GURU NANAK INSTITUTE OF TECHNOLOGY

An Autonomous Institute under MAKAUT

2022

CHEMISTRY OF FOOD

FT303

TIME ALLOTTED: 3Hours **FULL MARKS:70**

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable

GROUP – A

(Multiple Choice Type Questions)

Answer any *ten* from the following, choosing the correct alternative of each question: 10×1=10

		Marks	CO No
1. i)	The principal protein present in milk whey is a) α-lactalbumin b) β-lactoglobulin c) casein d) both (a) and (b)	1	CO1
ii)	In lactose glucose and galactose are linked together by a) Alpha-1:4 glycosidic linkage b) Beta-1:4 glycosidic linkage c) Alpha-1:6 glycosidic linkage d) Beta-1:6 glycosidic linkage	1	CO1
iii)	In the α-helix the hydrogen bonds: a) are roughly parallel to the axis of the helix. b) are roughly perpendicular to the axis of the helix. c) occur mainly between electronegative atoms of the R groups d) occur only between some of the amino acids of the helix.	1	CO2
iv)	The approximate water activity of foods at which the bacterial growth starts is a) 0.4 b) 0.6 c) 0.8 d) 1	1	CO3
v)	The degree of saturation of oil is determined by a) peroxide value b) iodine value c) acid value d) saponification value	1	CO4

vi) Ribose is a — 1 — CO1
- a) Biose
- b) Triose
- c) Tetrose
- d) Pentose

vii) An example of a water-soluble pigment is — 1 — CO1
- a) Lycopene,
- b) Beta carotene
- c) Chlorophyll
- d) Anthocyanin

viii) Naturally occurring antioxidant is — 1 — CO3
- a) Vitamin D
- b) Vitamin B2
- c) Vitamin E
- d) Vitamin B12

ix) Hydrolysis of cellulose results in the formation of disaccharides as — 1 — CO1
- a) Maltose
- b) Lactose
- c) Cellobiose
- d) Sucrose

x) Example of water in oil emulsion is — 1 — CO3
- a) Mayonnaise
- b) Margarine
- c) Butter
- d) Both (b) & (c)

xi) The provitamin of Vitamin A is — 1 — CO1
- a) Alpha Carotene
- b) Beta Carotene
- c) Gamma Carotene
- d) All of these

xii) A tomato gets its red color from: — 1 — CO1
- a) Beta Carotene
- b) Fructose
- c) Lycopene
- d) Limonene

GROUP – B
(Short Answer Type Questions)
(Answer any *three* of the following) 3 x 5 = 15

		Marks	CO No
2. a.	What do you mean by EAA?	2	CO1
b.	Give one example of each sulfur-containing and aromatic ring-containing amino acid.	2	CO1
c.	Name the principal protein present in corn.	1	CO1
3. a.	How chlorophyllide is formed?	1	CO3
b.	Explain how anthocyanins change with pH?	4	CO3
4.	Explain the effects of different processing and storage conditions on vitamin E.	5	CO3
5. a.	Define iodine value and peroxide value.	2	CO4
b.	What are their chemical significances?	3	CO4
6.	Write a short note on cholesterol.	5	CO1

GROUP – C
(Long Answer Type Questions)
(Answer any *three* of the following) 3 x 15 = 45

		Marks	CO No
7. a.	Briefly describe the moisture absorption isotherm of food material and state the relationship of three zones of moisture with it.	7	CO3
b.	How food's stability with respect to relative reaction rate is related to water activity?	8	CO3
8. a.	What is the gelatinization of starch?	3	CO2
b.	Which factors affect this process?	3	CO2
c.	What changes occur after gelatinization?	2	CO2
d.	What is the dextrinization of starch?	3	CO2
e.	Explain the retrogradation of starch with an example.	4	CO2
9. a.	Describe the functions of lecithin as an emulsifier.	5	CO2
b.	Compare rancidity and reversion with examples.	5	CO2
c.	Briefly explain the interesterificationof oil.	5	CO2
10. a.	What are zwitter ions and how is it related to the isoelectric point for protein?	4	CO1
b.	With structures compare amylase and amylopectin.	5	CO1
c.	Explain omega 3 and omega 6 fatty acids with structures and examples.	6	CO1
11. a.	What is the denaturation of protein? Mention the factors, which cause the denaturation. Give one example of protein denaturation.	5	CO3
b.	What kind of changes occurs in meat during the curing process?	5	CO3
c.	Why is the green colour of vegetables lost during thermal processing?	5	CO3