Dr.BATU, Lonere
Branch:Diploma in Chemical Engg
Year : III (New Pattern , 70 Marks Sem)
Subject :Mass Transfer Operation
Subject Code: DCH3202
No of questions: 150

Id	**1**
Question	The process of transfer of mass as a result of the concentration difference of a component/species in a mixture or two phases is called_____.
A	Mass transfer
B	Heat transfer
C	Momentum transfer
D	None of the above
Answer	
Marks	2
Unit	1

Id	**2**
Question	Which among the following is always true for mass transfer to occur?
A	Difference in concentration
B	Difference in temperature
C	Difference in pressure
D	Difference in chemical potential
Answer	
Marks	2
Unit	1

Id	**3**
Question	For what kind of mixtures $D_{AB}=D_{BA}$ holds?
A	Real
B	Ideal
C	Both real and ideal
D	This relation is never true.
Answer	
Marks	2
Unit	1

Id	**4**
Question	Mass transfer co-efficient of liquid is _____.
A	Affected more by temperature
B	Affected less by temperature
C	Not affected by temperature
D	None of these
Answer	
Marks	2
Unit	1

Id	**5**
Question	The ratio of a mass concentration of species A to the total mass density of mixture is known as _____.
A	Mass density
B	Concentration
C	Mole fraction
D	Mass fraction
Answer	
Marks	2
Unit	1

Id	**6**
Question	The ratio of number of moles of species A to the total number of moles of the mixture is known as _____.
A	Mole fraction
B	Partial pressure
C	Mass fraction
D	Mass density
Answer	
Marks	2
Unit	1

Id	**7**
Question	Vapor pressure is dependent on _____.
A	Temperature
B	Pressure
C	Volume
D	None of the above
Answer	
Marks	2
Unit	1

Id	**8**
Question	Fick's law is given by formula;
A	$J_A = - D_{AB} .dC_A / dz$
B	$J_A = D_{AB} .dC_A / dz$
C	$J_A = dC_A / dz$
D	$J_A = -2 D_{AB} .dC_A / dz$
Answer	
Marks	2
Unit	1

Id	**9**
Question	What is unit of diffusion coefficient?
A	m^2
B	s
C	m^2s
D	m^2/s
Answer	
Marks	2
Unit	1

Id	**10**
Question	What is the molecular weight of ammonia?
A	31
B	29
C	17
D	39
Answer	
Marks	2
Unit	1

Id	**11**
Question	On increasing the temperature of a liquid, its vapor pressure _____.
A	Decreases
B	Increases
C	Remains constant
D	None of mentioned
Answer	
Marks	2
Unit	1

Id	**12**
Question	The boiling point of a liquid is the temperature at which the vapor pressure _____.
A	Is equal to the internal pressure
B	Is equal to the external pressure
C	Is greater to the internal pressure
D	Is lesser to the internal pressure
Answer	
Marks	2
Unit	1

Id	**13**
Question	The normal boiling point of a liquid is the temperature at which it boils when the external pressure is _____.
A	1 atm
B	2 atm
C	3 atm
D	5 atm
Answer	
Marks	2
Unit	1

Id	**14**
Question	The _____ of a substance is the temperature at which it changes state from solid to liquid.
A	Melting point
B	Boiling point
C	Dew point
D	Bubble point
Answer	
Marks	2
Unit	1

Id	**15**
Question	The _____ is the point at which the first drop of a liquid mixture begins to vaporize.
A	Bubble point
B	Dew point
C	Melting point
D	Boiling point
Answer	
Marks	2
Unit	1

Id	**16**
Question	The _____ is the point at which the first drop of a gaseous mixture begins to condense.
A	Bubble point
B	Dew point
C	Melting point
D	Boiling point
Answer	
Marks	2
Unit	1

Id	**17**
Question	A solution contains 0.3 moles of solute A, 0.2 moles of B and 0.5 moles of C. What will be the mole fraction of A in the mixture?
A	0.3
B	0.2
C	0.5
D	1
Answer	
Marks	2
Unit	1

Id	**18**
Question	Mass transfer occurs in;
A	One and Opposite direction
B	With exchange of single component
C	With exchange of multiple component
D	All of the above
Answer	
Marks	2
Unit	1

Id	**19**
Question	Diffusion can occur in _____ materials.
A	Solid
B	Liquid
C	Gases
D	All
Answer	
Marks	2
Unit	1

Id	**20**
Question	Diffusion is the result of:
A	Random motion of particles
B	Concentration gradient
C	Kinetic energy of particles
D	All of the mentioned
Answer	
Marks	2
Unit	1

Id	**21**
Question	Concentration gradient refers to:
A	Change of concentration with respect to time
B	Change of concentration with respect to direction
C	Change of concentration with respect to temperature
D	None of the above
Answer	
Marks	2
Unit	1

Id	**22**
Question	When diffusion results from random motion of molecules it is called as_____.
A	Molar flux
B	Molecular diffusion
C	Mass flux
D	None of the above
Answer	
Marks	2
Unit	1

Id	**23**
Question	Rate of diffusion are most conveniently expressed in terms of _____.
A	Molar flux
B	Collision flux
C	Heat flux
D	None of the above
Answer	
Marks	2
Unit	1

Id	**24**
Question	_____ describes how particle under random motion tend to spread from one region of higher concentration to the region of lower concentration.
A	Dalton's law
B	Ideal gas law
C	Fick's law of diffusion
D	None of the above
Answer	
Marks	2
Unit	1

Id	**25**
Question	The diffusivity or diffusion coefficient for a gas can be measured experimentally using _____.
A	Mercury cell
B	Thermometer
C	Arnold Diffusion cell
D	None of the above
Answer	
Marks	2
Unit	1

Id	**26**
Question	The rate of mass transfer is higher in _____.
A	Gases
B	Solids
C	Liquids
D	All of the above
Answer	
Marks	2
Unit	1

Id	**27**
Question	The rate of mass transfer is very low in _____.
A	Gases
B	Solids
C	Liquids
D	All of the above
Answer	
Marks	2
Unit	1

Id	**28**
Question	For mass transfer to occur at-least _____ phases must come in intimate contact with each other.
A	Zero
B	One
C	Two
D	None of the above
Answer	
Marks	2
Unit	1

Id	**29**
Question	_____ is a gas- solid operation.
A	Leaching
B	Crystallization
C	Stripping
D	Adsorption
Answer	
Marks	2
Unit	1

Id	**30**
Question	_____ is a liquid-liquid operation.
A	Extraction
B	Adsorption
C	Stripping
D	None of the above
Answer	
Marks	2
Unit	1

Id	**31**
Question	_____ is a solid- vapor operation.
A	Sublimation
B	Stripping
C	Extraction
D	None of the above
Answer	
Marks	2
Unit	1

Id	**32**
Question	Which phenomenon must exist in all types of mass transfer?
A	Two or more phases must come in contact with each other.
B	Material should flow from one phase to another phase.
C	Both A and B
D	None of the above
Answer	
Marks	2
Unit	1

Id	**33**
Question	Rate of diffusion depends on _____.
A	Material and medium
B	Concentration
C	Speed
D	None of the above
Answer	
Marks	2
Unit	1

Id	**34**
Question	The average kinetic energy of the molecule is directly proportional to _____.
A	Dry bulb temperature
B	Absolute temperature
C	Wet bulb temperature
D	All of the above
Answer	
Marks	2
Unit	1

Id	**35**
Question	If the molecule suddenly changes the path after collision, it is referred as _____.
A	Random walk process
B	Collision process
C	Distillation
D	None of the above
Answer	
Marks	2
Unit	1

Id	**36**
Question	An _____ process is a change of a system, in which the temperature remains constant.
A	Adiabatic
B	Isochoric
C	isobaric
D	Isothermal
Answer	
Marks	2
Unit	1

Id	**37**
Question	For gases diffusivity is given by _____ correlation.
A	Gilliland
B	Maxwell
C	Heat and mass
D	None of the above
Answer	
Marks	2
Unit	1

Id	**39**
Question	Mass transfer coefficient is given by;
A	$K= D_{AB}+dz$
B	$K= D_{AB}/dz$
C	$K= D_{AB}*C_{avg}$
D	$K= D_{AB}*P$
Answer	
Marks	2
Unit	1

Id	**39**
Question	Which of the following term does not involve in ideal gas law?
A	Pressure
B	Volume
C	Temperature
D	Time
Answer	
Marks	2
Unit	1

Id	**40**
Question	The value of universal gas constant is _____.
A	8.2353
B	8.3143
C	8.5123
D	None of the above
Answer	
Marks	2
Unit	1

Id	**41**
Question	The equation of state of an ideal gas is given by;
A	PV=VRT
B	PV=KT
C	PV=nRT
D	all of the mentioned
Answer	
Marks	2
Unit	1

Id	**42**
Question	The _____ of a species A in a solution is the mass of species A per unit volume of the solution.
A	Molar concentration
B	Mass fraction
C	Mass concentration
D	None of the above
Answer	
Marks	2
Unit	1

Id	**43**
Question	The _____ of a species A in a solution is the number of moles of species A per unit volume of the solution.
A	Molar concentration
B	Mass fraction
C	Mass concentration
D	None of the above
Answer	
Marks	2
Unit	1

Id	**44**
Question	The _____ of a species A in a solution may be defined as the ratio of mass concentration of species A to the density of the solution.
A	Mass concentration
B	Molar concentration
C	Diffusion
D	Mass fraction
Answer	
Marks	2
Unit	1

Id	**45**
Question	The _____ of a species A is defined as the mass of species A that passes through a unit area per unit time.
A	Mass flux
B	Mole fraction
C	Concentration
D	None of the above
Answer	
Marks	2
Unit	1

Id	**46**
Question	_____ is defined as the moles of species that passes through a unit area per unit time.
A	Mass flux
B	Mass concentration
C	Molar concentration
D	Molar flux
Answer	
Marks	2
Unit	1

Id	**47**
Question	For steady state equimolar counter diffusion;
A	$N_A = - N_B$ = constant
B	$N_B = -N_A$ = constant
C	Both A and B
D	None of the above
Answer	
Marks	2
Unit	1

Id	**48**
Question	A mixture of benzene and toluene boils at 368 K under a pressure of 101.325 kPa. Determine the composition of the boiling liquid assuming that mixture obeys Raoult's law. At 368 K, the vapor pressure of benzene is 155.56 kPa and that of toluene is 63.98 kPa.
A	0.41
B	1
C	0
D	1.5
Answer	
Marks	2
Unit	1

Id	**49**
Question	The equation applicable for batch distillation is _____.
A	Fenske's equation
B	Wilke- Chan equation
C	Rayleigh equation
D	None of the above
Answer	
Marks	2
Unit	2

Id	**50**
Question	Distillation is possible only if the solution components are _____.
A	Volatile
B	Non- volatile
C	Cryogenic
D	None of the above
Answer	
Marks	2
Unit	2

Id	**51**
Question	In Distillation, separation is only possible when;
A	$\alpha = 1$
B	$\alpha > 1$
C	$\alpha < 1$
D	None of the above
Answer	
Marks	2
Unit	2

Id	**52**
Question	Vapor Liquid Equilibrium for binary system at constant pressure are given by;
A	The temperature- composition diagram
B	The equilibrium curve
C	Both A and B
D	None of the above
Answer	
Marks	2
Unit	2

Id	**53**
Question	_____ is given with respect to relative velocity of all components.
A	Molar flux
B	Mass fraction
C	Heat flux
D	All of the above
Answer	
Marks	2
Unit	2

Id	**54**
Question	When concentration changes with time it is;
A	Unsteady state
B	Steady state
C	Both A and B
D	None of the above
Answer	
Marks	2
Unit	2

Id	**55**
Question	The _____ of distillation column is determined by VLE data.
A	Height
B	Volume
C	Material of Construction
D	None of the above
Answer	
Marks	2
Unit	2

Id	**56**
Question	For an ideal solution, the partial vapor pressure of a component in solution is equal to the mole fraction of that component times its vapor pressure is _____.
A	Henry's law
B	Raoult's law
C	Dalton's law
D	Charle's law
Answer	
Marks	2
Unit	2

Id	**57**
Question	According to Dalton's law of partial pressure, the total pressure of a mixture of ideal gas is equal to;
A	Difference of the highest and lowest pressures
B	Product of partial pressure
C	Sum of partial pressure
D	None of the above
Answer	
Marks	2
Unit	2

Id	**58**
Question	The equilibrium in vapor- liquid system is governed by phase rule;
A	F= C-P+2
B	F= C+P+2
C	F= C-P-2
D	F= C+P-2
Answer	
Marks	2
Unit	2

Id	**59**
Question	The vapor pressure of n- heptane (A) and n- octane (B) are $P^{O}A$= 101.325 kPa and $P^{O}B$= 44.396 kPa and P= 101.325 kPa at a temperature of 98.4 ^{O}C. Compute the values of x and y using Raoult's law and Dalton's law?
A	x= 0.0 and y= 1.0
B	x= 1.0 and y= 0.0
C	x= 1.0 and y= 1.0
D	x= 0.0 and y= 0.0
Answer	
Marks	2
Unit	2

Id	**60**
Question	Simple distillation is a _____ process.
A	Batch
B	Continuous
C	Fractional
D	None of the above
Answer	
Marks	2
Unit	2

Id	**61**
Question	The process of distillation is used for the liquids having _____.
A	Difference in their boiling point
B	Difference in their melting point
C	Difference in their solubility
D	None of the above
Answer	
Marks	2
Unit	2

Id	**62**
Question	In plate column, packed column or spray column used for extraction, the phase inter-dispersion and counter-current flow are produced by the;
A	Force of gravity
B	Mechanical agitation
C	Temperature
D	All of the above
Answer	
Marks	2
Unit	2

Id	**63**
Question	The components A and B that has _____ can be separated by ordinary separation.
A	Same boiling point
B	Different boiling point
C	Less boiling point
D	None of the above
Answer	
Marks	2
Unit	2

Id	**64**
Question	_____ is a unit operation in which the constituents of a liquid mixture are separated using thermal energy.
A	Distillation
B	Crystallization
C	Absorption
D	None of these
Answer	
Marks	2
Unit	2

Id	**65**
Question	Consider a sugar solution[Sugar + Water]; on vaporization water only evaporate since sugar is _____.
A	Volatile
B	Non- volatile
C	Cryogenic
D	None of the above
Answer	
Marks	2
Unit	2

Id	**66**
Question	In a solution (A and B); The vapor pressure of A is 260 mmHg and B is 360 mmHg; Find the relative volatility?
A	0.72
B	1.38
C	2
D	3
Answer	
Marks	2
Unit	2

Id	**67**
Question	Calculate the partial pressure of oxygen in an oxygen-nitrogen mixture at 10 atm and temperature of 25^{o}C. The concentration of oxygen at 2 places are 20 and 10 volume % respectively.
A	P_{A1}= 2 atm and P_{A2}= 1 atm
B	P_{A1}= 4 atm and P_{A2}= 2 atm
C	P_{A1}= 1 atm and P_{A2}= 1 atm
D	P_{A1}= 2 atm and P_{A2}= 2 atm
Answer	
Marks	2
Unit	2

Id	**68**
Question	Consider an insoluble mixture A and B; Find the Total pressure of the system Vapor pressure of A= 50mmHg Vapor pressure of B= 100 mmHg
A	100
B	50
C	20
D	150
Answer	
Marks	2
Unit	2

Id	**69**
Question	The process of heating a liquid mixture to form vapors and then cooling the vapors to get pure component is called _____.
A	Sublimation
B	Crystallization
C	Chromatography
D	Distillation
Answer	
Marks	2
Unit	2

Id	**70**
Question	Porcelain pieces are put into the distillation flask to avoid _____.
A	Overheating
B	Uniform boiling
C	Bumping of the solution
D	None of the above
Answer	
Marks	2
Unit	2

Id	**71**
Question	The boiling point of chloroform is _____.
A	334 K
B	286 K
C	350 K
D	298 K
Answer	
Marks	2
Unit	2

Id	**72**
Question	Which of the following will vaporize faster?
A	Aniline
B	Kerosene
C	Water
D	Chloroform
Answer	
Marks	2
Unit	2

Id	**73**
Question	The distilled water is collected in _____.
A	Receiver
B	Condenser
C	Still
D	Adapter
Answer	
Marks	2
Unit	2

Id	**74**
Question	The residue in the round bottom flask is _____.
A	Volatile
B	Non- volatile
C	Both A and B
D	None of the above
Answer	
Marks	2
Unit	2

Id	**75**
Question	Crude oil can be fractionally distilled to produce _____.
A	Diesel
B	Petrol
C	Paraffin
D	All of the above
Answer	
Marks	2
Unit	2

Id	**76**
Question	For drinking, distilled water is _____.
A	Suitable
B	Not suitable
C	Poisonous
D	None of the above
Answer	
Marks	2
Unit	2

Id	**77**
Question	_____ is defined as the pressure exerted by a vapor in thermodynamic equilibrium with its condensed phases at a given temperature in a closed system.
A	Partial pressure
B	Vapor pressure
C	Total pressure
D	Absolute pressure
Answer	
Marks	2
Unit	2

Id	**78**
Question	The net effect of distillation is _____ the composition of more volatile component in vapor and less volatile component in liquid.
A	Increasing
B	Decreasing
C	Constant
D	None of the above
Answer	
Marks	2
Unit	2

Id	**79**
Question	Separation of benzene and toluene is an example of _____.
A	Extraction
B	Leaching
C	Drying
D	Distillation
Answer	
Marks	2
Unit	2

Id	**80**
Question	_____ refers to the absence of any tendency for a change to take place and thus represent an end point of any naturally occurring process.
A	End point
B	Drying
C	Equilibrium
D	None of the above
Answer	
Marks	2
Unit	2

Id	**81**
Question	A equilibrium/ ideal stage is one where the vapor leaving the stage is in equilibrium with the _____ leaving the same stage.
A	Gas
B	Solid
C	Liquid
D	None of the above
Answer	
Marks	2
Unit	2

Id	**82**
Question	The _____ describes the distribution of a liquid mixture between two existing liquid and vapor phases in equilibrium.
A	Rate of reaction
B	Temperature data
C	VLE data
D	None of the above
Answer	
Marks	2
Unit	2

Id	**83**
Question	The VLE data are generally given at;
A	Constant P or T
B	Constant V
C	Constant moles
D	None of the above
Answer	
Marks	2
Unit	2

Id	**84**
Question	_____ is defined as the ratio of partial pressure of component to the mole fraction of the same component in liquid phase.
A	Volatility
B	Flux
C	Area
D	Concentration
Answer	
Marks	2
Unit	2

Id	**85**
Question	Relative volatility of mixture of AB is defined as;
A	Ratio of volatility of A to volatility of B
B	Sum of volatility of A and B
C	Sum of vapor pressure of A and B
D	None of the above
Answer	
Marks	2
Unit	2

Id	**86**
Question	Relative volatility is denoted as ____.
A	R
B	β
C	λ
D	α
Answer	
Marks	2
Unit	2

Id	**87**
Question	_____ is the measure of separability by distillation.
A	Concentration
B	Pressure
C	Relative volatility
D	None of the above
Answer	
Marks	2
Unit	2

Id	**88**
Question	The vapor leaving the still is rich in _____.
A	More volatile component
B	Less volatile component
C	Non-volatile component
D	None of the above
Answer	
Marks	2
Unit	2

Id	**89**
Question	Boiling point of water is _____
A	373 K
B	300 K
C	273 K
D	100 K
Answer	
Marks	2
Unit	2

Id	**90**
Question	The equilibrium in vapor- liquid systems is governed by _____.
A	Time
B	Phase rule
C	System
D	None of the above
Answer	
Marks	2
Unit	2

Id	**91**
Question	In distillation there are _____ variables.
A	1
B	2
C	3
D	4
Answer	
Marks	2
Unit	2

Id	**92**
Question	The compositions of the vapor and liquid phases, that are in equilibrium are usually expressed in terms of _____ of the more volatile component in the respective phase.
A	Mole fraction
B	Vapor pressure
C	Temperature
D	None of the above
Answer	
Marks	2
Unit	2

Id	**93**
Question	According to Phase rule, F= C-P+2; P is
A	Partial pressure
B	Pressure
C	Phase
D	None of the above
Answer	
Marks	2
Unit	2

Id	**94**
Question	An equilibrium curve very close to the diagonal means the vapor phase composition is
A	Not much different from the liquid phase composition.
B	Different from the liquid phase composition.
C	Equilibrium curve is not close to diagonal.
D	None of the above
Answer	
Marks	2
Unit	2

Id	**95**
Question	The solutions which follow Raoult's law are _____.
A	non-ideal solutions
B	Ideal solutions
C	Both A and B
D	None of the above
Answer	
Marks	2
Unit	2

Id	**96**
Question	For an ideal system, volatility is equal to the _____ of the pure component.
A	Vapor pressure
B	Mole fraction
C	concentration
D	None of the above
Answer	
Marks	2
Unit	2

Id	**97**
Question	Relative volatility is the measure of the difference in _____ between two components.
A	Pressure
B	Concentration
C	Volatility
D	Time
Answer	
Marks	2
Unit	2

Id	**98**
Question	The part of the condensed liquid returned to the distillation unit is called _____.
A	Reflux
B	Extract
C	Solvent
D	None of the above
Answer	
Marks	2
Unit	2

Id	**99**
Question	The term rectification is commonly used in the ____ industry.
A	Alcohol
B	Plastic
C	Polymer
D	None of the above
Answer	
Marks	2
Unit	2

Id	**100**
Question	The term fractionation is commonly used in _____ industry.
A	Polymer
B	Petroleum
C	Plastic
D	None of the above
Answer	
Marks	2
Unit	2

Id	**101**
Question	_____ is a process in which a liquid mixture is heated to convert the most volatile component from the liquid mixture into vapor which is then condensed and collected as a product.
A	Drying
B	Extraction
C	Simple Distillation
D	None of the above
Answer	
Marks	2
Unit	2

Id	**102**
Question	In a simple distillation unit where F is Feed, D is Distillate and B as Bottom product, the overall Material balance, is given as;
A	F=BxD
B	F=B/D
C	F= B-D
D	F= B+D
Answer	
Marks	2
Unit	2

Id	**103**
Question	The below equation, holds well for? $\ln\frac{W_f}{W_0} = \int_{x_0}^{x_F} \frac{dx}{(y-x)}$
A	Flash distillation
B	Simple distillation
C	Multi-component distillation
D	Azeotropic distillation
Answer	
Marks	2
Unit	2

Id	**104**
Question	Batch distillation is also called as _____.
A	Simple distillation
B	Flash distillation
C	Azeotropic distillation
D	None of the above
Answer	
Marks	2
Unit	2

Id	**105**
Question	The opposite process of vaporization is called _____.
A	Drying
B	Sublimation
C	Condensation
D	None of the above
Answer	
Marks	2
Unit	2

Id	**106**
Question	Flash distillation is also called as _____.
A	Equilibrium distillation
B	Simple distillation
C	Batch distillation
D	None of the above
Answer	
Marks	2
Unit	2

Id	**107**
Question	Stages are also called as _____.
A	Trays
B	Flow regime
C	Initial plate
D	Cascades
Answer	
Marks	2
Unit	2

Id	**108**
Question	Flash distillation is carried out in _____ manner.
A	Continuous
B	Batch
C	Both A and B
D	None of the above
Answer	
Marks	2
Unit	2

Id	**109**
Question	More volatile liquid will have _____ vapor pressure.
A	Lower
B	Higher
C	Moderate
D	None of the above
Answer	
Marks	2
Unit	2

Id	**110**
Question	The vapor pressure of n- heptane (A) and n- octane (B) are 101.325 kPa and 44.396kPa respectively. The pressure over the system is 101.325 kPa. Calculate vapor- liquid composition (x,y)and relative volatility at 371.4 K using Raoult's law and Dalton's law.
A	x= 1.0 and y= 1.0 and α= 2.28
B	x= 1.0 and y= 0.0 and α= 1.00
C	x= 0.0 and y= 1.0 and α= 1.28
D	x= 0.0 and y= 0.0 and α= 1.28
Answer	
Marks	2
Unit	2

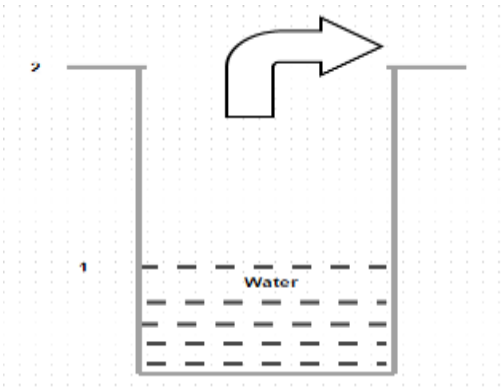
Id	**111**
Question	Which of the following is not separated through distillation process?
A	Acetone and water
B	Aniline and chloroform
C	Impurities in Sea water
D	Milk and water
Answer	
Marks	2
Unit	2

Id	**112**
Question	Fractional distillation is a process of separation of _____.
A	2 miscible liquids
B	2 immiscible liquids
C	1 miscible and 1 immiscible liquid
D	None of the above
Answer	
Marks	2
Unit	2

Id	**113**
Question	Fractional distillation is different from distillation because of the presence of _____.
A	Fractionating column
B	Condenser
C	Distillation flask
D	Conical flask
Answer	
Marks	2
Unit	2

Id	**114**
Question	In Azeotropic distillation _____ remains low.
A	Heat
B	Relative volatility
C	Time
D	None of the above
Answer	
Marks	2
Unit	2

Id	**115**
Question	The distilled water is collected in _____.
A	Receiver
B	Adapter
C	Condenser
D	Round bottom flask
Answer	
Marks	2
Unit	2

Id	**116**
Question	Given diagram shows diffusion of water vapor through air. Identify the correct statement 
A	The water evaporates and diffuses downward
B	The water does not evaporates but diffuses upward
C	The water evaporates and diffuses upward
D	The water does not evaporates but diffuses downward
Answer	
Marks	2
Unit	1

Id	**117**
Question	Methane diffuses at steady state through a tube containing helium. At point 1 the partial pressure of methane is 55kPa and at point 2 it is 15 kPa. The points 1 and 2 are 30mm apart. The total pressure is 101.3 kPa and temperature is 298K. Calculate the flux of methane at steady state equimolar counter diffusion. The diffusivity of methane is $6.75 \times 10^{-5} m^2/s$.
A	3.63×10^{-5} kmol/(m^2/s)
B	9.9×10^{5} kmol/(m^2/s)
C	6×10^{-5} kmol/(m^2/s)
D	3.63×10^{-5} kmol
Answer	
Marks	2
Unit	1

Id	**118**
Question	What is the representation of Distribution coefficient?
A	S
B	H
C	G
D	K
Answer	D
Marks	
Unit	3

Id	**119**
Question	The most common example of extraction is with the help of _____.
A	Ether
B	Alcohol
C	Benzene
D	chloroform
Answer	
Marks	2
Unit	3

Id	**120**
Question	Separation of brine solution into water and salt is _____.
A	Distillation
B	Extraction
C	Drying
D	None of the above
Answer	
Marks	2
Unit	3

Id	**121**
Question	_____ refers to an operation in which the constituents of a liquid mixture are separated by contacting it with a suitable insoluble liquid solvent.
A	Absorption
B	Crystallization
C	Drying
D	Liquid-liquid extraction
Answer	
Marks	2
Unit	3

Id	**122**
Question	In extraction _____ is used as a measure of degree of separation.
A	Relative volatility
B	Selectivity
C	Density
D	None of the above
Answer	
Marks	2
Unit	3

Id	**123**
Question	_____ is used to dissolve a soluble matter from its mixture with an insoluble solid.
A	Crystallization
B	Drying
C	Leaching
D	Distillation
Answer	
Marks	2
Unit	3

Id	**124**
Question	In liquid extraction _____ is added to the liquid mixture to be separated.
A	Solvent
B	Solute
C	Solution
D	None of the above
Answer	
Marks	2
Unit	3

Id	**125**
Question	In _____ phases are hard to mix and harder to separate.
A	Drying
B	Extraction
C	Distillation
D	None of the above
Answer	
Marks	2
Unit	3

Id	**126**
Question	Recovery of penicillin from the fermentation broth using butyl acetate is an example of _____.
A	Absorption
B	Distillation
C	Drying
D	Extraction
Answer	
Marks	2
Unit	3

Id	**127**
Question	In extraction, the solution which is to be extracted is called as ____.
A	Feed
B	Solvent
C	Raffinate
D	Extract
Answer	
Marks	2
Unit	3

Id	**128**
Question	In extraction, the liquid with which the feed is contacted for the extraction of solute is called as _____.
A	Feed
B	Solvent
C	Raffinate
D	Extract
Answer	
Marks	2
Unit	3

Id	**129**
Question	In extraction, the solvent lean, residual liquid solution from which solute is removed is called as _____.
A	Feed
B	Solvent
C	Raffinate
D	Extract
Answer	
Marks	2
Unit	3

Id	**130**
Question	The solvent- rich product of the operation, containing the extracted solute is called as _____.
A	Feed
B	Solvent
C	Raffinate
D	Extract
Answer	
Marks	2
Unit	3

Id	**131**
Question	In liquid-liquid extraction, when the solvent is partially miscible with original solvent, the solubility and equilibrium relations are shown on _____.
A	Triangular diagram
B	Boiling point diagram
C	Vapor Liquid Equilibrium data
D	None of the above.
Answer	
Marks	2
Unit	3

Id	**132**
Question	_____ is the point at which composition of the raffinate phase is equal to that of the extract phase.
A	Equilibrium
B	Plait point
C	Both A and B
D	None of the above
Answer	
Marks	2
Unit	3

Id	**133**
Question	The ratio of the concentration ratio of solute to feed solvent in extract phase to that in raffinate phase is called as _____.
A	Selectivity
B	Recoverability
C	Density
D	Distribution coefficient
Answer	
Marks	2
Unit	3

Id	**134**
Question	The selectivity is analogous to _____ in distillation.
A	Density
B	Relative volatility
C	Mole fraction
D	Mass fraction
Answer	
Marks	2
Unit	3

Id	**135**
Question	For extraction;
A	The distribution coefficient should have higher value (> 1) so that less solvent will be required.
B	The distribution coefficient should have lower value (< 1) so that less solvent will be required.
C	The distribution coefficient should be constant.
D	None of the above
Answer	
Marks	2
Unit	3

Id	**136**
Question	Which of the following factors should be considered while selecting a solvent for extraction?
A	The solvent should be stable chemically.
B	It should not be corrosive towards common material of construction.
C	The solvent should have a low viscosity, freezing point, vapor pressure for ease in handling and storage.
D	All of the above
Answer	
Marks	2
Unit	3

Id	**137**
Question	Solvent extraction is more effective when the extraction is repeated with:
A	Extra solvent
B	Large solvent
C	No solvent
D	Small solvent
Answer	
Marks	2
Unit	3

Id	**138**
Question	What is true about mixer settlers?
A	Two liquid phases mixed with impellers and separated by gravity induced separation.
B	Two liquid phases unmixed, and magnetic separation carried out
C	Two liquid phases are mixed by impellers, and separated using magnetic separation
D	Two liquid phases are heated to mix, and gravity induced separation is carried out
Answer	
Marks	2
Unit	3

Id	**139**
Question	Which is the simple and the oldest technique for solvent extraction?
A	Spray column
B	Packed column
C	Plate column
D	Decanter
Answer	
Marks	2
Unit	3

Id	**140**
Question	A_____ is the simplest of differential contactors.
A	Perforated plate
B	Mixer settlers
C	Spray tower
D	Packed tower
Answer	
Marks	2
Unit	3

Id	**141**
Question	Why are spray columns rarely used?
A	High cost
B	High efficiency
C	More size of equipment required
D	Due to axial dispersion
Answer	
Marks	2
Unit	3

Id	**142**
Question	_____ are not used to handle liquids containing dispersed solids as the solids present tend to collect in packing and cause channeling.
A	Perforated plate
B	Mixer settlers
C	Spray tower
D	Packed tower
Answer	
Marks	2
Unit	3

Id	**143**
Question	From the given list which is the most popular solvent?
A	Hexane
B	Cyclohexane
C	Water
D	Carbon tetra-chloride
Answer	
Marks	2
Unit	3

Id	**144**
Question	What is the use of ether layer?
A	To separate organic impurities
B	To separate inorganic impurities
C	To separate fibers
D	To separate solvent
Answer	
Marks	2
Unit	3

Id	**145**
Question	A mobile phase cannot be a :
A	Gas
B	Solid
C	Liquid
D	None of the above
Answer	
Marks	2
Unit	3

Id	**146**
Question	_____ columns are used for processing radio-active solutions in atomic energy work.
A	Pulsed
B	Spray
C	Pack
D	Tray
Answer	
Marks	2
Unit	3

Id	**147**
Question	A _____ pump is a common mechanically pulsing device.
A	Centrifugal
B	Reciprocating
C	Gravity
D	None of the above
Answer	
Marks	2
Unit	3

Id	**148**
Question	Picric acid is to be extracted with benzene from its solution. If the aqueous solution contains 0.2 mol of picric acid per liter, calculate the volume of benzene with which 1 liter of the solution must be extracted in order to form a benzene solution containing 0.02 mol of picric acid per liter. Also calculate the percent recovery of picric acid from the aqueous solution. $K = C_E / C_R = 0.505$ where, C_E = concentration of picric acid in benzene in mol/l. C_R = concentration of picric acid in water in mol/l.
A	50
B	60
C	80
D	100
Answer	
Marks	2
Unit	3

Id	**149**
Question	How does packing the column help?
A	Lessens the mass transfer
B	Increases the mass transfer by not breaking the large drops
C	Decreases the interfacial area
D	Increases the mass transfer by breaking the large droplets thus increasing interfacial area
Answer	
Marks	2
Unit	3

Id	**150**
Question	What type of agitator is rotating disk Contactor?
A	Mechanical rotating agitator
B	By moving plates
C	By hand
D	Gravity separation
Answer	
Marks	2
Unit	3