

R09

Code No: 54047

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech II Year II Semester Examinations, April - 2018

MASS TRANSFER OPERATIONS

(Biotechnology)

Time: 3 hours

Max. Marks: 75

Answer any five questions
All questions carry equal marks

- 1.a) State and derive Fick's law of diffusion.
- b) Write in detail about diffusion in biological gels. [7+8]
2. What is the significance of convective mass transfer (k_L)? How of K_L is evaluated using Sherwood number, Stanton number and Schmidt number? [15]
3. Explain Mc-Cabe-Thiele method for the determination of number of stages for distillation. Derive the operating line equations for rectifying, stripping and feed line. [15]
- 4.a) What are the various factors to be considered for the choice of solvent for extraction operations?
- b) Write briefly about multi stage counter current extraction. [8+7]
- 5.a) Write the principle and process of crystallization. Discuss how it is different from precipitation.
- b) Write applications of Freundlich equation to single and multistage adsorption. [8+7]
- 6.a) What is continuous drying? Write the equations of material and energy balance of continuous drier.
- b) Explain briefly about the working of a Rotary dryer with neat diagram. [9+6]
- 7.a) Write a brief note on Reverse osmosis and its applications.
- b) What is Microfiltration and explain how is it useful in bioseperation? [8+7]
8. Write short notes on:
 - a) Oxygen mass transfer in production of Penciline.
 - b) Distillation of alcohol from fermentation broth. [8+7]

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