

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATION- 2025

M.Sc -IIIrd Semester (BT)

COURSE CODE (CREDITS): 20MS1BT311 (03)

MAX. MARKS: 35

COURSE NAME: Bioprocess Engineering and Technology

COURSE INSTRUCTORS: Dr. Garlapati Vijay Kumar

MAX. TIME: 2 Hours

Note: (a) All questions are compulsory.

Q.No	Question	Marks
Q1	Elaborate the concept of "Lignocellulosic Bioethanol Technology" by explaining the different steps along with the objectives with a neat diagram?	5
Q2	Why lipases are a choice in oil and fat modification sector and explain the different specificity possessed by lipases? Explain the lipase-catalyzing reactions in oil and fat sector along with the respective products with industrial relevance?	5
Q3	Describe briefly about the different $K_L a$ determination methods and explain about the "Crab tree effect" observed during bioreactor operation?	5
Q4	What are the different complexities which impact scaling for bioreactors? What needs to be taken care while scaling up? Mention the common scale-up rules need to follow during scale-up?	5
Q5	Differentiate the concepts of "Rational Protein Design", "Differential Evolution" and "Focused Directed Evolution" with a neat sketch and also how the utilized mutation scheme varies with each concept?	5
Q6	Classify the agitation- and gassing-based scale-up parameters and also emphasize why it is important? Write about the "Scale-down" approach used in BPE?	5
Q7	Write about the following one's (a) Obstacles of Lignocellulosic Bioethanol Technology for commercialization (2.5M) (b) Role of lipases in "Degumming of oils" (2.5 M)	5

@@@@@@@@@@@@@@@@ ALL THE BEST @@@@@@@@@@@@@@@@@@