GUJARAT TECHNOLOGICAL UNIVERSITY BE - SEMESTER-V • EXAMINATION – SUMMER • 2015			
	Subject Code: 153502 Date: 05-05-20 Subject Name: Basics of Mass Transfer		
	Tin	ne: 02:30 pm to 05:00 pm ructions: 1. Attempt all questions. 2. Make suitable assumptions wherever necessary. 3. Figures to the right indicate full marks.	
Q.1	(a) (b) (c)	Define the following terms: Humidity, percentage relative humidity, humid heat. Write Henry's law, Dalton's law, Raoult's law and Fick's law of diffusion. Derive an integrated equation to compute the molar flux of gas A diffusing through gas B in equimolar counter diffusion.	03 04 07
Q.2	(a) (b)	Describe the process of binary distillation with the help of a T-xy diagram. With a neat sketch of continuous fractionating distillation column explain relative volatility, reflux and q-line. OR	07 07
	(b)	Derive a relation between individual and overall mass transfer coefficients according to two film theory.	07
Q.3	(a)	Draw the neat sketch of agitated vessel for gas absorption and write its construction and functioning.	07
	(b)	Explain the working principle of a rotary drier. Cite any two industrial application of rotary drier. OR	07
	(a) (b)	With neat sketch explain construction and working of vacuum crystallizer. With the help of neat diagrams describe horizontal tube and vertical tube natural circulation evaporators.	07 07
Q.4	(a) (b)	Describe Batch distillation with the help of a neat diagram. Define liquid-liquid extraction. Explain choice of solvent for extraction. OR	07 07
	(a) (b)	With neat sketch explain construction and working of Oslo cooling crystallizer. Write principle of membrane separation. Explain the types of membrane in detail.	07 07
Q.5	(a) (b)	Explain the construction and working of a tray drier with a neat diagram. Explain the mechanism of crystallization process.	07 07

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Differentiate between random and regular packing arrangement.

them in detail.

(a) State the different types of cooling towers and discuss the working of any one of 07

(b) What are the different types of packing material used in packed tower? 07