

Dr.B.R.AMBEDKAR OPEN UNIVERSITY
FACULTY OF SCIENCE
M.Sc. II year -CHEMISTRY (2021-22)
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 AgCO₃.
 - b) Reduction with LiAlH₄, NaBH₄, 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.

Dr.B.R.AMBEDKAR OPEN UNIVERSITY
FACULTY OF SCIENCE, DEPARTMENT OF CHEMISTREY
M.Sc II Year – CHEMISTRY (2021-22)
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 PGE₁α, PGE₂α, PGE₃α 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 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. 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 (2021-22)
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 β -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