Reg. No										

AY 24

GANDHI INSTITUTE OF ENGINEERING AND TECHNOLOGY UNIVERSITY, ODISHA, GUNUPUR

(GIET UNIVERSITY)

M.Tech. (First Semester) Regular Examinations, February – 2025

24MBTPC11001 - Advanced Bioprocess Engineering

(Biotechnology)

Time: 3 hrs | Maximum: 60 Marks

Answer ALL questions

(The figures in the right hand margin indicate marks)

PART – A **(2 x 5 = 10 Marks)**

Answer ***ALL*** questions	CO #	Blooms Level
1. Define chemical reactor.	CO1	K1
2. Explain flow sheet.	CO2	K3
3. Mention the Michaelis-Menten equation.	CO3	K2
4. Write down the Monod equation.	CO4	K3
5. Recall process economy.	CO6	K2

PART – B **(10 x 5 = 50 Marks)**

Answer ***ALL*** the questions		Marks	CO #	Blooms Level
1. a.	Explain about the operation of batch reactor.	5	CO1	K2
b.	Discuss different applications of batch reactor.	5	CO1	K1
	(OR)			
c.	Explain detail about different Sterilization procedure.	5	CO1	K2
b.	Write the different benefits of Aeration and Sensors in a bioreactor.	5	CO1	K2
2. a.	Explain about principle and operation of adsorption chromatography.	5	CO2	K3
b.	Discuss different applications of adsorption chromatography.	5	CO2	K1
	(OR)			
c.	Write the types of economic process.	5	CO2	K1
b.	Explain importance economic process with example(s).	5	CO2	K2
3.a.	Classify Enzyme classes.	5	CO3	K1
b.	Explain Industrial applications of microbial enzymes with reference to Dairy, Baking and Cosmetics Industry.	5	CO3	K2
	(OR)			
c.	Explain Enzyme Activity.	5	CO3	K1
d.	Describe the effect of enzyme and substrate concentration on Enzyme Activity.	5	CO3	K2
4. a.	Write about bacterial nutrition.	5	CO4	K1
b.	Explain different phases of bacterial growth along with the growth curve.	5	CO4	K2
	(OR)			
c.	How heat Balances and other forms of energy influence energy balance?	5	CO4	K3
d.	Give a process flow diagram in the light of raw material to finished product.	5	CO4	K1
5. a.	What is Catalytic Strategies in case of Enzyme? Explain with example.	5	CO5	K2
b.	What is Regulatory Strategies in case of Enzyme? Explain with example.	5	CO5	K3
	(OR)			
c.	Give an overview of Membrane Bioreactor Technology.	5	CO6	K1
d.	Explain the advantages and disadvantages of Membrane Bioreactor Technology	5	CO6	K1

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