GIET UNIVERSITY, GUNUPUR – 765022

B. Tech (Sixth Semester Regular) Examinations, May – 2024

21BBTPC36003 – Downstream Process Engineering

(Biotechnology)

Time: 3 hrs | Maximum: 70 Marks

(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 is the role of detergent in cell disruption? Give example of one anionic detergent and one cationic detergent.	CO#2	K3
b. List out the factors affecting choice of product recovery process.	CO#2	K2
c. Explain the principle of alkali treatment.	CO#3	K3
d. What do you mean by capital cost?	CO#1	K1
e. Write the application of fractional distillation.	CO#4	K3

PART – B **(15 x 4 = 60 Marks)**

Answer ***ALL*** questions	Marks	CO #	Blooms Level
2. a. Give an account on biological activity analysis of purity of biological compound.	7	CO#1	K3
b. Outline the process of intracellular product recovery.	8	CO#1	K4
(OR)			
c. Write a note on foam separation.	7	CO#2	K3
d. Discuss briefly about different types of batch filters.	8	CO#2	K3
3.a. Give an account on distillation process.	7	CO#4	K2
b. Illustrate the cocurrent and countercurrent liquid extraction methods with suitable figures.	8	CO#4	K2
(OR)			
c. Discuss about ultrafiltration module configurations.	7	CO#3	K3
d. Discuss about the chemical methods of cell disruption.	8	CO#3	K3
4.a. Explain the role of downstream processing in biotechnology.	5	CO#1	K3
b. Discuss about the process economics in details with example.	10	CO#1	K4
(OR)			
c. Write a note on reverse osmosis.	7	CO#3	K2
d. Discuss in details about ultracentrifugation and its application	8	CO#3	K3
5.a. Write about the working principle and applications of isoelectric focusing.	7	CO#2	K3
b. Explain the theory of crystallization and its application in product purification.	8	CO#4	K3
(OR)			
c. Differentiate between ion exchange and gel filtration chromatography.	7	CO#2	K2
d. Describe in details the recovery process of monoclonal antibody.	8	CO#4	K3

--- End of Paper ---