

SC

[A-30]

SEAT No. _____

SARDAR PATEL UNIVERSITY
M. Sc. Integrated Biotechnology (IG- BT) 10th Semester
Theory Examination - April 2018
PS10CIGIB2 – Downstream Processing
11th April 2018 (Wednesday), 10:00 am to 1:00 pm

Maximum Marks: 70

Note: (1) All Questions are Compulsory. (2) Figures on the right indicate marks.

Q.1 Attempt the followings 08

- 1 _____ kind of batch filter is also known as metafilter.
a. Vertical metal-leaf filter b. Horizontal metal-leaf filter
c. Stacked-disc filter d. Flate and Frame filter
- 2 Which of the following flocculating agents are most common in fermentation industry
a. Ammonium salts b. Organic Solvents
c. High Molecular weight polymers d. Polyelectrolytes
- 3 Following centrifuge has lowest bowl capacity with highest output
a. The Disc Bowl Centrifuge b. Solid Bowl Scroll centrifuge
c. Multichamber centrifuge d. The Tubular bowl centrifuge
- 4 _____ can be used to transfer salts from a lower concentration to a higher concentration and can be used either to add or remove salts.
a. Electrosalting b. Desalting
c. Electrodiffusion d. Electrodialysis
- 5 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
- 6 In liquid-liquid extraction process, final choice of the solvent depends on _____ value.
a. Dielectric Constant (D) b. Electrostatic Constant (C)
c. Partition Co-efficient (K) d. None of the above
- 7 In counter-current extractor, at low pH partition coefficient is in favour of _____ and at neutral pH, partition coefficient is in favour of _____.
a. Organic & aqueous b. Organic & aqueous
c. Inorganic & aqueous d. None
- 8 In Ion exchange chromatography, to ensure adequate binding of protein to the resin, the starting buffer pH should be at least _____.
a. one pH unit above b. below the pI of the protein
c. both (a & b) d. a or b

(P.T.O.)

Q.2	Answer in brief (Any seven)	14
	1 Explain merits of tangential filtration.	
	2 Derive Darcy's equation of filtration process.	
	3 Draw a labeled diagram of solid bowl scroll centrifuge.	
	4 Enlist various combinations of hydrophilic polymers for two phase aqueous extraction system.	
	5 Which kind of stationary phase is used in reverse phase chromatography & give suitable examples.	
	6 Draw labeled diagram of continuous distillation plant.	
	7 Which kind of dryers will be effective for drying of heat sensitive materials & why?	
	8 Give diagrammatic representation of counter current and co current flow extractor.	
	9 Give two examples of cation exchangers.	
Q.3 A	Give an account on batch filters.	06
B	Write a note on disc bowl centrifuge with suitable diagram	06
	OR	
B	Write a note on: 1) Multichamber centrifuge 2) Rotary vacuum filters	06
Q.4 A	Enlist various physical methods of cell disruption. Explain liquid shear & ultrasonication in detail.	06
B	Write a note on: Two-phase aqueous extraction	06
	OR	
B	Explain the mechanism of Podbielniak centrifugal extractor.	06
Q.5 A	Affinity chromatography is one of the significant chromatography methods in terms of protein purification : Justify	06
B	Give an explanatory note on performance criteria of a gradient system of HPLC.	06
	OR	
B	Discuss important variables in the choice of a column packing material in Gel permeation chromatography.	06
Q.6 A	Enlist various recovery methods of citric acid and discuss the most common method of citric acid recovery in detail.	06
B	Discuss types of dryers used for drying final product.	06
	OR	
B	Discuss the role of electrodialysis process in product recovery.	06