

JAMIA HAMDARD
Department of Chemistry
School of Chemical and Life Sciences (SCLS)
M. Sc. Chemistry, III Semester
End-term Examination 2023

Paper Name: Chemistry of Natural Products-I
Time: 2:30 hrs

Paper Code: MCHCCO-301
Maximum Marks: 60

Note: This paper has 3 sections A, B, and C. Attempt all the three sections

Section A: Answer *all* the questions; **Section B:** Answer *any 2* out of 4; **Section C:** Answer *all* the questions, each question has an *internal choice*

Abbreviations Used

CLO- Course Learning Outcome, PLO- Program learning Outcome, BTL- Bloom Taxonomy
 Level: BT level 1-Remember; BT level 2- Understand; BT level 3-Apply; BT level 4-Analyse;
 BT level 5-Evaluate, BT level 6-Create

Q. No.		BTL	CLO	PLO
SECTION A				
Very Short Type Questions (Attempt <u>all</u> questions)		10x1.5 = 15 Marks		
A 1.	Discuss the isoprene rule.	1	1	1
A 2.	What are carotenoids? Are they water soluble or fat soluble?	1-2	1-2	1-2
A 3.	What are the roles of alkaloids in plants?	1-2	1-2	1-2
A 4.	Draw the structure of Quinine.	1	1	1
A 5.	Define Diel's hydrocarbon.	1-2	1-2	1-2
A 6.	Under which category of plant pigments, quercetin falls and discuss its isolation.	3	3	3
A 7.	Give the chemical name of daidzein and its structure.	3	3	3
A 8.	How cyanidin chloride and quercetin related to each other?	4	4	4
A 9.	What are steroids?	1	1	1
A 10.	How the double bond and hydroxyl group in a sterol can be determined?	4-5	4-5	4-5

SECTION B				
Long Type Questions (Attempt any two out of four)		2x10 = 20 Marks		
B 1.	Discuss the important reactions used in the determination of the structure of steroids. Illustrate your answer with reference to the structure of either cholesterol or progesterone.	4-6	4-6	4-6
B 2.	Describe the occurrence, isolation and properties of myrcetin.	1-3	1-3	1-3
B 3.	Give the isolation and synthesis of menthol.	3-6	3-6	3-6
B 4.	Draw the structure of nicotine and explain its synthesis.	4-6	4-6	4-6

SECTION C

Short Type Questions (Attempt all questions)

5x5 = 25 Marks

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|-------------|---|-----|-----|-----|
| C 1. | Give the biosynthesis of terpenoids. | 3/6 | 3/6 | 3/6 |
| | OR | | | |
| | Explain the steps involved in structure determination of santonin. | 4-5 | 4-5 | 4-5 |
| C 2. | Give a resume of the experiments that led to the establishment of the size of the D-ring of sterols and bile acids. | 5-6 | 5-6 | 5-6 |
| | OR | | | |
| | Give an account of the chemistry of testosterone. | 1-2 | 1-2 | 1-2 |
| C 3. | Establish the structure of atropine by giving it's synthesis. | 5-6 | 5-6 | 5-6 |
| | OR | | | |
| | Sketch the biosynthesis of morphine. | 5-6 | 5-6 | 5-6 |
| C 4. | Explain the acetate pathway and shikimic acid pathway for the biosynthesis of flavonoids. | 3-4 | 3-4 | 3-4 |
| | OR | | | |
| | Prepare daidzein by any two methods. | 3-4 | 3-4 | 3-4 |
| C 5. | Describe the biosynthesis of cholesterol. | 3/6 | 3/6 | 3/6 |
| | OR | | | |
| | Discuss the occurrence and synthesis of Hirsutidin. | 1-3 | 1-3 | 1-3 |
