

Total No. of Questions :6]

SEAT No. :

P63

[Total No. of Pages :2

Oct./TE/ Insem. - 182
T.E. (Chemical Engineering)
MASS TRANSFER - I
(2015 Pattern) (Semester - I)

Time : 1 Hour]

[Max. Marks :30

Instructions to the candidates:

- 1) Answer Q1 or Q2, Q3 or Q4, Q5 or Q6.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.
- 4) Assume suitable data, if necessary.

Q1) a) Explain the Design Principal for Mass Transfer operation. **[4]**

- b) A Oxygen (A) is diffusion through carbon Monoxide (B) under steady state condition with carbon monoxide is non diffusing. The total pressure is 1×10^5 and temp is 273K. The Partial pressure of oxygen at two planes 2.00 mm apart is, respectively 13000 and 6500N/m². The diffusivity of Mixture is 1.87×10^{-5} M²/sec. Calculate the rate of Diffusion of oxygen in kmol/sec through each square meter of each plane. **[6]**

OR

Q2) a) Derive the Equation for molar flux for steady state diffusion of one gas through a second stagnant gas. **[6]**

- b) Explain the Fick's Law of Diffusion. **[4]**

Q3) a) Establish the relation for local overall mass transfer coefficient in terms of local individual film mass transfer coefficients for each phase for gas-liquid interphase mass transfer operation. **[6]**

- b) Explain the Concept of Film Theory and Two Film Theory. **[4]**

OR

P.T.O.

Q4) a) Derive the equation for Operating Line Counter Current Operation, show the Line Graphically. [8]

b) What is Interphase? [2]

Q5) a) Explain the Gas Absorption Mechanism. [6]

b) Explain the Criteria for Selection of Solvent for gas absorption operation. [4]

OR

Q6) a) Explain equipment used for absorption along with different types of packing's. [6]

b) Explain the absorption factor 'A'. [4]

