FACULTY OF SCIENCE
M.Sc. IV – Semester Examination, April / May 2014
Subject: Organic Chemistry
Paper – I: Drug discovery

Time: 3 Hours   Max. Marks: 80

Note: Answer all questions from Part - A and Part - B. Each question carries 4 marks in Part - A and 12 marks in Part - B.

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

1 (a) Define the terms:
   i) Lead
   ii) Prodrug and give two examples for each.

   (b) Write a brief note on targets for drug action.

2 (a) Discuss briefly the SAR studies in sulfara drugs.

   (b) How a biological activity of a drug changes with the variation and position of hetero atoms?

3 (a) What are Tafts and lipophilicity constants? Explain their significance in drug design.

   (b) What is QSAR? Illustrate with an example.

4 (a) Define and explain the following:
   i) Combinatorial synthesis
   ii) Combinatorial library

   (b) Draw the structures of
   i) Diltilozem
   ii) Propanolol and mention which isomer of them is Eutomer.

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

5 (a) Explain the concept of “drug pruning” taking morphine as the example.

   (b) Write short notes on clinical trials.

   OR

6 (a) Discuss briefly the following:
   i) Drug-receptor interactions
   ii) Natural products as leads

   (b) What are bioisosteres? Explain their importance in drug design.

   OR

   (c) How the drug oxaminquin is discovered?

   (d) Discuss briefly the role of following strategies in development of drugs

   i) Extension of structure
   ii) Ring expansion contraction

7 (a) Write short notes on:
   i) Toplin method
   ii) Craig’s plot
   iii) Cluster significant analysis

   OR

   (b) Explain linear and non-linear relationship between log P and biological activity.

   (c) Explain the use of Hammett substituent constant in QSAR study with an example.

8 (a) Write a brief note on:
   i) Automated parallel synthesis
   ii) High through put screening.

   OR

   (b) Outline the synthesis of S-Naproxen.

   (c) What is three-point contact model? How it helps in discriminating enantiomers?

   (d) Describe the Haughton’s tea bag procedure.

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