

University of Mumbai
Examination 2020 under cluster

Program: BE Chemical Engineering

Curriculum Scheme: Revised 2016

Examination: Third Year Semester V

Course Code: CHC502

Course Name: Mass Transfer Operations- I

Time: 1 hour

Max. Marks: 50

For the students:- All Questions are compulsory and carry equal marks .

Q1.	Diffusion co-efficient in molecular diffusion is estimated by _____
Option A:	Daltons law
Option B:	Diffusion law
Option C:	Ficks law
Option D:	Raoult's Law
Q2.	Find the total flux for a particle A and B in a steady state if flux of A and B is 2.44 and 4.44 mol/sq.m sec.
Option A:	2
Option B:	4.88
Option C:	6.88
Option D:	8

Q3/	Estimate the mole fraction if concentration of A is 2 mol/cu.m and the total concentration is 5 mol/cu.m.
Option A:	0.2
Option B:	0.25
Option C:	0.4
Option D:	1
Q4.	Find J flux of A ($x_A = 0.5$) if the total N flux is 6 mol/sq.m sec and N flux of A is 3 mol/sq.m sec.
Option A:	0
Option B:	1
Option C:	2
Option D:	3
Q5	For the molecular diffusion of liquids, if the diffusing molecules having criteria of steady state diffusion of B over non diffusing A then the N flux of A is
Option A:	1
Option B:	0
Option C:	Negative
Option D:	Infinity

Q6.	The horizontal line in psychrometric chart joining the change of state of air represents
Option A:	humidification
Option B:	sensible cooling or heating
Option C:	sensible cooling or heating with humidification
Option D:	sensible cooling or heating with dehumidification
Q7.	What is the unit of mass transfer coefficient?
Option A:	m^2
Option B:	m/s
Option C:	m^2s
Option D:	m^2/s
Q8.	What do you mean by Sherwood number?
Option A:	Dimension mass transfer number
Option B:	Dimensionless mass transfer number
Option C:	Dimension momentum transfer number
Option D:	Dimensionless momentum transfer number
Q9.	Which of the following is true about rate of mass transfer in gas?
Option A:	$N_A = k_G (p_{A1} - p_{A2})$
Option B:	$N_A = k_G (c_{A1} - c_{A2})$

Option C:	$N_A = k_c (p_{A1} - p_{A2})$
Option D:	$N_A = k_c (c_{A1} - c_{A2})$
Ans:	
Q10.	Which of the following is present in turbulent flow mass transfer, because of which mass transfer is fast?
Option A:	Slow mass transfer
Option B:	Less mass transfer
Option C:	Molecular diffusion
Option D:	Eddy diffusion
Q11.	Humidification is the process of addition moisture in air at
Option A:	constant wet bulb temperature
Option B:	constant dry bulb temperature
Option C:	constant latent heat
Option D:	constant sensible heat
Q12.	The area of packing support should be -----

Option A:	Less than 50%
Option B:	Between 50% to 70 %.
Option C:	More than 70%
Option D:	At least 90%
Q13.	The higher difference in pressure inside the tray tower cause
Option A:	Flooding
Option B:	Loading
Option C:	Weeping
Option D:	Dumping
Q14.	Diameter of raschig rings used in packed tower in industry is normally around _____ inches.
Option A:	2
Option B:	8
Option C:	12
Option D:	6
Ans:	
Q15.	The equilibrium characteristics of the solubility of a gas in liquid helps to determine the
Option A:	Rate
Option B:	Concentration
Option C:	Time
Option D:	No existence of equilibrium characteristics

Q16.	For the Absorber design, the plotting with mole ratio helps to find the
Option A:	Slope of operating line
Option B:	Slope of equilibrium curve
Option C:	Minimum number of trays
Option D:	Maximum number of trays
Q17.	In counter current gas absorption, the concentrations are represented in mole ratio. The value of $(Y_1 - Y_2)/(X_1 - X_2) = 2$. Find the slope of the operating line.
Option A:	1
Option B:	2
Option C:	3
Option D:	Infinity
Ans:	
Q18.	Stripper= $(1/X)$, Find X?
Option A:	Condenser
Option B:	Reboiler
Option C:	Absorber
Option D:	Sprayer
Q19.	Falling rate period of the batch drying curve = _____ + _____
Option A:	Internal movement, unsaturated surface drying
Option B:	Internal movement, saturated surface drying

Option C:	External movement, unsaturated surface drying
Option D:	External movement, saturated surface drying
Q20.	Find the region if the final and the initial moisture content are 40% and 30% (Dry basis) and the critical moisture content is 45%
Option A:	Constant rate
Option B:	Falling rate
Option C:	Internal movement
Option D:	Surface diffusion
