

Seat No. : _____

NB-133
December-2015
M.Sc., Sem. III
501 : Chemistry
(Organic : Natural Products and Bio-molecules)

Time : 3 Hours]

[Max. Marks : 70

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

1. Answer the following :

- (A) (i) How sugar residue in anthocyanin is being determined ? Explain presence and position of sugar residue in anthocyanin with suitable illustrations. **4**
- (ii) Discuss spectral properties of porphyrin. Give one synthesis of dipyrromethene. **3**

OR

- (i) Give classification of pigment based on their structural unit. Give synthesis of ω -3, 4-trimethoxy acetophenone from veratric acid. **4**
- (ii) Giving evidences prove the presence of porphyrin nucleus in chlorophyll and derive conclusion. **3**
- (B) (i) Discuss oxidation and reduction reaction of bilirubin and derive conclusion. **4**
- (ii) Give synthesis of kryptopyrrole and phyllopyrrole. **3**

OR

- (i) Discuss the degradation of haemin under different conditions. Give synthesis of homopyrrole carboxylic acid. **4**
- (ii) Give synthesis of quercetin. **3**

2. Answer the following :

- (A) (i) How would you obtain α -code methine and β -codemethine from morphine ? What happens when morphenol is (a) Fused with KOH (b) Reduced with sodium and ethanol ? **4**
- (ii) Give synthesis of alpha tocopherol. **3**

OR

NB-133

1

P.T.O.

- (i) Give evidence for the presence of acetamido group and size of ring B in colchicine. 4
- (ii) Give synthesis of vitamin-C. 3
- (B) (i) Give oxidation reaction of quinine. Prove the structure of quininic acid with its synthesis. 4
- (ii) Give evidence for nature of nucleus and side chain in biotin. 3

OR

- (i) Discuss the nature of nucleus and position of carboxyl group in reserpine acid. 4
- (ii) Sodium sulphite cleavage of vitamin-B1 gives an acid [A] and base [B]. Discuss structure of any one of them. 3

3. Answer the following :

- (A) (i) What is Blanc's rule ? Give evidence for the size of ring A, B and D in cholesterol. 4
- (ii) Classify sex hormones giving one example of each. Give synthesis of progesterone. 3

OR

- (i) Discuss the position of hydroxyl group and double bond in cholesterol. 4
- (ii) What are corticoids ? Give partial synthesis of cortisone. 3
- (B) (i) Discuss the position of angular methyl group in cholesterol. 4
- (ii) Give evidence for the nature and position of double bond in ergosterol. 3

OR

- (i) Prove that bile acids are hydroxy derivatives of 5- β cholic acid or 5- α cholic acid. Explain the biological importance of bile acid. 4
- (ii) Explain the chemical relationship and their inter-conversion among oestrone, oestriol and oestradiol. 3

4. Answer the following :

- (A) (i) Give degradation product of gibberic acid and derive conclusion. 4
- (ii) Give synthesis of farnesol. 3

OR

- (i) Prove the structure of allogiberic acid analytically. 4
- (ii) Give synthesis of retene. 3

- (B) (i) How will you prove the position of double bond in abeitic acid ? 4
(ii) Discuss the ozonolysis of squalene. 3

OR

- (i) Discuss the ozonolysis and nature of double bond in zingebarine. 4
(ii) Discuss the oxidation of retene and derive conclusion. 3

5. Answer the following : 14

- (i) Give name and structure of product when flavone is boiled with alcoholic KOH.
(ii) Give name and structure of the product when pionidine chloride is reacted with barium hydroxide and KOH.
(iii) Give name and structure of any two flavone.
(iv) Giving necessary reaction discuss Weerman test.
(v) Give classification of vitamins according to their solubility.
(vi) Giving reason show colchicine is an alkaloid.
(vii) Give structures of codeine and thebaine.
(viii) Give structural formula of any two corticoids.
(ix) Write the structure of product when steroids are dehydrogenated with selenium at 360 °C & 420 °C.
(x) What is barbier-Wieland degradation ?
(xi) Write the general formulae of bicyclic and tetracyclic terpenoid.
(xii) Write isoprene rule & special isoprene rule.
(xiii) How will you detect isopropenyl & methyl ketone group in terpenoid ?
(xiv) Show how L-ascorbic acid is converted to dehydro L-ascorbic acid.

