JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -3EXAMINATION- 2023
M.Sc (Biotechnology)-III Semester

COURSE CODE (CREDITS):20 MS1BT311 (03) **MAX. MARKS:** 35
COURSE NAME: Bioprocess Engineering and Technology
COURSE INSTRUCTOR: Dr. Garlapati Vijay Kumar **MAX. TIME:** 2 Hours

Note: (a)All questions are compulsory.
(b)Marks are indicated against each question in square brackets.

1. What are the different reasons for failing the performance of a fungal culture at 10000 L than at 1 L? Discuss about the different complexities associated with the scale-up of bioreactors? Summarize the common scale-up rules which need be followed in bioprocesses? (CO V) **(6 Marks)**
2. Why we have to opt Rational Protein Design (RPD) and Directed Evolution (DE) approaches in Bioprocess Engineering? Explain in detail about the RPD, DE and Focused-DE approaches in terms of requirements, procedure and utilized mutagenesis techniques? (CO V) **(6 Marks)**
3. Discuss about the different survival mechanisms adopted by halophiles? Explain about the existing and probable applications of halophiles in bioprocess industries by giving more emphasis on PHA production? (CO II & CO III) **(6 Marks)**
4. Explain in detail about the homogenous- and heterogenous-catalysis concepts used in biodiesel technology? Discuss about the different areas of utilization of lipases in fat and oil industry? (CO I &CO IV) **(6 Marks)**
5. With a neat sketch explain the different steps utilized in lignocellulosic bioethanol technology by mentioning the purpose and followed procedure approaches? What are the technical challenges which hamper the success of lignocellulosic bioethanol technology in the present scenario? (CO IV) **(6 Marks)**
6. Discuss about the following one's (CO IV & CO V) **(5 Marks)**
   (a) Agitation- and gassing-based parameters and its importance in scale-up (2.5 M)
   (b) Importance of Kla& methods used for Kla determination? (2.5 M)

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