CLASS: B. TECH   SEMESTER : VI
BRANCH: BIOTECH   SESSION : SP2023

SUBJECT: BE308 BIOSEPARATION ENGINEERING
TIME: 02 Hours   FULL MARKS: 25

INSTRUCTIONS:
1. The question paper contains 5 questions each of 5 marks and total 25 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
4. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates

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				CO	BL
Q1	(a)	Draw a flow chart to depict an overall Bioseparation process.	[2]	CO1	BL2
Q1	(b)	It was observed that at high antibiotic concentration, a resin can adsorb 62 mg antibiotic per gram adsorbent. At a solution concentration of 82 g/L, the resin adsorbs half of its maximum value. Estimate the amount adsorb at final solution concentration of 200 g/L assuming Langmuir model.	[3]	CO2	BL4
Q2	(a)	Write the applications of affinity chromatography.	[2]	CO3	BL1
Q2	(b)	Explain, with diagram, the basic principal of Anion Exchange Chromatography.	[3]	CO3	BL3
Q3		A broth of 80 L contains lipase of 12.8 g/L and some contaminant of 1.8 g/L. Calculate the salt required to recover 98% of lipase if the value of β and k for lipase are 9.33 and 1.1 respectively and that of contaminant are 8.8 and 0.95 respectively. What will be the purity of the lipase at 98% recovery?	[5]	CO2	BL5
Q4		Two analyte A and B are separated on a 50 cm column. The observed retention times were 2.5 min and 3.1 min and base width of 0.24 and 0.3 min respectively. Calculate the number of theoretical plates and resolution of these two peaks?	[5]	CO3	BL5
Q5	(a)	Justify the use of ammonium sulphate for salt precipitation.	[2]	CO2	BL2
Q5	(b)	Write a short note on IMAC	[3]	CO3	BL3

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