

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)**

**CLASS: M.Tech
BRANCH: BIOTECHNOLOGY**

**SEMESTER : II
SESSION : SP/2025**

SUBJECT: BE507 ADVANCED BIOSEPARATION ENGINEERING

TIME: 3 Hours

FULL MARKS: 50

INSTRUCTIONS:

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
 2. Attempt all questions.
 3. The missing data, if any, may be assumed suitably.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
-

		CO	BL
Q.1(a)	Propose a generalized block diagram of bioseparation of the targeted product of your interest?	[5] 1	1
Q.1(b)	Provide the significance of centrifugal and centripetal forces during removal of insoluble? Calculate the centrifugal field at 10cm from the rotor axis at an angular velocity of 1000rad/sec?	[5] 3	4
Q.2(a)	Evaluate different types of adsorption isotherm with their kinetics behaviour?	[5] 2	2
Q.2(b)	Discuss different types of mechanism for precipitation of proteins?	[5] 4	5
Q.3(a)	Reveal the importance of liquid liquid chromatography?	[5] 2	4
Q.3(b)	Elucidate the importance of gels in column chromatography with pros and cons?	[5] 4	6
Q.4(a)	Provide the schematic representation of a membrane separation plant with its working mechanism?	[5] 3	3
Q.4(b)	Differentiate between reverse osmosis and ultrafiltration?	[5] 4	5
Q.5(a)	What do you mean by crystallization? Provide the kinetics of crystal growth?	[5] 1	1
Q.5(b)	Propose the process of drying a heat labile product?	[5] 4	6

:26/04/2025:E