

Seat No. : _____

NI-108

November-2013

M.Sc. Sem.-III

**CHE (O) 501, Organic Chemistry
(Natural Product and Biomolecules)**

Time : 3 Hours]

[Max. Marks : 70

- Instructions :** (1) All questions are compulsory.
(2) Figures to the right indicate full marks.

1. (A) Answer the following :

- (1) What are anthocyanins and anthocyanidins ? Give one general method for the synthesis of anthocyanidin. Give synthesis of Quercetin. **4**
- (2) Discuss the geometry and aromatic character of porphin. Give one synthesis of dipyrromethene. **3**

OR

- (1) Discuss general chemical properties of flavones. Prove the presence and position of glucose units present in anthocyanin.
- (2) Give evidences for the presence of porphyrin nucleus in chlorophyll and derive conclusion.

(B) Answer the following :

- (1) Give synthesis of **4**
- (a) ω , 3, 4 – Trimethoxy acetophenone from veratric acid.
- (b) 2-Hydroxy 4, 6 – dimethoxy benzaldehyde from phloroglucinaldehyde.
- (2) Differentiate haem and haemin. Discuss the degradation product of haemin under different condition. **3**

OR

- (1) Give synthesis of
 - (a) Cryptopyrrole,
 - (b) Phyllopyrrole carboxylic acid,
- (2) Discuss reduction reaction of bilirubin and derive conclusion.

2. (A) Answer the following :

- (1) Discuss the nature of hydroxyl group in morphine. Convert morphin to morphenol and derive conclusion. 4
- (2) Discuss thermal decomposition of a-tocopherol under different condition and derive conclusion. 3

OR

- (1) Give evidence for the presence of acetamido group and nature of ring C in colchicines.
- (2) Give evidence for the presence of sulfur atom in five member ring and side chain n-valeric acid in biotin.

(B) Answer the following :

- (1) Discuss the structure of reserpic acid. 4
- (2) Give synthesis and biochemical function of Vitamin-C. 3

OR

- (1) Give oxidation reaction of quinine. Prove the structure of meroquinine.
- (2) Sodium sulphite cleavage of Vitamin-B1 gives an acid A and base B. Discuss structure of any of them.

3. (A) Answer the following :

- (1) Give evidence for the size of ring A, B and D in cholesterol. 4
- (2) What are sex hormones ? Classify them giving one example of each. Give synthesis of projesterone. 3

OR

- (1) Discuss the nature and position of side chain in cholesterol.
- (2) Give synthesis of 7-Methoxy 3, 3' - dimethyl 1,2 - cyclopentano phenanthrene and show what light it throw in determining the structure of oestrone.

(B) Answer the following :

- (1) Explain the pathway by which squalene is converted to cholesterol in animals. 4
- (2) What are corticoids ? Give partial synthesis of cortisone. 3

OR

- (1) Prove that bile acids are hydroxyl derivatives of 5- β cholanolic acid or 5- α - cholanolic acid. Explain biological importance of bile acid.
- (2) Explain the chemical relationship & their interconversion among oestrone, oestradiol and oestriol.

4. (A) Answer the following :

- (1) Acidic hydrolysis of gibberallic acid gives compound I & II. Formulate, discuss degradation product of any one of them and derive conclusion. 4
- (2) Give synthesis of zingiberine. 3

OR

- (1) Discuss the oxidation of retene and derive conclusion.
- (2) Give synthesis of farnesol.

(B) Answer the following :

- (1) Discuss the reaction of transformation of farnesol to farnescenic acid and show what light they throw in determining the structure of farnesol. 4
- (2) Give synthesis of homoretene. 3

OR

- (1) Discuss the ozonolysis and nature of double bond in zingiberine.
- (2) Give synthesis of squalene.

5. Answer the following :

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- (1) What is meant by soret band in porphyrin ?
 - (2) Give name and structure of product when delphinidin chloride is fused with alkali.
 - (3) Give name and structure of two pyrane and pyrrone pigment.
 - (4) The haemoglobin consist which of two parts ? Mention their names.
 - (5) Giving necessary reaction discuss weerman test.
 - (6) Discuss relationship between morphin, codein and thebaine.
 - (7) Give structure of diels hydrocarbon, chrysene and picene.
 - (8) Give structural formula of any two corticoids.
 - (9) How the double bonds in ergosterol are determined ?
 - (10) Define isoprene and special rule giving example.
 - (11) How will you detect alkyl and isopropyl groups in terpenoids ?
 - (12) Giving example distinguish Vitamins and hormones.
 - (13) Define alkaloid. Give justification for colchicines to be alkaloid.
 - (14) Give name of any two monocyclic or bicyclic terpenoids.
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