FACULTY OF SCIENCE
M.Sc. IV – Semester Examination, May / June 2018

Subject: Chemistry (Organic Chemistry / Pharmaceutical Chemistry)

Paper – II
Drug Synthesis and Mechanism of Action

Time: 3 Hours

Max. Marks: 80

Note: Answer all questions from Part–A and Part–B. Each question carries 8 marks in Part–A and 12 marks in Part – B.

PART – A (4 x 8 = 32 Marks)
(Short Answer Type)

1. (a) What is drug synergism? Explain with an example.
   (b) What are carbonic anhydrase inhibitors? What is their medicinal use? Give the
   synthesis of acetozalamide?

2. (a) Give the structure of lomefloxacin and explain its mechanism of action.
   (b) Formulate the synthesis of chloroquin.

3. (a) Explain the terms neuro transmitters, receptors and give examples.
   (b) What are β-blockers? What is their medicinal used? Give the structure of any one
   drug of this class.

4. (a) Draw the structures of etuomer of ethambutol and metaprolol.
   (b) Outline the synthesis of S, S – captopril.

PART – B (4 x 12 = 48 Marks)
(Essay Answer Type)

5. (a) What are antifolates? Explain the mechanism of sulphonamides.
   (b) Formulate the synthesis of omeprazole.

   OR

   (c) What are β-Lactamase inhibitors? What is their medicinal importance? Explain
   the mechanism of action of clavulanic acid.
   (d) Formulate the synthesis of pencilllin-G.

6. (a) Explain the mechanism of cyclophosphamide and give reasons for its selectivity.
   (b) What are DNA-intercalating agents? Give the structure of Daunomycin and
   explain its mechanism of action.

   OR

   (c) Formulate the synthesis of AZT and chloromycetin.
   (d) Write a brief note on vaccines.
7 (a) What are cholinergic receptors? How are they classified? Give an example of agonist and antagonist for those.
(b) Formulate the synthesis of ranitidine.  
(c) What are ion channels? Explain the mechanism of action of drugs acting on sodium channels.
(d) Write a brief note on dopamine receptors.

8 (a) Explain about the chiral drugs in which both enantiomers have independent therapeutic activity.
(b) Formulate the synthesis of R-Indacrinone and mention its medicinal use.
(c) Explain metabolic chirality inversion.
(d) Formulate the synthesis of fluvastatin and explain its pharmacological activity.