

(135)

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATIONS- 2026

M.Sc.-II Semester (MB)

COURSE CODE (CREDITS): 21MS1MB211 (3)

MAX MARKS: 25

COURSE NAME: Enzymes and Bioprocess Technology

COURSE INSTRUCTOR: Dr. Saurabh Bansal

MAX. TIME: 1 Hour 30 Min

Note: (a) All questions are compulsory.

Q. No.	Question	Marks
Q1 a)	Why is the lag phase considered metabolically active despite the absence of visible growth?	1
Q1 b)	How does the age and physiological state of the inoculum influence the length of the lag phase?	2
Q2	Differentiate between growth-associated and non-growth-associated product formation with suitable industrial examples.	3
Q3	Draw a self-explanatory Monod's plot. How does the value of K_s reflect microbial affinity for nutrients?	2
Q4	Why is yield coefficient ($Y_{x/s}$) critical in determining the economic viability of a fermentation process?	2
Q5 a)	What happens when the dilution rate exceeds the maximum specific growth rate (μ_{max}) in a chemostat?	1
Q5 b)	Why is continuous culture more suitable for primary metabolite production but less effective for secondary metabolites like penicillin?	2
Q5 c)	How does cell recycle in a chemostat improve productivity and stability of the system?	2
Q6	Define the headspace volume in the fermenter and its importance.	2
Q7	What are the functions of the following in a fermenter? i) Baffle ii) Sparger iii) Load Cell	3
Q8	How did Novozymes improve <i>Bacillus</i> strains to reduce foaming and pigment production?	3
Q9	Discuss the importance of genetic stability in industrial strains.	2