

Roll No. _____

M. Sc. (Chemistry) – 4th SEMESTER
Organic Chemistry (Special) – IV, 09040413
END TERM THEORY EXAMINATION

Time: 03:00 Hrs

Max. Marks: 80

Instructions:

1. Write Roll No. on the Question Paper.
2. Candidate should ensure that they have been provided with correct question paper. Complaint(s) in this regard, if any, should be made within 15 minutes of the commencement of the exam. No complaint in this regard will be entertained thereafter.
3. Attempt 5 Questions in all. Q. No. 1 is compulsory. Students are required to attempt other FOUR questions selecting one from each unit. Marks are indicated against each question.
4. Draw diagram wherever required.

- Q.1. Answer the following Questions. (8×2=16)**
- a) Discuss the cheletropic reactions with suitable examples?
 - b) What are (4n+2) cycloaddition reactions?
 - c) What are photosensitizers? Give their role in photo induced reactions?
 - d) Discuss the role of free radical initiators in free radical reactions?
 - e) Why the properties of polymers change on long standing in sunlight?
 - f) Explain quantum efficiency in a photo chemical reaction?
 - g) What are 1,3 diaxial interactions?
 - h) Explain suprafacial and antarafacial shift of hydrogen in sigmatropic rearrangement?

UNIT-I

- Q.2. Discuss the following with suitable examples (8)**
- a) Photoreduction of benzophenone (8)
 - b) Norrish Type – II reaction (8)
- Q.3. (8)**
- a) Explain the α – cleavage and γ – hydrogen abstraction reactions in photo chemistry? (8)
 - b) Discuss the rearrangement in 1,4 and 1,5 dienes? (8)

UNIT-II

- Q.4. (8)**
- a) Explain the mechanism and applications of Paterno – Buchi reaction? (8)
 - b) Discuss the photo chemistry of aromatic compounds? (8)
- Q.5. Discuss the following:- (4×4=16)**
- a) Singlet molecular oxygen reactions.
 - b) Photo fries reactions of anilides.
 - c) Hunsdiecker reaction.
 - d) Factors on which stability of free radicals depend.

P.T.O.

UNIT-III

Q.6.

- a) With the help of correlation diagram, derive selection rules for (i) $4\pi+4\pi$ and (ii) $2\pi+2\pi$ cycloaddition reactions? (8)
- b) With the help of correlation diagram and FMO method, show that the Diels – Alder reaction is thermally allowed process? (8)

Q.7.

- a) Illustrate the suprafacial and antarafacial shift of H by examining [1,5] sigmatropic rearrangement? (8)
- b) Discuss Cope and Claisen rearrangements as examples of sigmatropic shift? (8)

UNIT-IV

Q.8.

- a) Discuss the conformation and reactivity of cyclohexanones? (8)
- b) Explain transannular reactions with suitable examples? (8)

Q.9.

- a) Discuss the stereochemistry of nitrogen containing compounds? (8)
- b) Explain the effect of conformation on reactivity of acyclic compounds? (8)

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3. Attempt 5 Questions in all. Q. No. 1 is compulsory. Students are required to attempt other **FOUR** questions selecting one from each unit. Marks are indicated against each question.
4. Draw diagram wherever required.

Q.1. Answer the following Questions.**(2X8=16)**

- a) What are the physiological roles of prostaglandins: PGA and PGE3?
- b) What are steroids?
- c) How will you determine the presence of phenanthrene nucleus in morphine,
- d) What is isoprene rule? How will you classify terpenoids?
- e) Draw the structure of streptomycin.
- f) How many optically active forms are possible in zingiberene structure?
- g) Write a short note on bile acids.
- h) How will you determine that N-atom present in morphine is the tertiary in nature?

UNIT-I

- Q.2. a) Write down the general methods of structural determination of terpenoids? (8)**
b) Describe in detail the structural elucidation and synthesis of citral. (8)

OR

- Q.3. a) Describe the structural elucidation, synthesis and stereochemistry of abietic acid. (8)**
b) How the structure of camphor was established? Describe the synthesis of camphor. (8)

UNIT-II

- Q.4. a) Write the structural determination and synthesis of Reserpine? (8)**
b) How the structure of Quinine was established? (8)

OR

- Q.5. a) How will you establish the structure of morphine by chemical methods? Give any one method of its synthesis. (8)**
b) How will you established the structure of papaverine? (8)

UNIT-III

- Q.6. a) Describe structural elucidation and synthesis of adrenaline. (8)
b) How will you determine the structure of cholesterol? (8)

OR

- Q.7. a) How will you synthesize oestrone? (8)
b) Describe the structure elucidation and synthesis of testosterone. (8)

UNIT-IV

- Q.8. a) How will you determine the structure of chloramphenicol? (8)
b) Write down the synthesis of PGF_{2α}. (8)

OR

- Q.9. a) Write complete scheme of synthesis of the PGE₂. (8)
b) Write structure elucidation of Penicillin. (8)

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M. Sc (Chemistry) - 4th Semester
ORGANIC CHEMISTRY (SPECIAL) – VI,-09040415
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3. Attempt five questions in all, selecting one question from each section. Question No.1 is compulsory. All questions carry equal marks. Marks are indicated against each question.
4. Draw diagram wherever required.

Q.1. Give one significant application of each of the following (2X8=16)

- a) Trimethyl silyl iodide
- b) Tetracarbonyl nickel
- c) Boron Trifluoride
- d) Cuprous chloride
- e) Ozone
- f) Sodamide
- g) Curtius reaction
- h) Schmidt reaction

SECTION-A

Q.2. Discuss the preparation and applications of organo lithium compounds? (16)

- Q.3. a) Illustrate significant uses of Gilman's reagent? (8)**
b) What are organo palladium (II) compounds? Explain its importance in organic synthesis? (8)

SECTION-B

Q.4. Discuss the preparation and applications of the following : (8)
a) Ethyldiazoacetate (8)
b) N-Bromosuccinamide (8)

- Q.5. a) Discuss the preparation and applications of DCC? (8)**
b) What are 1,3 dithianes ? Explain its importance in organic synthesis? (8)

SECTION-C

Q.6. Discuss the preparation and applications of the following oxidizing agents in detail: (8)
a) Thallium (III) nitrate (8)
b) Potassium permanganate (8)

Q.7 Explain the importance of catalytic hydrogenations in organic synthesis? (16)

SECTION-D

Q.7. Discuss the mechanism and applications of the following name reactions in detail:

- a) Baeyer Villiger Oxidation (8)
- b) Neber rearrangement (8)

Q.7 Explain the mechanism and applications of

- a) Pinacol-Pinacolone rearrangement (8)
- b) Wagner-Meerwein rearrangement (8)

*****ETE MAY 2018*****

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