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B.Sc. (Hons) Biochemistry, Semester-IV Examination, 2023
Paper Title: Protein Purification Techniques
Paper Code: BBC SEC 02

Time: 1.5 h

Max Marks: 37

Note: This paper has 3 Sections, A, B, and C. Attempt all three sections. Section A: Answer all the questions; Section B: Answer anyone; Section C: Answer all the questions, each question in this section has an internal choice

Abbreviations Used:

CO- Course Outcome, PO- Program Outcome, BTL- Bloom Taxonomy Level: BT level 1- Remember; BT level 2-Understand; BT level 3-Apply; BT level 4-Analyse; BT level 5-Evaluate, BT level 6-Create

Section A (Attempt all questions)

[1x7=7 Marks]

Q. No. 1	Questions (Mention True or False against each statement)	BTL	CLO	PLO
i.	Void volume is equal to elution volume for molecules whose $K_d = 1$.	1	2	3
ii.	Salt fractionation can easily give a pure protein in a single step.	3	1	3
iii.	Both dialysis and gel filtration chromatography can be used to remove excess salts from protein solutions.	4	4	2
iv.	Cation exchangers are negatively charged and are also called as basic ion exchangers.	1	2	3
v.	Within the cell the protein is in a highly reducing environment.	3	1	2
vi.	The peptidoglycan cell wall can therefore be removed from Gram-positive bacteria by treatment with lysozyme.	5	2	3
vii.	Both SDS and Native PAGE can be used to study the purity of proteins.	4	3	3

Section B: Long type Questions (Attempt any one)

[1x15=15 Marks]

Q. No. 2	Questions	BTL	CLO	PLO
a)	Write the principle and applications of Gel Filtration Chromatography in detail.	3	2	3
b)	With the help of diagram, discuss the instrumentation of HPLC in detail.	5	5	2

Section C: Short-type Questions (Attempt all questions, each question has an internal choice)
[3x5=15 Marks]

Q. No.	Questions	BTL	CLO	PLO
3				
a)	Write the use of affinity chromatography in protein purification. OR Distinguish between affinity and gel filtration chromatography.	4	2	3
b)	Discuss the principle of SDS PAGE. OR Discuss the outline of the steps involved in protein purification.	3	3	3
c)	Mention few applications of HPLC. OR Discuss the principle of HPLC.	4	5	2

END OF THE QUESTION PAPER