1.
 - a) Write a brief note on Histamine receptors.
 - b) What are ion channels? Discuss about the drugs acting on Sodium ion channels and Calcium ion Channels.
2.
 - a) What is process engineering? Explain. And Write the process of fermentation production of chiral hydroxy acids form carbohydrate metabolism.
 - b) Explain about Genetic engineering.

SECTION – B [1x5=5]

(Short Type)

(Answer any ***one*** question from the following ***two*** questions)

1.
 - a) Write a short note on classification of nervous system.
 - b) What are the vaccines? Explain its importance.
2. How quantitatively and qualitatively GC and GC-MS chromatography useful for the drug analysis?