

February copy

UNIVERSITY OF JAFFNA, SRI LANKA
BACHELOR OF PHARMACY
THIRD YEAR FIRST SEMESTER EXAMINATION – SEPTEMBER 2018
PHACN 3124 CHEMISTRY OF NATURAL PRODUCTS

Date: 25.09.2018

Time: 3 Hours

Answer All Eight Questions.

Answer parts A, B and C in separate answer books.

PART – A

- 1 1.1 Define the term 'Glycosides'. (10 Marks)
- 1.2 Draw the structures of different aglycon moieties of cardiac glycosides with an example for each of them. (40 Marks)
- 1.3 Write an account on Anthraquinone glycosides. (50 Marks)

- 2 2.1 Name three monocyclic monoterpenoids with their structures. (30 Marks)
- 2.2 Enumerate the general properties of terpenoids. (30 Marks)
- 2.3 List the medicinal uses of terpenoids with examples. (40 Marks)

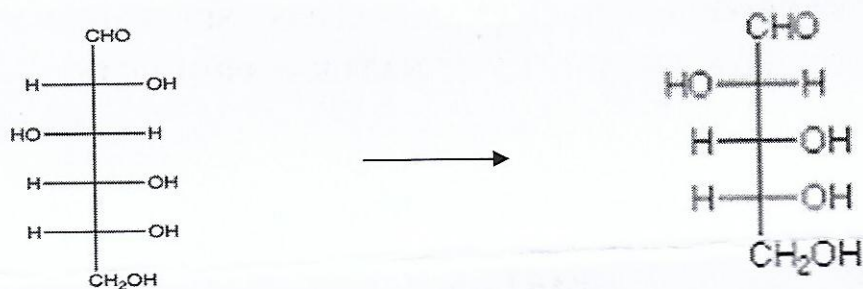
- 3 3.1 List the differences between typical and proto alkaloids. (20Marks)
- 3.2 Classify heterocyclic alkaloids with an example for each of them. (40Marks)
- 3.3 Explain the general procedure for the extraction of alkaloids from plants. (40 Marks)

PART – B

4. 4.1 What is meant by 'Denaturation of protein'? (10 Marks)
- 4.2 List the chemical and physical agents that are involved in the denaturation of protein. (10 Marks)
- 4.3 Draw the structures of all end products that would be formed in the following reactions.
 - 4.3.1. Gly-Ala + Phenyl isothiocyanate (10 Marks)
 - 4.3.2. Glycine + Ninhydrin (10 Marks)
 - 4.3.3. Ala-Gly + 1-Floro-2,4-dinitro benzene (10 Marks)
 - 4.3.4. Ala-Gly + 5-dimethylamine naphthalene-1-shulphonylchloride (10 Marks)
- 4.4 Give the steps involved in the synthesis of tryptophan from Indole-3-aldehyde (40 Marks)

5. 5.1 Briefly explain the mutarotation in glucose. (40 Marks)

5.2 Give the steps involve in conversion of D-Glucose to D-Arabinose.



D- Glucose

D- Arabinose

(30 Marks)

5.3 Draw the most stable form of chair confirmation of α and β forms of D-glucose and give the reasons for your answer. (30 Marks)

6. 6.1 Draw the structures of end products in the following reactions.

6.1.1 Glucose + Con.HNO₃ (10 Marks)

6.1.2 Glucose + Ag₂O (10 Marks)

6.1.3 Glucose + Cu(OH)₂ (10 Marks)

6.2 Briefly explain the epimerization of D-glucose with relevant structures. (30 Marks)

6.3 Explain the carbohydrate chemistry of following.

6.3.1 Sucrose (15 Marks)

6.3.2 Lactulose (10 Marks)

6.3.3 Maltose (15 Marks)

PART – C

7. 7.1 Draw the chemical structures of sulfur containing vitamins. (30 Marks)
- 7.2 Sketch out the synthesis of α – tocopherol from 2,3,5 – Triethylquinol (30 Marks)
- 7.3 Write the steps involved in the conversion of β – carotene to vitamin A₁ with relevant chemical structures? (40 Marks)
8. 8.1 Define the following terms.
- 8.1.1 Saponification value (10 Marks)
- 8.1.2 Iodine value (10 Marks)
- 8.1.3 Acid value (10 Marks)
- 8.1.3 Ester value (10 Marks)
- 8.2 8.2.1 What is rancidity of oils? (10 Marks)
- 8.2.2 Explain the different types of rancidity? (30 Marks)
- 8.2.3 How rancidity of oils can be prevented? (20 Marks)

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