

Sardar Patel University

M. Sc. Integrated Biotechnology, Tenth Semester Examination

Wednesday, 20-03-2019

PS10CIGIB2: Downstream Processing

TIME: 10:00 am to 1:00 pm

Marks: 70

- Q.1 Attempt the followings 08
- 1 The choice of filtration process is not based on _____
 - a. Properties of solids
 - b. Mode of operation
 - c. Solid to liquid ratio
 - d. Temperature
 - 2 Podbielnaik extractor is used in _____
 - a. Cell disruption
 - b. Product finishing
 - c. Solvent extraction
 - d. Cell separation
 - 3 An ion exchange resin is composed of _____
 - a. Polymeric network
 - b. Ionic functional groups
 - c. Counter ions
 - d. all of these
 - 4 In gel filtration column, _____
 - a. Smaller molecules enter the bead more readily
 - b. Larger molecules elute first
 - c. a & b
 - d. None of these
 - 5 In which of the technique, DEAE is used as most common resins
 - a. Affinity Chromatography
 - b. Ion-exchange chromatography
 - c. Hydrophobic Interaction Chromatography
 - d. Size-exclusion chromatography
 - 6 To elute target proteins from an affinity chromatography matrix which of the following conditions would be the most appropriate
 - a. Low salt concentration
 - b. High salt concentration
 - c. adding a soluble ligand which competes with the affinity ligand for binding to the column
 - d. Just keep washing buffer through the column, isocratic column
 - 7 In which of the drier, the material does not directly come into contact with the heating surfaces, instead, it is atomized into small droplets
 - a. Freeze drier
 - b. Counter-current spray drier
 - c. Fluidized bed drier
 - d. None
 - 8 An isocratic illusion in HPLC is one in which composition of the solvent _____
 - a. Remain Constant
 - b. Change in series of step
 - c. Change continuously
 - d. all of these

Q.2 Answer in brief (Any seven) 14

- 1 Describe the role of filter aid in filtration with suitable example.
- 2 How reverse osmosis process can be useful for product recovery.
- 3 Draw a labeled diagram of solid bowl scroll centrifuge.
- 4 What is two phase aqueous extraction system? Give its two examples.

(1)

(P.T.O)

- 5 Which kind of stationary phase is used in reverse phase chromatography & give suitable examples.
- 6 What are the benefits of affinity chromatography in protein purification?
- 7 Which kind of dryers will be effective for heat sensitive materials & why?
- 8 Explain the use of enzymes in cell disruption process.
- 9 Enlist the differences b/w batch and continuous distillation plant.
- Q.3 A Give an account on batch filters. 06
B Write note on disc bowl and multichambered centrifuge 06
OR
B Write a note on: 06
1) Tubular bowl centrifuge
2) Scrapping mechanisms for rotary drum vacuum filter
- Q.4 A Write in detail about chemical methods of cell disruption 06
B Write an exhaustive note on super critical fluids. 06
OR
B Define the difference b/w co-current and counter-current extraction. 06
Explain centrifugal counter current solvent extraction in detail.
- Q.5 A Give an explanatory note on performance criteria of a gradient system of HPLC. 06
B Adsorption chromatography is utilized as the most common chromatography method of purification- Justify. 06
OR
B Affinity chromatography is significant chromatography method in terms of protein purification: Comment. 06
- Q.6 A Enlist various methods of citric acid recovery and discuss solvent extraction process of citric acid recovery. 06
B Discuss types of electrodialysis process on the basis of their principle. 06
OR
B Write a note on drying and crystallization. 06

— X —
(2)