Total number of printed pages: **03 Programme: PG**

Semester: 1st

Paper Code: PFET103

2022

SUBJECT NAME: RECENT ADVANCES IN ENZYME AND MICROBIAL TECHNOLOGY

Full Marks: 100

Time: Three hours

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

*Answer **any five** questions.*

1.	a)	Write a brief note on preservation and maintenance protocol of microbes.	5
	b)	How can you enumerate the microbial population in a food sample?	5
	c)	Define surface culture and submerged culture fermentation. Give one example each of these fermentations.	4
	d)	How crude enzyme can be prepared by submerged culture fermentation?	6
2.	a)	What is mutation?	2
	b)	Discuss about different types of mutation.	6
	c)	Give few examples of stop codon.	2
	d)	Describe R-DNA technology with suitable diagram and applications.	8
	e)	What is koji?	2
3.	a)	Explain any efficient protein characterization technique.	5
	b)	Briefly describe proteomics.	5
	c)	Mention two natural and two synthetic support materials for immobilization of an enzyme.	2+2=4
	d)	Describe the different modes of enzyme immobilization techniques.	6
4.	a)	Explain the kinetic property of a matrix material in enzyme immobilization?	3
	b)	Cite two potential industrial applications of immobilized enzyme technology with the involvement of biochemical reaction.	4
	c)	State the possible causes of restriction of immobilized enzyme technology.	3
	d)	Explain CLEA technology with suitable example.	4
	e)	Describe one suitable whole cell immobilization technique with potential applications.	6
5.	a)	Explain biomass and biomass constituents.	4

	b)	Discuss the bioethanol production by using any suitable method.	6
	c)	What do you understand by biofuel?	2
	d)	What is meant by biogas?	2
	e)	Describe the mechanism of formation of biogas through anaerobic digestion process.	6
6.	a)	Define antibiotic. How antibiotic is ingested in the body?	2+2=4
	b)	Discuss the mechanism of action of antibiotics against human pathogens.	6
	c)	Mention the structure of Pen-G. Compare Pen-G with semisynthetic penicillin.	2+2=4
	d)	Give the action of acid and alkali on Pen-G.	2+2=4
	e)	Cite one example of semisynthetic penicillin with its synthesis reaction.	2
7.	a)	Explain the fermentative production and purification strategy of penicillin.	4+4=8
	b)	What is 10^5 unit of penicillin?	2
	c)	Explain the chemical structure, synthesis, isolation, recovery and application of a microbial polysaccharide with suitable example.	6
	d)	Explain mycotoxin and aflatoxin? Cite few examples of mycotoxins with characteristic properties.	2+2=4