GURU NANAK INSTITUTE OF TECHNOLOGY
An Autonomous Institute under MAKAUT
2020-2021
FOOD PROCESS ENGINEERING
FT503

TIME ALLOTTED: 3 HOURS **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)	Pasteurization is used mainly in (a) Juice processing (b) Milk processing (c) Grain processing (d) None of these	1	CO1
1 (ii)	Pasteurization cannot eliminate (a) Bacteria (b) Enzyme (c) Spore (d) None of the above	1	CO1
1(iii)	Which one is a non-thermal sterilization process (a) Pasteurization (b) Autoclaving (c) Flaming (d) Fumigation	1	CO1
1(iv)	The vessel used for processing of cans is known as (a) Bleed (b) Baffle (c) Retort (d) None of these	1	CO3
1 (v)	Appertization was the initial term for (a) Vaporurization (b) Sterilization (c) Disinfection (d) None of these	1	CO3
1 (vi)	Number of layers present in tetra-pack material are (a) 6 (b) 8 (c) 5 (d) 4	1	CO1

1(vii)	Milk is the example of a natural (a) Solution (b) Mixture (c) Emulsion (a) None of these	1	CO1
1 (viii)	In drying the major physical phenomenon is (a) Evaporation (b) Condensation (c) Saturation (d) None of these	1	CO3
1 (ix)	A cold storage is used for (a) Preservation (b) Packaging (c) Processing (d) None of these	1	CO2
1 (x)	A hot air oven is a type of (a) Cabinet dryer (b) Rotary dryer (c) Spray dryer (d) Tunnel dryer	1	CO3
1(xi)	Most commonly used cryogenic freezant is (a) Liquid carbon di-oxide (b) Liquid ammonia (c) Liquid nitrogen (d) Water	1	CO2
1 (xii)	Sublimation occurs in (a) Lyophilization (b) Drying (c) Disinfection (d) None of these	1	CO3

GROUP – B
(Short Answer Type Questions)

(Answer any ***three*** of the following) **3 x 5 = 15**

		Marks	**CO No**
2. (a)	Define sterilization	2	CO1
2. (b)	Discuss about the different methods of sterilization.	3	CO1
3. (a)	Define batch sterilization?	2	CO1
3. (b)	What are the advantages and disadvantages of batch sterilization?	3	CO1
4.	Briefly describe the refrigerated transportation system.	5	CO2
5.	Schematically show the differences between a co-current and a counter-current heat exchanger?	5	CO4
6.	Drying is a heat and mass transfer phenomenon - explain.	5	CO3

GROUP – C
(Long Answer Type Questions)

(Answer any ***three*** of the following) **3 x 15 = 45**

		Marks	CO No
7.(a)	What are the main differences between canning and aseptic packaging processes, describe with schematic diagram?	7	CO1
7.(b)	Describe the structure of tetra-pack packaging material with function of each layer.	8	CO1
8. (a)	Describe the common methods of sterilization of different packaging materials.	8	CO1
8.(b)	How the methods of sterilization is selected for packaging materials?	7	CO1
9. (a)	What is pasteurization?	2	CO1
9. (b)	What are the purposes of pasteurization?	7	CO1
9. (c)	What are the effects of pasteurization on foods?	6	CO1
10. (a)	What are the factors affecting evaporation process?	7	CO3
10. (b)	Describe a single effect evaporator with diagram.	8	CO3
11.(a)	Describe the structural and operational characteristics of shell and tube type heat exchanger system.	6	CO5
11.(b)	Write about the applications of extrusion in food processing.	6	CO5
11.(c)	Describe the structure of a twin screw extruder.	3	CO5