Reg. No. | | | | | | | | |

M.E. / M.TECH. DEGREE EXAMINATIONS, MAY 2019
Second Semester
BY18201 – BIOSEPARATION TECHNOLOGY
(*Biotechnology*)
(Regulation 2018)

Time: Three Hours   Maximum : 100 Marks

Answer **ALL** questions

PART A - (10 X 2 = 20 Marks)

1. List the characteristics of biomolecules.

2. List the factors associated with the cost of separation of bioproducts.

3. What is osmotic shock?

4. Compare the mechanism of cell disruption for a gram positive bacteria and gram negative bacteria.

5. What do you mean by tangential flow filtration?

6. Write a note on concentration polarization.

7. Define distribution coefficient?

8. Write the principle of hydrophobic interaction chromatography.

9. Define the term heterogeneous nucleation.

10. List the applications of spray drying.

PART B - (5 X16 = 80 Marks)

11. (a) (i)   Discuss the basis of separation in bioseparation processes.   **(8)**

       (ii) What is the RIPP scheme? Discuss.   **(8)**

                                          (OR)

    (b) What are the characteristics of biological materials? Discuss the problems **(16)**
         encountered during recovery and possibilities to overcome these difficulties.

12. (a) Comment on the principle, working, applications and advantages of **(16)**
         microfiltration processes.

                                          (OR)

    (b) (i)   Explain the principle and working of a homogenizer.   **(8)**

(ii) Explain the principle and working of a Tubular bowl centrifuge. **(8)**

13. (a) Discuss in detail the theoretical principles and applications of Aqueous two phase extraction. **(16)**

(OR)

(b) Comment on the principle, working, applications and advantages of ultrafiltration processes. **(16)**

14. (a) What is metal affinity chromatography? Discuss its applications. **(16)**

(OR)

(b) The following data apply to a liquid chromatographic column: **(16)**

Column length 25.7; Flow rate 0.313 mL/min.

A chromatogram of a mixture of A, B, C, and D resulted in the following data:

	Retention time	Width of peak base
Nonretained	3.1	-
A	5.4	0.41
B	13.3	1.07
C	14.1	1.16
D	21.6	1.72

Calculate

    i.   The number of plates from each peak.
    ii.   The plate height for the column.
    iii.   The retention factor
    iv.   The distribution constant
    v.   Resolution
    vi.   The Selectivity factor

15. (a) (i) What is product polishing? Write a note on freeze Drying, its applications and advantages. **(8)**

    (ii) What is the significance of crystallization? What are the types of crystallization? **(8)**

(OR)

(b) Describe the steps involved in downstream processing of Aspartic acid, with a case study. **(16)**