TY-Chem

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Mid Semester Examination – Oct 2019

Course: B. Tech in - Chemical **Sem: III**

Subject Name: Mass Transfer Operation-I **Subject Code: BTCHC 502**

Max Marks: 20 **Date:-** 24/09/2019 **Duration:- 1 Hr.**

Instructions to the Students:

1. All questions are compulsory.
5. Question one are compulsory.
6. Solve any two from question 2 and solve any one from question 3.
7. Assume suitable data wherever required.

Q. 1	**Attempt following Questions.**	**(Level/CO)**	Marks
	1. Ordinary diffusion process is also called _____ diffusion. A) pressure b) thermal c) concentration d) forced	**Evaluation**	6
	2. Schmidt number is given by-----a) $\frac{\mu}{\rho D_{AB}}$ b) Re.Pe c) Sh x Pe d) Re/Pe	**Application**	
	3. The reciprocal of stripping factor is termed as a) selectivity index b) relative volatility c) absorption factor d) Murphree efficiency	**Analysis**	
	4. (N_{Re} . N_{Sc}) is termed in mass transfer operation as the _____ number a) Stanton b) Sherwood c) Peclet d) none of these	**Remember**	
	5. The partial pressure distribution of an ideal gas diffusing through another stagnant ideal gas at steady state follows a/an _____ law a) exponential b) parabolic c) linear d) cubic	**Understand**	
	6. Mass transfer co-efficient (K) and diffusivity (D) are related according to film theory as a) $K \propto D$ b) $K \propto D^{0.5}$ c) $K \propto D^{1.5}$ d) $K \propto D^2$	**Understand**	
Q. 2	**Solve Any Two of the following.**		3 X 2
(A)	What is process to Choose solvent for Absorption operation?	**Remember**	
(B)	Derive $J_A = -J_B$	**Understand**	
(C)	Explain term Cascade with their types.	**Application**	
Q. 3	**Solve Any One of the following.**		8
(A)	Derive Material Balance Equation for countercurrent flow Absorption Operation	**Application**	
(B)	Oxygen (A) is diffusing through carbon monoxide (B) under steady state conditions with carbon monoxide non diffusing. The total pressure is $1 * 10^5$ N/m^2 and temperature 0°C. The partial pressure of oxygen at two planes 2 mm apart is respectively, 13000 and 6500 N/m^2. The diffusivity for the mixture is $1.87 * 10^{-5}$ m^2/s. Calculate the rate of diffusion of oxygen in Kmol/s through each square meter of two planes.	**Evaluation**	

***** End *****

CO - Qus. Mapping