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**B.E. / B.TECH. DEGREE EXAMINATIONS, DEC 2019**

Seventh Semester

**BT16702 – DOWNSTREAM PROCESSING***(Biotechnology)***(Regulation 2016)****Time: Three Hours****Maximum : 100 Marks**Answer **ALL** questions**PART A - (10 X 2 = 20 Marks)**

	<b>CO</b>	<b>RBT</b>
1. List the basis of separation of biomolecules.	1	U
2. Why are detergents not preferred for cell disruption?	1	U
3. What are filter aids?	2	R
4. Differentiate a fixed angle and swinging bucket centrifuge.	2	U
5. What is the significance of tie line?	3	U
6. Give any examples of chaotropic salts .	3	R
7. What is meant by retention time in a chromatographic column?	3	U
8. What do you mean by HETP in a chromatographic column?	3	U
9. What is freeze drying?	4	R
10. Define primary nucleation.	4	R

**PART B - (5 X16 = 80 Marks)**

11. (a) (i) Explain the characteristics of biomolecules in detail (8) 1 AN  
(ii) Describe in detail the pretreatment and stabilization of bioproducts. (8) 1 AP

**(OR)**

- (b) Explain in detail the mechanical and non-mechanical methods of cell disruption. (16) 1 AN
12. (a) (i) Describe the design and working principle of rotary drum vacuum filtration. (8) 2 E  
(ii) Write a note on microfiltration. (8) 2 AN

**(OR)**

(b) List the different types of centrifuges. Explain in detail the design and working of a tubular bowl centrifuge. **(16) 2 AN**

13. (a) (i) Discuss in detail aqueous two-phase partitioning of proteins. **(8) 2 AN**  
(ii) What is Ultrafiltration? How is it useful in Bioseperation? **(8) 2 AN**

**(OR)**

(b) Explain in detail the various techniques of precipitation used in isolation of protein. **(16) 2 AP**

14. (a) Give an account on the principle and applications of reverse phase chromatography. **(8) 3 AN**

**(OR)**

(b) Give an account on the principle and applications of affinity chromatography. **(16) 3 AN**

15. (a) (i) Explain in detail the principle of freeze drying. **(8) 4 AP**  
(ii) List the applications of spray drying. **(8) 4 AP**

**(OR)**

(b) How is the process of crystallization carried out? Enumerate on its importance in bioproducts. **(16) 4 E**