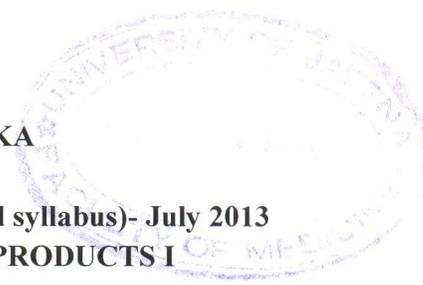


UNIVERSITY OF JAFFNA, SRI LANKA
BACHELOR OF PHARMACY
THIRD YEAR FIRST SEMESTER EXAMINATION (Old syllabus)- July 2013
PHACN 3104 - CHEMISTRY OF NATURAL PRODUCTS I
PAPER II



Date: 24.10.2013

Time: 02 Hours

Answer all the eight questions.

1.
 - 1.1 What are glycosides? (10 Marks)
 - 1.2 State the medicinal importance of glycosides. (30 Marks)
 - 1.3 Describe the physicochemical properties of glycosides. (40 Marks)
 - 1.4 Draw the chemical structures of different cardiac glycosides. (20 Marks)
2.
 - 2.1 List the physical and chemical parameters used in the analysis of fats and oils. (20 Marks)
 - 2.2 Briefly explain the chemical parameters mentioned in 2.1. (40 Marks)
 - 2.3 Describe the chemical reaction between fats and alcoholic KOH. (20 Marks)
 - 2.4 Describe in the test done to identify cotton seed oil contamination. (20 Marks)
3. Describe in detail the periodate oxidation method to determine the ring size of glucose. (100 Mark)
4.
 - 4.1 Draw the chemical structure and give one therapeutic use of the following vitamins
 - 4.1.1. Ergocalciferol (15 Marks)
 - 4.1.2. α - Tocopherol (15 Marks)
 - 4.1.3. Thiamine (15 Marks)
 - 4.1.4. Folic acid (15 Marks)
 - 4.2 Draw the synthesis of riboflavin from 2, 3 - dimethyl aniline. (40 Marks)
5.
 - 5.1 Explain the mutarotation in glucose. (20 Marks)
 - 5.2 Explain the synthesis of the following using chemical reaction.
 - 5.2.1 Glucose to Arabinose (40 Marks)
 - 5.2.2 Fructose to Glucose (40 Marks)
6.
 - 6.1 Classify carotenoids based on chemical properties. (20 Marks)
 - 6.2 Write the steps involved in the conversion of β -carotene to vitamin A1. (40 Marks)
 - 6.3 Draw the chemical reaction of vitamin A to vitamin A2. (40 Marks)

- 7.
- 7.1 What is meant "essential amino acid"? (10 Marks)
- 7.2 Give the name and structure of two essential amino acids. (15 Marks)
- 7.3 Draw the synthesis of cysteine from diethylmalonate (75 Marks)

- 8.
- 8.1 What is meant by the isoelectric point of a polypeptide? (10 Marks)
- 8.2 Derive an equation for isoelectric point of amino acids (35 Marks)
- 8.3 The dissociation constants K_1 , and K_2 of valine are 3.162×10^{-3} and 3.162×10^{-8} respectively. Calculate the isoelectric point of valine. (15 Marks)
- 8.4 The amino acid proline was prepared by the sequence of reactions given below. (40 Marks)

Draw the structures of the compounds denoted by **P**, **Q**, **R** and **S** in the sequence.

