

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

**CLASS: BTECH
BRANCH: BIOTECHNOLOGY**

**SEMESTER : VI
SESSION : SP/2025**

SUBJECT: BE307 BIOPROCESS 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)	Explain the effect of nutrients on growth of bacteria under batch mode condition and how to measure the growth?	[5] 1	1
Q.1(b)	Justify the Leudeking- Piret model on product formation kinetic?	[5] 2	3
Q.2(a)	Examine the various types of yield during growth and product synthesis?	[5] 3	4
Q.2(b)	Differentiate between theoretical and predicted yields?	[5] 3	2
Q.3(a)	Why does medium for growth need to be sterilized? Elaborate the role of del factor during removal of contaminants?	[5] 4	5
Q.3(b)	Evaluate the significance of X_{90} ?	[5] 5	6
Q.4(a)	Describe the role entrapment in immobilization with pros and cons?	[5] 2	4
Q.4(b)	Mention the important strategies to overcome the stability of biocatalyst?	[5] 1	3
Q.5(a)	Examine the essential parameters to design bioreactors?	[5] 5	4
Q.5(b)	Evaluate the significant features of batch mode of reactor operation with limitations?	[5] 4	5

:::25/04/2025:::M