FACULTY OF SCIENCE
M.Sc. IV – Semester Examination, May / June 2017
Subject: Organic Chemistry
Paper – IV
Advanced Natural Products

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 (4x8 = 32 Marks)
[Short Answer Type]

1. a) Differentiate between absolute incorporation and specific incorporation.
   b) Give the biosynthesis of any two aromatic compounds by Shikimic acid pathway.

2. a) Write the structures of the products of following:
    i) Ablenic acid
    ii) Reserpine
    b) Explain how the position of secondary hydroxyl group is established in morphine.

3. a) Draw the stereochemical structures of
    i) Aldosterone
    ii) Testosterone
    b) Convert oestrone to oestradiol.

4. a) Classify the prostaglandins and mention their physiological activity.
    b) What is the product obtained when retone is treated with MnO2/Acetone.

PART – B (4x12 = 48 Marks)
[Essay Answer Type]

5. a) How the position of labels are identified in labelled natural products by chemical methods.
    b) How the biosynthesis of cholesterol.

   OR

   Discuss briefly the following:
   c) Methods of feeding labelled precursors
   d) Biosynthesis of flavanoids.
6. a) Explain the following:
   i) Evidence for position of double bond in morphine
   ii) Stereochemistry of reserpine
   iii) Synthesis of dehydro abietic acid.

   OR

b) Formulate the synthesis of morphine.

c) Write the stereochemical structure of β-amyrin.

7. a) What is Barbier-Wieland degradation? How it helped in finding position and nature of side chain in cholesterol.

b) Convert cholesterol to progesterone.

   OR

c) Discuss briefly the following:
   i) Stereochemistry of A/B ring junction in cholesterol
   ii) Structure determination of androsterone.

8. a) How the structure of PGE2 is established?

b) Formulate the synthesis of chlorophyll.

   OR

c) Write the structure for Haem and chlorophyll.

d) Formulate the synthesis of rotenone.