

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- 2024

M.Sc-III Semester (BT)

COURSE CODE (CREDITS):20MS1BT311 (3-0-0)

MAX. MARKS: 25

COURSE NAME: Bioprocess Engineering & Technology

COURSE INSTRUCTORS: Dr.Garlapati Vijay Kumar

MAX. TIME: 1 Hour 30 Minutes

Note: (a) All questions are compulsory.

(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

| Q.No | Question | Marks |
|------|---|-------|
| Q1 | Explain the pros and cons associated with the "intracellular" and "extracellular" products in bioprocessing? Illustrate the DSP stages associated with the "Flocculation", "Ultrafiltration", "Covalent Chromatography" and "Spray drying" steps along with the purpose of the step? | 4 |
| Q2 | Summarize the advantages and disadvantages associated with the immobilized enzymes? If you want to evaluate the prepared "Immobilized Enzyme" what are the different characteristics/tests you will perform? | 4 |
| Q3 | Demonstrate the "Mass transfer Limitation phenomenon in immobilized enzymes" by explaining the possible mass-transfer resistances associated with the different immobilizing techniques by explain the significance of "Damkohler Number" and "Thiele Modulus" in immobilization systems? | 4 |
| Q4 | How the Designs of "CSTR" and "Airlift reactor" differ with each other with a neat sketch and by summarizing the how the uniform mass-transfer achieved in each case? | 4 |
| Q5 | Justify the need for taking care of "Foam control System" and "mass-transfer concept" in case of fermentation operation with the associated probable consequences? Different approaches utilized to enhance the oxygen transport in the bioreactors? | 4 |
| Q6 | Illustrate about the following one's (a) Laws and numerical representations associated with the "Filtration" and "Precipitation" ? (2 M) (b) Outline the biological and non-biological chromatographic techniques associated with the Pseudo Bio-specific Ligand Affinity Chromatography (PBSLAC) ? Write the composition of GFC matrices of "Sephacryl HR" and "Sephacryl CL"? (3 M) | 5 |

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