

**University of Mumbai**  
**Examination 2020 under cluster PCOE**

Program: BE Chemical Engineering

Curriculum Scheme: Rev2012

Examination: Third Year, Semester VI

Course Code: CHC602 and Course Name: Mass Transfer operation II

Time: 1 hour

Max. Marks: 50

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

Q1.	For distillation to be achieved, relative volatility should be
Option A:	1
Option B:	>1
Option C:	0
Option D:	<1
Q2.	Rayleigh's equation is applicable to----- distillation.
Option A:	Simple Distillation
Option B:	Steam distillation
Option C:	Extractive distillation
Option D:	Flash Distillation
Q3.	In a binary distillation column, if the feed contains 40 mole% vapour, the q line will have a slope of
Option A:	1.5
Option B:	-0.6
Option C:	0.6
Option D:	-1.5
Q4.	The reflux to a distillation column is 100 moles/h when the overhead product rate is 50 moles/h. The reflux ratio is
Option A:	50
Option B:	2
Option C:	0.5
Option D:	150
Q5.	In a plate type distillation column, an ideal plate is defined as one where
Option A:	the vapour and liquid leaving streams are in equilibrium
Option B:	the vapour and liquid entering streams are in equilibrium
Option C:	the vapour leaving stream is in equilibrium with the liquid entering streams
Option D:	the vapour entering stream is in equilibrium with the liquid leaving streams
Q6.	The slope of a feed line for a saturated vapor feed is-----
Option A:	0
Option B:	1
Option C:	infinity
Option D:	>1
Q7.	The tie lines in multistage ideal Crosscurrent Leaching are
Option A:	Vertical

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Option B:	Horizontal
Option C:	Line, positive slope
Option D:	Line, negative slope
Q8.	Overflow in LEACHING indicates
Option A:	Vaporization losses
Option B:	Product
Option C:	Waste
Option D:	Reflux
Q9.	A feed of 1000 kg/hr, containing 20 % of solute is mixed with 850 kg/hr of pure solvent. The mass fraction of solute in the resulting mixture is
Option A:	0.11
Option B:	0.32
Option C:	0.5
Option D:	0.9
Q10.	In minimum boiling azeotrope, total pressure curve
Option A:	passes through a maximum value
Option B:	passes through a minimum value
Option C:	continuously increases
Option D:	continuously decreases
Q11.	On the binodal solubility curve, the point where A-rich and B-rich curves merge is called as
Option A:	Tripple point
Option B:	Boiling point
Option C:	Dew point
Option D:	Plait point
Q12.	The mass fraction of solute in the extract phase is 0.69, its concentration on solute free basis is
Option A:	1
Option B:	2
Option C:	2.23
Option D:	1.26
Q13.	Sugar recovery from sugar beats is by
Option A:	Absorption
Option B:	Leaching
Option C:	Distillation
Option D:	Adsorption
Q14.	When the temperature is lowered and pressure is raised, the adsorption of a gas on a solid
Option A:	increases
Option B:	decreases
Option C:	remains unaffected

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Option D:	decreases then increases
Q15.	The nature of the crystallization process is governed by _____
Option A:	Thermodynamics
Option B:	Kinetic factors
Option C:	Thermodynamics and Kinetic factors
Option D:	Spontaneous
Q16.	Which of the following is not an application of transport in membranes?
Option A:	Microfiltration
Option B:	Reverse osmosis
Option C:	Dialysis
Option D:	Fractional distillation
Q17.	If the pressure drop( $\Delta P$ ) is 1000 units, the flux(J) is 50 units, what is the hydraulic membrane permeability?
Option A:	0.02
Option B:	0.04
Option C:	0.05
Option D:	0.06
Q18.	Which of the following is not true about membrane separations?
Option A:	Components which are passed through the membrane is called permeate
Option B:	Components which are not passed through are called retentate
Option C:	Non-porous membrane is never used
Option D:	Membrane separations require a driving force
Q19.	HTU for packed bed adsorber is
Option A:	Heat of transfer units
Option B:	Heat of Unit
Option C:	Height of temperature unit
Option D:	Height of transfer unit
Q20.	One of the most common solvent used in crystallization are
Option A:	Water
Option B:	Alcohol
Option C:	Normal saline
Option D:	Sulphuric acid
Q21.	Crystalline solids can be recognised by their
Option A:	low boiling point
Option B:	sharp melting point
Option C:	color
Option D:	moderate melting point
Q22.	The insoluble impurities from solution during crystallisation are removed by
Option A:	Drying
Option B:	Filtration

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Option C:	Heating
Option D:	Cooling
Q23.	Which one of the following characteristics is not correct for physical adsorption
Option A:	Adsorption on solids is reversible
Option B:	Adsorption increases with increase in temperature
Option C:	Adsorption is spontaneous
Option D:	Both enthalpy and entropy of adsorption are negative
Q24.	Larger value of the distribution coefficient
Option A:	More is the solvent required
Option B:	Less is the solvent
Option C:	There is no effect of the amount of solvent used
Option D:	Is not desired
Q25.	In the first stage of a three stage cross current liquid extraction, 100 kg of feed solution containing 15 % weight of solute was contacted with 75 kg of fresh solvent. if the solvent is completely immiscible with the feed solution, the slope of the operating line is
Option A:	1.13
Option B:	-1.13
Option C:	2.3
Option D:	-2.3