

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -3 EXAMINATION- 2025

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	Why do we have to give more priority for the extremozymes in Industrial sector? Illustrate the practical application of different extremozymes in Industrial Biotechnology sector?	5
Q2	How “Salt-in” strategy serves as an energy efficient mechanism than the “Compatible solute” strategy in case of halophiles? How the “halophiles” usage in “PHA” and “Ecotines” production makes the difference with the usage of normal microbes, explain in detail?	5
Q3	Differentiate the third-generation biofuels with first-generation biofuels by illustrating the advantages and disadvantages by explaining production process of “Biodiesel” and “Bioethanol”?	5
Q4	Quote the reasons for utilizing of lipases in oil and fat modification? Elaborate the different specificities possessed and catalyzing reactions of lipases in fat and oil modification sectors?	5
Q5	Summarize the concept of “Rational Protein Design (RPD)” by comparing with the “Directed evolution (DE)” utilized for tailor-design of enzyme properties with a neat sketch? List how the utilized mutation scheme of “Focused Directed Evolution” differs with the mutation schemes of “RPD” and “DE”?	5
Q6	Depict the different key drivers of Industrial Biotechnology for successful development of bio-based process with a neat sketch? Demonstrate the different disciplines those are part of the “Industrial Systems Biology” in a pictorial form?	5
Q7	Discuss about the following one's (a) Metabolomics Vs Fluxomics Vs Metagenomics (2.5 M) (b) Biomimicry concepts of “Gecko Adhesives” and Nacre & Biomineralization” (2.5 M)	5