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Total Number of Pages : 01

M.TECH

AR-19

M.TECH 1ST SEMESTER EXAMINATIONS NOV/DEC 2019

BIOTECHNOLOGY, MPCBT1020

BIOPROCESS AND BIOSEPARATION TECHNOLOGY

Time: 3 Hours

Max Marks : 70

The figures in the right hand margin indicate marks.

PART-A

(10 X 2=20 MARKS)

1. Answer the following questions.

- What is the importance of a process flow in bioprocess?
- Explain continuous Fermentations
- What are structured models?
- What is meant by 'Balanced growth' and Unbalanced growth
- What are the types of product formations?
- Mention three main classes of sensor
- Name any two mechanical methods for cell disruption.
- What is principle of alkali treatment?
- Short notes on pretreatment of culture broth before purification
- Define Retention time and volume

PART-B

(5 X 10=50 MARKS)

Answer any five questions from the following.

- (a) Write a short note on the key physical and chemical parameters control during fermentation
(b) Illustrate in detail about 'Models of microbial Product formation'
- a) Discuss the design and working principle of rotary drum filtration system
b) A 30-ml sample of broth from a rifamycin B fermentation is filtered in the laboratory on a 3 cm² filter at a pressure drop of 3.45 x 10⁴ N/m². The filtration time is 4.5 min. Previous studies have shown that filter cake of *Streptomyces mediterraneensis* is significantly compressible with s = 0.5. If 500 litres broth from a pilot-scale fermenter must be filtered in 1hour, what size is required if the pressure drop is: 6.86 x 10⁴ N/m²
- (a) Describe in detail Reverse phase chromatography
(b) Explain the general description of chromatography.
- (a) Write a short note of types of adsorption and factors affecting adsorption?
(b) Describe the cell disruption for product release by chemical methods with suitable examples.
- (a) Describe in detail liquid- liquid extraction.
(b) Discuss protein precipitation
- Described in detail about the working principle of
 - Adsorption chromatography and
 - Affinity chromatography

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