

FINAL EXAMINATION

FERMENTATION AND DOWN STREAM PROCESSING

INSTRUCTION TO STUDENTS: ATTEMPT ALL QUESTIONS. TIME 3 HOURS

PART A

1. Name one cationic and anionic detergent used for cell disruption.
2. What is filter aid?
3. Define buoyant force.
4. Define isopycnic sedimentation.
5. Define adsorption.
6. Give the Freundlich equation.
7. Define retention ratio.
8. Define Partition co-efficient.
9. What is lyophilisation?
10. Define first falling-rate period.

PART B

Q.1: Which of the following is an upstream process

- a) Media formulation.
- b) Product recovery.
- c) Product purification.
- d) Cell lysis

Q.2: Which of the following is a downstream process

- a) Screening.
- b) Product recovery
- c) sterilization of media
- d) Inoculum preparation

Q.3: Cell lysis becomes an important operation if the product is

- a) Extra cellular
- b) Heat labile
- c) Toxic
- d) Intracellular

Q.4: Which of the following is true in case of extraction of any fermentation product

- a) it should occupy less steps and take less time
- b) it should occupy more steps and take long time
- c) it should occupy less steps and take long time
- d) it should occupy more steps and less time

Q.5: Which of the following factor increase the difficulties of products recovery

- a) pH of the medium
- b) only cell fragments,
- c) Cell fragments, soluble and insoluble medium components

d) only insoluble medium components

Q.6: Many operations which are standard in the laboratory become

a) uneconomic at production level

b) always economic at production level

c) mostly economic at production level

d) time consuming at production level

Q.7: What is the percent range of variation in recovery costs of microbial products with respect to the total manufacturing costs?

a) 50% - 55%

b) 0% - 20%

c) 5% - 7%

d) 15% - 75%

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Q.9: Precipitation is done by

- a) PEG(polyethylene glycol)
- b) Triazine dyes
- c) Ammonium and sodium sulphate
- d) All of the above

Q.10: If the product formed is extracellular then the method which is not used is

- a) Reverse osmosis
- b) Ultra filtration
- c) Chromatography
- d) Freeze thawing