

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATIONS- 2026

M.Tech-II Semester (BT)

COURSE CODE (CREDITS):14M11BT211 (03)

MAX MARKS: 35

COURSE NAME: Industrial Biotechnology

COURSE INSTRUCTOR: Dr. Garlapati Vijay Kumar

MAX. TIME: 2 Hours

*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	With neat diagram differentiate "CSTR" with "Air-lift" and Bubble column reactors in terms of operation and H/D ratios?	6
Q2	Illustrate the different stages associated with the downstream processing by emphasizing the objective and associated techniques? What are the laws behind "centrifugation" and "Precipitation" by writing its mathematical notations?	6
Q3	What are the advantages and disadvantages associated with enzyme immobilization? Summarize the different properties of immobilized enzymes with respect to enzyme, carrier and final immobilized enzyme?	6
Q4	With a neat sketch explain the steps involved in the conversion of lignocellulose to bioethanol by explaining the each step objective? Explain briefly about how 1,3-DAG oil usage prevents the accumulation of body fat rather than using TAG oil?	6
Q5	Compare the "Rational Protein Design" with "Directed Evolution" approaches with schematic representations? What are prerequisites for choosing the "RPD" and "DE" approaches and how the mutation schemes varies with the "RPD", "DE" and "Focused-DE"?	6
Q6	Write about the following one's (a) Chemical- Vs Lipase-catalyzed Transesterification (2.5 M) (b) Physico-chemical principle behind "Dialysis", "Reverse-phase chromatography", "Pervaporation", "Distillation" and "Lyophilization" (2.5 M)	5

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