



**FACULTY OF SCIENCE**  
**M.Sc. IV Semester Examination, April/May 2013**  
**ORGANIC CHEMISTRY**  
**Paper – IV : Advanced Natural Products (Elective)**

Time : 3 Hours]

[Max. Marks : 80

**SECTION – A**

**(4×8=32 Marks)**

1. a) What is the difference between specific incorporation and uniform incorporation of isotopes ? Give an example to each.  
b) Explain one method of determination of bio-synthesis.
2. a) What are the by-products isolated during extract interaction of turpentine oil ? Name and give the structure of any two.  
b) Write a short note on the medicinal use of alkaloids.
3. a) Elucidate the configuration at C-3 and C-10 in cholesterol.  
b) Convert oestradiol to oestriol.
4. a) Give the structure of chlorophyll-a.  
b) Write a note on the physiological activity of prostaglandins.

**SECTION – B**

**(4×12=48 Marks)**

5. a) Explain the location of isotopic tracers in the bio-synthesis by NMR technique.  
b) How are the aromatic amino acids produced from glucose involving shikimic acid as obligatory intermediate ?

OR

- c) How are the radioactive isotopic tracers are fed in to the plants ?
- d) What is a chalcone ? How is it produced in-vivo ?



6. a) Describe the orientation of the hydrogens at C-5 and C-6 in the morphine.  
b) Draw the stereochemical structure of reserpine and give numbering to its carbons.

OR

- c) Determine the stereochemistry of A/B ring junction in abietic acid.  
d) Describe the semi-synthesis of  $\beta$ -amyrin.
7. a) Formulate the Barbier-Wieland degradation of stepping down of  $5\beta$ -cholanic acid.  
b) Explain the structural isomerism associated with the aldosterone.

OR

- c) What is Blanc's rule ? How is it useful in the structure determination of cholesterol ?  
d) Describe the total synthesis of oestradiol.
8. a) Outline the total synthesis of  $PGE_1$ .  
b) Write the important chemical reactions by which the structure of rotenone can be arrived.

OR

- c) Sketch the synthesis of haemin.  
d) Give the structure of haematinic acid, haemopyrrole, phyllopyrrole and cryptopyrrole.