Sub Code: RBT702

Paper Id: 154730 Roll No: | | | | | | | | | | | | | |

BTECH
(SEM 7) THEORY EXAMINATION 2019-20
BIOSEPERATION & DSP

Time: 3 Hours ***Total Marks: 70***

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 7 = 14

a.	Give the main characteristics of bioproducts
b.	Name one cationic and one anionic detergents for cell disruption
c.	What is filter aid
d.	Define adsorption
e.	Define Partition coefficient
f.	Define crystallization
g.	How monoclonal antibodies are synthesized

SECTION B

2. Attempt any *three* of the following: 7 x 3 = 21

a.	What is cell disruption? Explain in detail the various mechanical and chemical methods employed in cell disruption.
b.	What are the various steps in DSP? Explain them in detail with a neat schematic diagram.
c.	Explain in detail: a) Hydrophobic interaction chromatography b) GC-MS
d.	Briefly describe the type of centrifugation used in fermentation industries
e.	Explain in detail about supercritical extraction.

SECTION C

3. Attempt any *one* part of the following: 7 x 1 = 7

(a)	Give the basic principle of fixed bed adsorption. Discuss adsorption isotherm
(b)	Briefly explain the commercial importance of ethanol

4. Attempt any *one* part of the following: 7 x 1 = 7

(a)	Discuss the principle of aqueous two-phase partitioning of proteins. Add a note on affinity partitioning.
(b)	Fermented broth is filtered under constant pressure of recovery of protease. A pilot scale filter is used to measure filtration properties. The filter area is 0.25 m2 , the pressure drop is 360mmHg and the filtrate viscosity is 4cP. The cell suspension deposits 22g cake/Lit of filtrate. The following data are obtained.

Time(mint)	2	3	6	10	15	20
Filtrate vol (Lit)	10.8	12.1	18.0	21.8	28.4	32.0

a) Determine the specific cake resistance and filtrate medium resistance.
b) What size filter is required to process 4000lit cell suspension in 30min at a pressure of 360 mmHg?

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5. Attempt any *one* part of the following: 7 x 1 = 7

(a)	Describe the design and working principle of rotary drum vacuum filtration
(b)	Explain design and configuration of membrane separation equipments and its application.

6. Attempt any *one* part of the following: 7 x 1 = 7

(a)	Explain how LC-MS is used in the purification of bioproducts.
(b)	Give the commercial importance of Vitamin B12

7. Attempt any *one* part of the following: 7 x 1 = 7

(a)	What are the characteristics of fermentation broth?
(b)	Explain in detail the methods of precipitation with salts.