



**UNIVERSITY OF JAFFNA**  
**BACHELOR OF PHARMACY**  
**THIRD YEAR FIRST SEMESTER EXAMINATION**  
**PHACN 3104 CHEMISTRY OF NATURAL PRODUCTS**

Date: 15.02.2016

Time: 03 Hours

**ANSWER ALL EIGHT QUESTIONS**

1. 1.1 Describe the periodic oxidation method which is used to determine the ring size of glucose. (40 Marks)
- 1.2 Explain 'mutarotation' in glucose. (20 Marks)
- 1.3 Write short notes on cellulose. (40 Marks)
  
2. 2.1 Classify the amino acids based on their polarity and charges. Give two examples for each. (20Marks)
- 2.2 What is meant by isoelectric pH? (10Marks)
- 2.3 Derive an equation for isoelectric pH of an aminoacid? (30Marks)
- 2.4 Give a method which is used to synthesis Tryptophan? (40Marks)
  
3. 3.1 3.1.1 Classify the glycosides based on the chemical nature of aglycone moiety? (10 Marks)
- 3.1.2 Discuss the chemical properties of cardiac glycosides? (40 Marks)
- 3.2 List and define the chemical parameters which are used in the analysis of Fat and Oils? (50 Marks)
  
4. 4.1 State the Isoprene rule? (20 Marks)
- 4.2 4.2.1 Classify Monoterpenoids based on their chemical structure (10 Marks)
- 4.2.2 Give two example for each specified in above 4.2.1. and draw their structures. (30 Marks)
- 4.3 Diagrammatically show the steps involved in the synthesis of 1, 8-cineole. (40 Marks)
  
5. 5.1 5.1.1 List the bonds that stabilize the tertiary structure of proteins. (10 Marks)
- 5.1.2 What is meant by protein denaturation? (10 Marks)
- 5.1.3 List the conditions/factors that cause denaturation of proteins? (10 Marks)
- 5.1.4 Discuss about amino-end degradation method of aminoacids? (40 Marks)
  
- 5.2 5.2.1 Classify carotenoids based on chemical structure? (15 Marks)
- 5.2.2 Give the uses of carotenoids? (15 Marks)

6. 6.1 Give the structures of Vitamin B<sub>6</sub> and give its physical properties ? (45 Marks)  
 6.2 Discuss the chemical properties of Vitamin A? (40 Marks)  
 6.3 Give the properties of Ascorbic acid? (15 Marks)
7. 7.1 How can you differentiate a glucose molecule from aliphatic aldehyde? (40 Marks)  
 7.2 Draw the structure of products A , B , C in the following reactions (10 Marks)
- 7.2.1 D-glucose  $\xrightarrow{\text{Ag}(\text{NH}_3)_2^+\text{OH}^-}$  (A)
- 7.2.2 D-glucose  $\xrightarrow{\text{Br}_2, \text{H}_2\text{O}}$  (B)  $\xrightarrow{\text{H}_2\text{O}_2, \text{Fe}(\text{SO}_4)_3}$  (C) + CO<sub>2</sub> (20 Marks)
- 7.3 How can you synthesis fructose from glucose? (30 Marks)
8. 8.1 Diagrammatically show the steps involved in the synthesis of Ephedrine? (40 Marks)  
 8.2 Classify the alkaloids on the basis of their chemical structure. Give their basic structures. (40 Marks)  
 8.3 Give the chemical properties of alkaloids. (20 Marks)

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