

Reg. No.

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

Fifth Semester

**BT16503 – MASS TRANSFER OPERATION***(Biotechnology)***(Regulation 2016)****Time: Three Hours****Maximum : 100 Marks**

Answer ALL questions

**PART A - (10 X 2 = 20 Marks)**

	CO	RBT
1. Define molecular diffusion.	1	R
2. State Fick's law of diffusion	1	R
3. Define gas absorption.	3	R
4. Write a note on pressure drop in packed towers for absorption.	3	R
5. Define total reflux.	2	R
6. What is HETP.	2	R
7. What are the various factors which limits the rate of Solid-Liquid extraction?	3	U
8. What are the factors depends on leaching action?	3	U
9. Distinguish between physical adsorption and chemisorption.	1	R
10. Define the term free moisture content of solid.	1	R

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

11. (a) Discuss in detail about various theories of mass transfer. (16) 1 U

**(OR)**

- (b) Explain briefly the Analogies and their usefulness in mass transfer studies. (16) 1 R

12. (a) Explain in detail about the various types of industrial absorbers with neat sketch. (16) 3 R

**(OR)**

- (b) Explain in detail about choice of solvent used for absorption and absorption with chemical reaction. (16) 3 R

13. (a) Explain the procedure to determine the minimum number of theoretical plates by Ponchon Savarit method. (16) 2 R

**(OR)**

- (b) What are the various types of distillation methods? explain with neat sketch. (16) 2 U

14. (a) Explain T-x-y diagram for a normal binary mixture system and distinguish minimum boiling azeotrope and maximum boiling azeotrope. (16) 3 R

**(OR)**

- (b) Explain with neat sketch industrial extraction equipments. (16) 3 U

15. (a) Explain in detail about various types of batch and continuous dryers with neat sketch. (16) 2 U

**(OR)**

- (b) Give a brief note on various types of batch and fixed bed adsorption equipments available for adsorption of a solute from gaseous and liquid stream with neat sketch. (16) 3 R