Model Paper
M.Sc. DEGREE EXAMINATION
Organic Chemistry
FOURTH SEMESTER
Paper - I – MODERN SYNTHETIC METHODOLOGY IN ORGANIC CHEMISTRY

(For the batch during the academic year 2022-2023)

Course Title _____ Code SCO-S 401

Answer one question from each Unit
All questions carry equal marks

Time: 3 Hours Max. Marks. 80 (16 x 5 =80)

Unit – I

1. a. Explain Baylis-Hillman reaction give examples.

   b. Discuss about Metal mediated C-X coupling reaction with an example.

(or)

2. a. Write the mechanism of the following :

   i) Ritter reaction

   ii) Brook rearrangement.

   b. Write a note on Metal mediated C-C coupling reaction with an example

Unit – II

3. a. Briefly explin Biginelli reaction

   b. Describe Olefin Cross coupling Metathesis (OCM)

(or)

4. a. Give in a details of Mannich reaction

   b. Write a note on Ring Opening Metathesis (ROM) with an example.

Unit – III

5. a. Describe oxidation of alcohols to carbonyl compounds.

   b. Write the mechanism of Jacobsen and Shi epoxidation reactions.

(or)

6. a. Explain alkenes to carbonyls with bond cleavage reaction with

examples.

b. Give the mechanism of the following:

i) Hydroboration-oxidation

ii) Baeyer-Villiger oxidation

Unit – IV

7. a. Write a note on Heterogeneous hydrogenation give examples

b. Explain DIBAL-H and Red-Al.

(or)

8. a. Describe Homogeneous hydrogenation give suitable examples.

b. Write a note on Hydride transfer reagents with an examples

Unit – V

9. a. Explain principles, atom economy and scope of **Green** Chemistry.

b. Describe any two methods of preparation and applications of Nano materials

(or)

10. a. Write about Microwave induced reactions

b. Explain Phase-transfer catalysis give applications.

(SCO-S402)

Model Paper

M.SC DEGREE EXAMINATION

ORGANIC CHEMISTRY

IV SEMESTER

PAPER-II ORGANIC SPECTROSCOPY AND STRUCTURE DETERMINATION OF NATURAL PRODUCTS

Time: 3 Hours | Max Marks: 80

Answer all questions

UNIT-I

1. a. Explain in detail about types of ^{13}C NMR spectra — 16 M

or

b. Define ^{13}C chemical shift and explain about various factors affecting chemical shifts

UNIT-II

2. a. Describe about the following — 16 M
i) ^{13}C - ^{19}F and ii) ^{13}C – ^{31}P

or

b. Explain in detail about hyperfine splitting

UNIT-III

3. a. Write a note on the following: — 16 M
i) CW-NMR
ii) NMR solvents

or

b. Write an account on the following
i) COSY
ii) HETCOR

UNIT-IV

4. a. i) Explain about cotton effect — 16 M
ii) Discuss about circular birefringence and circular dichroism

Or

b. i) Write absolute configuration of R(+)-3-methyl cyclohexanone by the application of octant rule.
ii) Explain about axial halo ketone rule

UNIT-V

5. a. Explain the spectral properties of Genistein and Apigenin — 16 M

Or

b. Write the H^1-NMR, C^{13}-NMR and mass spectra of stigmasterol

MODEL PAPER
M.Sc. DEGREE EXAMINATION
ORGANIC CHEMISTRY
Fourth Semester

Paper III – Designing organic synthesis and synthetic applications of organo boranes and silanes

(For the batch admitted during the academic year 2021-2022)

Answer all the Questions

Time : 3 hrs Max Marks: 80

5x16=80 M

Each question carries equal marks

UNIT-I

1. (a) Explain the following with examples

   (i) Synthon (ii) Reagent

   (b) Discuss " Reversal of polarity" with two examples

Or

2. (a) Discuss the order of events involved in retrosynthesis of "Salbutamol"

   (b) Describe "convergent synthesis" with examples

UNIT-II

3. (a) Describe one group 'C-C' disconnections of alcohols with examples.

   (b) Explain C-X one group disconnections of carbonyl with examples

Or

4. (a) Discuss one group 'C-X' disconnections of sulphides with examples

   (b) Write a general note on two group 'C-C' and 'C-X' disconnections with examples

UNIT-III

5. (a) Explain two group 'C-X' disconnections in 1,1-, 1,2- and - difunctionalised compounds with examples.

   (b) Explain the control in "carbonyl condensations" with examples

Or

6. (a) Describe the disconnections approach of oxanamide and mevalonic acid

   (b) Explain the retrosynthesis involved in "Michael addition" reactions with examples

UNIT-IV

7. (a) What is Hydroboration ? Explain with examples

   (b) Write the synthetic utility of the following

   (i) thexyl borane (ii) 9 - BBN

Or

8. (a) Explain Hydroboration - carbonylation with examples

   (b) Discuss formation of C-C single bonds through organoboranes with examples

UNIT-V

9. (a) Describe the synthetic importance of 'Trimethyl silyl chloride' with examples

   (b) Explain 'Petersons olefination' reaction with examples

Or

10. (a) Give the synthetic applications of 'α-silyl carbanions' with examples

    (b) Explain the Organosilanes as protecting groups in organic synthesis.

Model Paper
M.Sc. DEGREE EXAMINATION
Organic Chemistry
FOURTH SEMESTER
PAPER-IV- Drug Design and Drug Chemistry

(For the batch during the academic year 2021-2022)
Course Title_____ Code _____

Answer one question from each Unit
All questions carry equal marks

Time: 3 Hours **Max.Marks.80 (16x5=80)**

1) a) (i) What are Physicochemical parameters of a drug? Explain in brief the following parameters? a) Surface Activity b) Redox potential

(ii) What is a Prodrug? Explain its advantages with suitable examples?

(OR)

b) (i) Explain Structure Activity Relationship (SAR)? Describe the effect of Resonance and Bio-isosterism on bio-activity?

(ii) Explain the concept of Drug Receptor Interactions?

2) a) (i) What are Nitrogen Mustards? Explain the Synthesis, Mode of action, Properties, Uses and dosage of a)Melphalan b) Chlorambucil.

(ii) What are Antibiotics? Explain the synthesis, Mode of action, Properties, uses and dosage of a) Mitomycin b) Doxorubicin.

(OR)

b) (i) Explain the synthesis, mode of action, Properties, Uses and dosage of a) Methotrexate b) 5-Flourouracil.

(ii) Explain the Synthesis, mode of action, Properties, Uses of a) Cyclophosphamide b) 6-Mercaptopurine.

3) a) (i) Write the Synthesis, mode of action, Properties, uses and dosage of

a) Sorbitrate b) Methyldopa

(ii) What are Cardiovascular drugs and disease? Explain the classification of Cardiovascular drugs?

(OR)

b) (i) Explain the Synthesis, mode of action, Properties, uses and dosage of a) Amyl nitrate b) Diltiazem

(ii) Write the synthesis, mode of action, properties and uses of a) Verapamil b) Quinidine

4) a) (i) What are Dipeptidyl Peptidase-4 (DPP-4) inhibitors? Explain the Synthesis, mode of action, Properties, uses and dosage of
a) Saxagliptin b) Sitagliptin.

(ii) Explain the synthesis, mode of action, properties, uses and dosage of Miglitol.

(OR)

b) (i) Explain the Synthesis, mode of action, Properties, uses and dosage of
a) Glipizide b) Tolbutamide

(ii) What are Oral Hypoglycemic drugs? Write the synthesis, mode of action, properties, uses and dosage of Metformin.

5) a) (i) What are CCR5 inhibitors? Write the Synthesis, metabolism, properties and uses of Maraviroc?

(ii) What are Local Anti infective Drugs? Write the synthesis of
a) Sulphonamides b) Ciprofloxacin.

(OR)

b) (i) Write the synthesis, metabolism, properties, uses and dosage of
a) Acyclovir b) Zidovudine.

(ii) Write the synthesis of a a) Amino Salicyclic Acid b) Econozole.