

THE KAVERY ENGINEERING COLLEGE
(An Autonomous Institution)
B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL-MAY
2025
Sixth Semester
Agricultural Engineering
AI3007-Emerging Technologies in Food Processing
Regulations - 2021

Duration : 3 Hrs**Maximum : 100 Marks****PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)**

Q.No	Questions	BLT	CO	Marks
1.	What is the principle behind High-Pressure Processing (HPP)?	1	1	2
2.	Mention the effect of high pressure on microorganisms.	1	1	2
3.	Define Pulsed Electric Fields (PEF) processing.	2	2	2
4.	Name the equipment's used in PEF processing.	1	2	2
5.	What is food irradiation, and how does it preserve food?	1	3	2
6.	What are the ways of food irradiation?	1	3	2
7.	Name two alternative non-thermal processing techniques.	2	4	2
8.	Define freeze drying.	2	4	2
9.	What is ohmic heating, and how is it used in food processing?	1	5	2
10.	Mention one advantage of microwave-assisted thermal sterilization.	2	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

Q.No	Questions	BLT	CO	Marks
11.	a i Explain the working principle, advantages, and applications of High-Pressure Processing (HPP) in food preservation.	2	1	8
	ii Explain the processing of meat and sea food in detail.	2	1	8
	Or			
	b i Describe the types of high pressure freezing process.	2	1	8
	ii Write the nutritional quality of foods in detail.	2	1	8
12.	a i Discuss Pulsed Electric Fields (PEF) processing technology, including its mechanism, benefits, and limitations.	3	2	8
	ii Elaborate the mechanisms of microbial and enzyme inactivation.	3	2	8
	Or			
	b i Explain food safety aspects of pulsed electric fields in detail.	2	2	8
	ii Explain how solid foods, liquid foods and beverages can be processed using pulsed electric fields.	2	2	8

13.	a	i	Describe food irradiation as a preservation method, highlighting its process and impact on food quality.	2	3	10
		ii	Explain in detail about type and sources of radiation and dosimetry.	2	3	6
Or						
	b	i	Discuss the food irradiation regulations in food industry.	3	3	8
		ii	Explain the mode of action of ionizing radiation.	3	3	8
14.	a	i	Compare alternative non-thermal processing techniques like ultrasound and cold plasma, focusing on their effectiveness and challenges.	2	4	8
		ii	Explain how ultra sound can be used as food preservation tool?	2	4	8
Or						
	b	i	Briefly explain the inactivation of microorganisms by radio frequency.	2	4	8
		ii	Explain extraction and osmotic dehydration with examples.	2	4	8
15.	a	i	Discuss alternative thermal processing techniques such as ohmic heating and microwave-assisted sterilization, emphasizing their role in retaining food quality.	3	5	10
		ii	Explain the applications of UV in food processing.	3	5	6
Or						
	b	i	Discuss the integration of AI and machine learning in food quality control and its impact on the food industry.	3	5	8
		ii	Discuss Hurtle technology in detail.	3	5	8