

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034**M.Sc. DEGREE EXAMINATION – FOOD CHEMISTRY AND FOOD PROCESSING****FIRST SEMESTER – NOVEMBER 2022****PFP1MC02 – UNIT OPERATIONS AND FOOD PACKAGING**

Date: 25-11-2022

Dept. No.

Max. : 100 Marks

Time: 01:00 PM - 04:00 PM

SECTION - A**Answer ALL the Questions**

1	Define the following	(5 x 1 = 5)	
a)	Van't hof factor.	K1	CO1
b)	Cryogenic freezing.	K1	CO1
c)	Dielectric heating.	K1	CO1
d)	RFID.	K1	CO1
e)	Biodegradable packaging.	K1	CO1
2	Multiple Choice Questions	(5 x 1 = 5)	
a)	The value of ΔG for a non-spontaneous reaction is _____ a. $\Delta G = 0$ b. $\Delta G > 0$ c. $\Delta G < 0$	K2	CO1
b)	Heating temperature and time for UHT is a. 72°C for 15 seconds b. 135°C for 3 minutes c. 135°C for 2 seconds	K2	CO1
c)	Membranes used for separation of mixtures are called _____ membrane. a. semi-permeable b. permeable c. permeate	K2	CO1
d)	The principle of detection of volatile metabolites which are emitted during aging of packaged food is _____ system of packaging technology. a. intelligent b. active c. CAP	K2	CO1
e)	_____ layer of a retort pouch is used for abrasion resistance. a. Aluminium b. Polyester c. Nylon	K2	CO1

SECTION - B**Answer any THREE of the following in 500 words****(3 x 10 = 30)**

3	Calculate the elevation in boiling point of a solution prepared by adding 96.0 g of sodium acetate to 383 mL of water. The boiling point constant for water is 0.52°C/m. (Molar mass of NaCl - 58.443 g/mol).	K3	CO2
4	Classify low temperature processing and illustrate its impact on food quality during storage.	K3	CO2
5	Examine the applications of irradiation in food processing.	K3	CO2

6	Illustrate the usefulness of various types of papers used in the food packaging.	K3	CO2
7	Classify biodegradable polymers and explain their properties.	K3	CO2
SECTION - C			
Answer any TWO of the following in 500 words		(2 x 12.5 = 25)	
8	Illustrate the freezing point curve of water with a neat diagram.	K4	CO3
9	Compare and contrast the principle, working protocol and applications of microwave heating verses pulse electric field heating.	K4	CO3
10	Design a food label of your choice, keeping in mind the FSSAI regulations for food packaging and labelling.	K4	CO3
11	Identify the different testing parameters used to evaluate the quality of food packaging materials.	K4	CO3
SECTION - D			
Answer any ONE of the following in 1000 words		(1 x 15 = 15)	
12	Justify the principle and mechanism of action of hurdle technology on the potential hurdles of food preservation.	K5	CO4
13	Evaluate the applications of various food packaging materials used for raw and cooked foods. Also give information on the ideal foods for MAP. Justify your answer. (10 + 5 Marks)	K5	CO4
SECTION - E			
Answer any ONE of the following in 1000 words		(1 x 20 = 20)	
14	Summarize the design, applications of the following technologies in food industry a. Types of Freezing used in Food Industry (10 Marks) b. Retort Packaging (10 Marks)	K6	CO5
15	Propose an innovative food processing and packaging technology for chicken fillets in the following aspects a. Novel techniques to be used for the production and processing of chicken fillets. (10 Marks) b. Components for active packaging to extend the shelf-life with intelligent sensor to benefit the consumer. (10 Marks)	K6	CO5

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