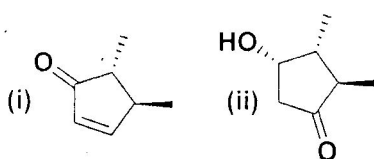


Jamia Hamdard
Department of Chemistry
School of Chemical & Life Sciences
M.Sc Chemistry
Semester-IV Examination 2025
Paper Title: Chemistry of Natural Products
Paper Code: MCHCCO-401

Time: 2 ½ hours

Maximum Marks: 60

Abbreviations Used: CLO- Course Outcome, PLO- Program Outcome, BTL- Bloom Taxonomy Level: BT level 1-Knowledge; BT level 2-Understand; BT level 3-Apply; BT level 4-Analyse; BT level 5-Evaluate, BT level 6-Creativity

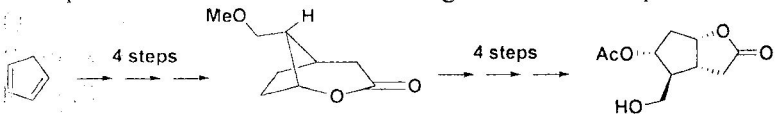
Q. No.		BTL	CLO	PLO
SECTION A				
Very Short Type Questions (Attempt all):		(1x15=15 marks)		
A1	Write the test for saponin?	2	2	1-2
A2	Draw the structure of Coumarin.	2	2	1-2
A3	Define tannins.	1	2	2
A4	Draw the structure of Anthraquinone.	2	2	
A5	Draw the structure of the simplest amino acid, Glycine.	1	1-2	1-2
A6	Define isoelectric point of a protein.	2	3	3
A7	What type of bond forms the primary structure of a protein?	1	2	2
A8	Name one color reaction for proteins.	1	2	3
A9	Draw the structure of acetone, a ketone body.	1	1-2	1-2
A10	Draw the structure of Palmitic acid (C16:0). Is it saturated or unsaturated?	2	1-2	1-2
A11	What is the backbone structure of a glycerophospholipid?	1	1-2	1-2
A12	Draw the Fischer projection of D-Glyceraldehyde.	2	1-2	2
A13	Identify the anomeric carbon in the structure of α -D-Glucose (Haworth).	2	3	3-5
A14	Name one method for chain lengthening of aldoses.	2	1-2	1-2
A15	The below given structures are cyclopentane ring of which type of prostaglandin			
		1	1-2	2

SECTION B

Long Type Questions (Attempt any two out of four):		(10x2=20 marks)		
B1.	(a) Write the classification of coumarin (with one example with structures of each class) (b) Write the synthesis for Bis-coumarinal	3	1-3	1-3
B2.	(a) Describe the classification and properties of proteins. Explain the forces that stabilize the tertiary structure of a protein, illustrating with examples involving amino acid side chains. (b) Describe the methods for determining the primary structure of peptides, including N-terminal and C-terminal analysis and partial hydrolysis.	4-6	2-6	4-6

B3.	(a) Discuss fatty acid metabolism, including an overview of β -oxidation, and ω -oxidation (b) Write the synthesis of margaric acid	3-4	3-5	3-5
B4.	Write a synthetic strategy used for the total synthesis of prostaglandin by Stark and Johnson	4-5	3-6	3-6

SECTION C

Short Type Questions (Attempt all Questions):		(5x5=25 marks)		
C1.	Complete the following multistep reaction 			
	Or Squalene a triterpene, plays an important in the biosynthesis of steroids. Justify with a proper reaction condition	03-May	04-May	04-May
	Describe Strecker's Synthesis and modification for enantioselective Synthesis of amino acid. Or Write the structure of Fmoc, Cbz and Boc and specify the protection and deprotection conditions.	3	4	03-Apr
C3	Define tannins. Classify them with suitable examples. Mention their uses and describe any two chemical tests used for their identification. Or What is the effect on unsaturated fatty acid under pyrolytic condition?	4-5	4	4-5
C4	Explain the Ruff degradation to show the conversion of D-Glucose to D-Arabinose. Or Write a synthetic strategy used for the Chemical Synthesis of Penicillin	5-6	3-5	4-5
C5	Illustrate the α -helix secondary structure, showing hydrogen bonding. Or Draw the structure of Sphingomyelin and explain its biosynthetic pathway.	4	4	4-5