

Your Roll No.:-----

**DEPARTMENT OF CHEMISTRY, SCLS
SEMESTER-IV EXAMINATIONS-2022
M.Sc. CHEMISTRY**

PAPER CODE: MCHCCO-401

PAPER TITLE: CHEMISTRY OF NATURAL PRODUCTS

(Write your Roll No. at the top immediately on receipt of this question paper)

Time: Three Hours

Maximum Marks: 75

Attempt all questions. All parts of a question must be attempted in continuation.

Start answer of a fresh question on a new page. Cite examples and draw labeled diagrams wherever necessary.

Q1. Attempt All the following questions:

- a) Give an example of:
 - i) a saturated fatty acid
 - ii) an unsaturated fatty acid
 - iii) an essential amino acid(3)
- b) Draw the structure of
 - i) monomer for starch
 - ii) any natural quinone
 - iii) condensed tannins
 - iv) hyaluronic acid(4)
- c) What are anomers? (1)
- d) In the Phe-gly-ala-asp-gly-pro polypeptide chain write the structure of
 - i) N-terminal
 - ii) C-terminal amino acid(2)
- e) Give a way to identify the presence of coumarin in the given sample. (1)
- f) What are the enzymes used to hydrolyze:
 - i) Starch
 - ii) Cellulose
 - iii) C-terminal amino acid from a peptide chain
 - iv) Fats in food(4)

P.T.O

- Q2. Attempt any three of the following: (3X5=15)
- What is PGE₂? Where and in which conditions it is synthesized in the body?
 - Explain the structure and source of naphthoquinones and anthraquinones? Which form of them are colored and why?
 - What is an anthrone? How is it different from anthranols and dianthrone? How is anthraquinone synthesized, Give one method?
 - Explain the structure and functions of coumarins? Draw the structure of naturally occurring coumarins.
 - How do we classify tannins? Give two examples of hydrolysable tannins?
- Q3. Attempt any three of the following: (3X5=15)
- Explain in detail what happens when an aqueous solution of glucose is kept for long and name the phenomenon taking place in it.
 - How will you convert?
 - α -glucose to β -Glucose
 - β -Glucose to D-Glucitol
 - Explain why glucose exist in a cyclic form? How we can determine the ring size in glucose?
 - What are heteropolysaccharides? Explain the structure and uses of pectins and mucopolysaccharides.
 - How is D/L stereochemistry of sugars determined? Discuss the chain shortening of sugars by Ruff degradation
- Q4. Attempt any three of the following: (3X5=15)
- Discuss the classifications of amino acids.
 - Explain the methods used to find N-terminal amino acids in a polypeptide chain.
 - Draw the Zwitterionic structure of amino acids. Discuss the tertiary structure of a protein
 - Write the steps involved in the synthesis of dipeptide: Glycylalanylserine.
 - Describe the alpha and beta secondary structure of protein with diagrams.
- Q5. Attempt any three of the following: (3X5=15)
- Differentiate between:
 - Fats and waxes
 - Phospholipids and Glycolipids
 - What is carnitine? Explain its role in fatty acid metabolism.
 - Write the steps involved in fatty acid synthesis cycle.
 - Describe how and when ketogenesis occurs in our body? What is ketoacidosis?
 - Give the structure and functions of sphingosine and sphingomyelins?