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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

T3 EXAMINATION- MAY 2019

BTDD, X Semester & PhD

COURSE CODE: 14M11BT211

MAX. MARKS: 35

COURSE NAME: Industrial Biotechnology

COURSE CREDITS: 03

MAX. TIME: 2 h

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.

1. Write down the step by step approach for determining K_m and V_{max} from Lineweaver - Burk plot of enzyme-catalyzed reaction? Write about the criticism of LB plot for determining the kinetic constants? Classify the cell disruption techniques utilized for handling intracellular products in IB? (CO I & CO II) (5 M)
2. Differentiate the Lipase-catalyzed Transesterification with chemical-catalyzed Transesterification for Biodiesel production? What meant by the "Severity Factor" in case of Lignocellulosic's pretreatment? What are the different approaches used for assessing the adopted pretreatment technique for lignocellulosics? (CO III) (5 M)
3. Write about any three steps of pulp and paper processes where enzymes can be utilized by mentioning the application, technical benefit, utilized enzyme and challenges? Discuss about the xylanase-aided bleaching utilized in pulp and paper industry? (CO III) (5 M)
4. What are the technological/process advantages of using enzymes in organic media? Write about the different specificities of lipases? What is the mechanism behind the prevention of body fat accumulation by usage of 1,3-DAG instead of TAG? (CO IV) (5 M)
5. What are the different environmental problems arising due to utilization of alkali treatment for dehairing/dewooling step in tanneries instead of enzymes usage? Differentiate the conventional enzymatic process with the one-step enzymatic process in terms of process efficiency and advantages? (CO IV) (5 M)
6. What are the different characteristics tests used to test the immobilized enzymes in terms pertaining to method, mass-transfer & stability issues? Write the significance of "Damkohler number" & Theile Modulus" in immobilized systems? (CO V) (5 M)
7. Write about the following (CO V) (5 M)
 - (a) Schematic comparison of Rational Protein Design and Directed Evolution
 - (b) Schematic representation of Systems Biology approach in IB

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