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**Gandhi Institute of Engineering and Technology University, Odisha, Gunupur
(GIET University)**



B. Tech (Eighth Semester - Regular) Examinations, April - 2026

22BCHOE48011 - Biochemical Engineering

(Chemical Engineering)

Time: 3 hrs

Maximum: 70 Marks

Answer ALL questions
(The figures in the right hand margin indicate marks)

PART – A

(2 x 5 = 10 Marks)

Q.1. Answer **ALL** questions

	CO #	Blooms Level
a. What are Whittaker's five kingdoms?	CO1	K1
b. Differentiate between coenzyme and Apo enzyme.	CO2	K1
c. Define cytoplasm.	CO1	K2
d. What is convective mass transfer?	CO3	K1
e. What is activated sludge process?	CO4	K2

PART – B

(15 x 4 = 60 Marks)

Answer **ALL** the questions

	Marks	CO #	Blooms Level
2. a. Explain the growth requirements of microorganisms.	8	CO1	K2
b. Explain the cell growth rate curve with neat sketch.	7	CO1	K2
(OR)			
c. Differentiate between DNA and RNA.	8	CO1	K2
d. Compare prokaryotic and eukaryotic cells in details.	7	CO1	K2
3.a. Describe various factors affecting enzyme activity.	8	CO2	K1
b. Describe enzyme kinetics in detail.	7	CO2	K2
(OR)			
c. Describe Monod equation.	8	CO2	K1
d. Explain growth phases of microorganisms.	7	CO2	K2
4.a. Briefly explain the different methods of air sterilization.	8	CO3	K3
b. Describe the process of continuous sterilization.	7	CO3	K1
(OR)			
c. Briefly explain the factors affecting oxygen transfer rate in a fermentation process.	8	CO3	K3
d. Describe briefly the concept of design of a fermenter. What are the factors that you consider as essential for successful design and operation of a fermenter?	7	CO3	K1
5.a. Describe continuous bioreactor with advantages.	8	CO4	K2
b. Explain the working principle of air lift reactor with neat sketch.	7	CO4	K3
(OR)			
c. Explain in details the production of biogas and the factors affecting methane formation.	8	CO4	K3
d. Explain in details about Methods of cell disruption.	7	CO4	K2

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