Total number of printed pages: 2

PG/1st/PFET 102

2023

RECENT TRENDS IN FOOD ENGINEERING AND TECHNOLOGY

Full Marks: 100

Time: Three hours

The figures in the margin indicate full marks for the questions.

*Answer **any five** questions.*

(Graph sheets should be provided to students for calculation purposes)

1.	a)	Describe the working mechanism of HTST pasteurizer with proper diagram	10
	b)	Cans of a conductive food material yielded the heat penetration data as given in the following table. The retort temperature reached 121°C after 20 min and remained constant thereafter during the heating cycle. The cooling cycle yielded a cooling lag factor jc equal to 5.4. The target organism has a thermal resistance constant of z = 10 K and a total process lethality of 30 min is required. The g value of the process is 0.372. From a suitable plot of the heat penetration data, determine the heat penetration factor and the thermal lag factor and hence calculate the required process time.	10

Time (min)	Temperature (°C)
0	50
10	65
20	78
30	83
40	95
50	100
60	104
70	110
80	115
90	117
100	118
110	119

2.	a)	Describe the working mechanism of batch retort system with suitable diagram.	10
	b)	Write about the design considerations for plate type heat exchangers with suitable diagram.	10

3.	a)	Give short notes about the construction of CAS rooms.	10
	b)	Write about the different gas mixtures used in MAP. Briefly explain about the machine systems for MAP.	10
4.	a)	Explain the concept of hurdle technology and write about its application in the preservation of food products.	10
	b)	Write about the working principle of electronic nose with suitable diagram.	10
5.	a)	Explain about the different mechanisms of microwave generation.	10
	b)	Give brief notes on the working principle of freeze drying.	10
6.	a)	Write the basic structure and testing principles of texture analyser.	10
	b)	Explain about the Supercritical fluid extraction (SCFE/SFE) technology for foods.	10
7.	a)	Give short notes on any two of the membrane separation processes.	10
	b)	Briefly discuss about the freeze concentration process of foods.	10