JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- 2024

M.Sc.-II Semester (Microbiology)

COURSE CODE(CREDITS): 21MS1MB211 (03)

MAX. MARKS: 25

COURSE NAME: Enzymes and Bioprocess Technology

COURSE INSTRUCTORS: Dr. Saurabh Bansal

MAX. TIME: 1 Hour 30 Minutes

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Note: (a) All questions are compulsory.

(b) Marks are indicated against each question in square brackets.

(c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

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1. What are the five important criteria we use while selecting any industrially important strains? [2]

2. In continuous culture, the specific growth rate (μ) is determined by the substrate concentration and is equal to the dilution rate (D). Suppose in a such system you got a following Monod's plot for two different organisms A and B. If you are interested in selecting strain A, what should be the dilution rate in the said experiment? Give your answer based on the graph representing the effect of substrate concentration on the specific growth rates of two micro-organisms A and B. [2]

Residual substrate concentration
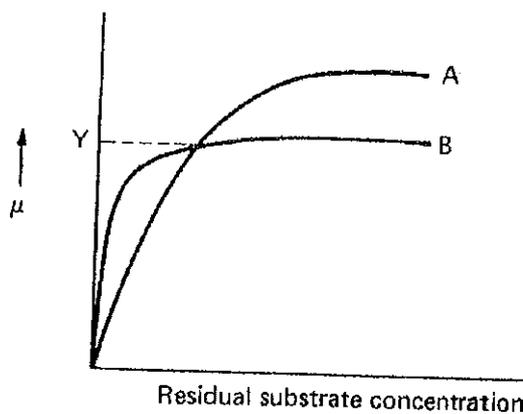
3. a) What do you understand by culture preservation? Why is it important? [2]

   b) How will you do the quality control of the preserved stock cultures? [2]

4. a) What are auxotrophs? How will you screen for a desired auxotroph? Explain with one suitable example.

[3]

b) How the Novozyme resolve the issue of foam generation by *B. subtilis* culture during fermentation?

[2]

5. a) Why batch culture is considered a dynamic system?

[2]

b) How can you reduce the lag phase time of a culture?

[2]

c) Whether the cell is metabolically active during stationary phase? Justify your answer.

[2]

6. Which mode of operation will you in the following cases:

[2]

a) A culture is synthesizing a toxic product during fermentation

b) High concentration of substrate inhibits the growth of the organism.

7. Differentiate between Chemostat and Fed-Batch Culture.

[2]

8. In which mode of operation of fermentation you will observe the quasi steady state (QSS)? What is its (QSS) significance?

[2]