BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION SP/2025)

CLASS: BTECH **SEMESTER : VI**
BRANCH: BIOTECH **SESSION : SP/2025**

SUBJECT: BE307 BIOPROCESS 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**

			CO	BL
Q.1(a)	Define the types of nutrients needed for the growth of live cell?	[2]	1	1
Q.1(b)	Justify the growth of microbes with the formation of products?	[3]	2	2
Q.2(a)	Mention the advantages and disadvantages of CFU?	[2]	1	1
Q.2(b)	What parameters need to optimize for enhanced synthesis of a microbial P?	[3]	2	2
Q.3(a)	Provide the significance of metabolic heats and its control?	[2]	2	2
Q.3(b)	Discuss different types of microbial yields?	[3]	2	2
Q.4(a)	What do you understand by mass balance?	[2]	1	1
Q.4(b)	The production of a biomass from glucose is given below: $C_6H_{12}O_6 + aO_2 \longrightarrow cCH_{1.66}O_{0.27}N_{0.2} + dCO_2 + eH_2O$ $CH_{1.66}O_{0.27}N_{0.2}$ is biomass. Determine the stoichiometric coefficient assuming two thirds of substrate has converted to biomass?	[3]	2	2
Q.5(a)	Find out degree of reduction of butane and glycerol?	[2]	2	1
Q.5(b)	Differentiate between theoretical and predicted yields?	[3]	2	2

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