QP Code: RJ23MTECH021 | Reg. No | | | | | | | | | | | AY 23

GIET UNIVERSITY, GUNUPUR – 765022

M. Tech (First Semester) Examinations, January– 2024

MPCBT1050 – Advanced Bioprocess Engineering

(Biotechnology)

Time: 3 Hrs | Maximum: 70 Marks

(The figures in the right hand margin indicate marks.)

PART – A **(2 x 10 = 20 Marks)**

Q.1. Answer all questions	CO#	Blooms Level
a. Name the factors that Influence Bacterial Growth.	CO1	K1
b. What do you mean by Immobilized cells?	CO1	K2
c. Write short notes on control of a bioreactor.	CO2	K1
d. Is aeration needed in a batch bioreactor? Justify your answer.	CO2	K1
e. How do you increase biomass yield in a bioreactor?	CO3	K2
f. What is Monod equation?	CO3	K3
g. Which enzymes do not follow Michaelis-Menten kinetics and why?	CO4	K2
h. Explain the process of adsorption with example.	CO4	K1
i. What is decline Phase during growth of bacteria?	CO5	K3
j. What is Michaelis-Menten equation?	CO5	K2

PART – B **(10 x 5=50 Marks)**

Answer ***ANY FIVE*** questions	Marks	CO#	Blooms Level
2. a. Explain about principle and operation of Fed-batch reactor.	5	CO1	K2
b. Discuss different applications of Fed-batch reactor.	5	CO1	K2
3.a. Give dental derivation of Michaelis-Menten equation.	5	CO1	K2
b. Explain different factors which can influence the Michaelis-Menten constant.	5	CO2	K3
4. a. Explain about industrial process.	5	CO2	K2
b. Why are industrial processes important?	5	CO2	K3
5.a. What are different Enzyme classes?	5	CO3	K3
b. Explain Industrial applications of microbial enzymes with reference to Dairy, Baking and Cosmetics Industry.	5	CO3	K1
6. a. Explain the advantages and disadvantages of Membrane Bioreactor Technology.	5	CO4	K1
b. Explain design aspects and working of reactor for cell culture.	5	CO4	K2
7.a. What are different conditions needed for aerobic and anaerobic bacterial growth?	5	CO4	K1

b.	What are different approaches for measuring bacterial growth?	5	CO5	K2
8. a.	Explain Industrial applications of microbial enzymes with reference to Dairy, Baking and Cosmetics Industry.	5	CO5	K1
b.	Differentiate between total mass balance and component mass balance.	5	CO5	K1

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