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MSc Chemistry, III Semester
End term Examination 2023

Paper Name: Food Chemistry
Time: 3 hours

Paper Code: MCHOE-308
Maximum Marks: 75

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.	Question	BTL	CLO	PLO
SECTION A				
Attempt <u>all</u> questions		10 x 2 = 20 Marks		
1	What is activity water and how it is determined in a food sample?	2	2/3	2
2	What is Aroma Threshold value?	1	2/3	2
3	Classify bacteria on the basis of their morphology.	1	3/4	1
4	What is a bacteriophage?	1	3/4	1
5	Define Food Spoilage.	2	3/5	3
6	Define Caramelization.	2	2/3	3
7	Role of Ascorbic acid in food preservation	2	1/2/3	4
8	What are the disadvantages of Xylitol as sweetener?	2	1/2	3
9	What are emulgents? Give one suitable example.	1/2	1/2	3
10	Mention the various criteria for HLB values.	2	1/2	4

SECTION B

Attempt <u>any two</u> out of four		2 x 10 = 20 Marks		
1	How is taste recognized and why is thiourea used as a standard substance for a taste test? Explain the SAR of sweeteners.	5	5/6	5
2	Schematically explain Maillard reaction and Amadori rearrangement, and differentiate their role in flavor and texture of food	6	2/5	5
3	What are the roles of the following in food chemistry? a) Sorbic acid; b) Mannitol; c) Maltol; d) Citric acid	1/2	2/4	4
4	Explain the mechanism for the generation of polycyclic aromatic Hydrocarbons in food, briefly explain their advantages and disadvantages.	6	2/3	3

SECTION C

Answer <u>all</u> the questions, each question has an internal choice		7 x 5 = 35 Marks		
1	How are Carbohydrates and Fatty acids metabolized in a biological system? Explain how both metabolisms are interlinked.	5/6	3/6	2
OR				
	Differentiate between the enzymatic and non-enzymatic processes of Food Browning. How they are interlinked in terms of their effect on food.	5/6	4/	3
2	What are amino acid-based sweeteners and explain how they differ from glucose or conventional sweeteners?	5/6	5	2
OR				
	Explain AHB theory in food. Give three suitable examples highlighting AHB criteria.	5/6	3	6
3	What are flavor enhancers and explain their various chemical transformations?	5/6	4	5
OR				
	i. Differentiate between preservatives and additives.	2/3	1,2	4
	ii. Explain the role of a) PARABENS in bakeries; b) SO ₂ and sulfites in wineries.			
4	Explain the role of a) Diethyl/Dimethyl-Pyro carbonate, b) Ethylene Oxide, c) Propylene Oxide, d) Nitrite, Nitrate in food preservation.	2/3	1,2	4
OR				
	What are the intrinsic and extrinsic parameters of foods that affect microbial growth.	3/4	5	3
5	Explain: a) Low-temperature food Preservation techniques b) Characteristics of psychrotrophic microorganisms?	3/4	4/5/6	5
OR				
	Explain a) High-temperature food preservation b) Characteristics of thermophilic microorganisms,	5/6	4/5/6	5
6	i. What are safety criteria for Toxic trace elements in food? ii. Briefly explain the effect of a) Arsenic, b) Mercury c) Lead, d) Cadmium	5/6	4/5	4
OR				
	How do Emulsifiers and thickening agents differ in their structure and activity? Explain their effect of food with suitable examples.	5/6	3/4	3
7	Explain the role of the following in food spoilage a) Catalase, b) <i>polyphenol oxidase</i> , c) <i>pyrioxidal dependant lyase</i> d) <i>Glutathione-S-transferase</i>	5/6	3/4	5
OR				
	Explain how the Sorption isotherm is involved in determining food spoilage.	5/6	5/6	6

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