

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

**CLASS: BTECH.
BRANCH: BIOENGINEERING AND BIOTECHNOLOGY**

**SEMESTER : VII
SESSION : MO/2025**

SUBJECT: BE412 PROCESS BIOTECHNOLOGY

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.
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		CO	BL
Q.1(a)	The growth of bacteria needs different carbon and nitrogen sources. Explain the growth kinetic assuming sucrose as main carbon source?	[5] 1	1
Q.1(b)	Analyze the different techniques used for measuring microbial growth in batch condition?	[5] 3	4
Q.2(a)	Derive Michelis Menten equation and mention the significance of Km?	[5] 2	3
Q.2(b)	Analys different stability concern biocatalysis? Mention different approaches to improve the catalytic behaviour of enzymes?	[5] 4	5
Q.3(a)	Examine the consequences of media contamination? Mention the significance of fractional reduction of contaminant?	[5] 2	2
Q.3(b)	Illustrate different assumptions of air filter sterilization with removal efficiency of filter?	[5] 3	4
Q.4(a)	Evaluate the process production of butanol using the agri-waste as main C source?	[5] 5	5
Q.4(b)	Investigate the synthesis microbial protein with the regulatory mechanisms?	[5] 4	4
Q.5(a)	Mention the salient features of bioreactor design and different control parameters?	[5] 5	3
Q.5(b)	Illustrate types of reactors available for shear sensitive cells?	[5] 3	4

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