

Q=QUESTION A=ANSWER	question_description answer_description	question_explanation answer_explanation	question_type answer_isright	question_difficulty answer_position
Q	Ion exchange chromatography is based on _____		M	1
A	Electrical mobility of charged particles		0	1
A	electrostatic force of attraction		1	2
A	hydrphobic interactions		0	3
A	hydrophilic interaction		0	4
Q	Ion-exchange chromatography is used for the separation of _____		M	1
A	polar molecules		1	1
A	non-polar molecules		0	2
A	hydrphobic molecules		0	3
A	solid molecules		0	4
Q	The choice of the ion exchanger depends upon _____		M	1
A	the unstability of the test analytes		0	1
A	the relative molecular mass of the test analytes		1	2
A	the specific requirements of the Coagulation		0	3
A	the specific requirements of the mixing		0	4
Q	If gradient elution is to be used, the initial conditions chosen are such that the exchanger binds all the test analytes _____		M	1
A	throughout the column		0	1
A	at the top of the column		1	2
A	at the bottom of the column		0	3
A	at the periphery of the column		0	4

Q	_____ tend to give better resolution with less peak tailing in ion exchange chromatography	M		1
A	Continuous gradient elution		1	1
A	Isocratic elution		0	2
A	Both isocratic and gradient elution		0	3
A	neither isocratic nor gradient elution		0	4
Q	Matrices used for ion exchange chromatography include _____	M		1
A	polypropylene		0	1
A	sulphate		0	2
A	agarose		1	3
A	sucrose		0	4
Q	The degree of cross-linking of an exchanger _____ influences its capacity	M		1
A	does		1	1
A	does not		0	2
A	barely		0	3
A	sometimes		0	4
Q	Physisorption is _____	M		1
A	Exothermic and irreversible		0	1
A	Exothermic and reversible		1	2
A	Endothermic and irreversible		0	3
A	Endothermic and reversible		0	4
Q	_____ is commonly used to remove H <sub>2</sub> S from synthetic gas	M		1
A	ZnCl <sub>2</sub>		0	1
A	ZnO		1	2
A	ZnBr <sub>2</sub>		0	3
A	ZnSO <sub>4</sub>		0	4
Q	The anionic exchangers include _____	M		1

A	Diethylaminoethyl		0	1
A	Triethyl aminomethyl		0	2
A	Quarternary aminomethyl		0	3
A	Carboxymethyl		1	4
Q	What is the use of cross flow in plate and frame module?	M		1
A	Reduces fouling		1	1
A	Reduces loss		0	2
A	Reduces efficiency		0	3
A	Increases efficiency		0	4
Q	Removal of bacteria from cellular broths and fat removal process in the dairy industry falls in the category of	M		1
A	Microfiltration		1	1
A	Ultrafiltration		0	2
A	Nano-filtration		0	3
A	Reverse osmosis		0	4
Q	The flow rate through the membrane filter itself expressed as gallon per square foot per day is:	M		1
A	Permeate		0	1
A	Headloss		0	2
A	Flux		1	3
A	Velocity		0	4
Q	In dialysis, there is _____ pressure difference across the membrane	M		1
A	little or no		1	1
A	very high		0	2
A	moderately high		0	3
A	moderate		0	4
Q	In dead end filtration _____	M		1

A	the fluid flows perpendicular to the surface of the membrane		1	1
A	the fluid flows parallel to the surface of the membrane		0	2
A	Both (a) and (b)		0	3
A	None of the above		0	4
Q	The driving force in electrodialysis is	M		1
A	moderately low pressure		0	1
A	electric potential		1	2
A	concentration difference		0	3
A	high pressure		0	4
Q	_____ does not cause membrane fouling	M		1
A	slime formation		0	1
A	backflushing with permeate		1	2
A	microbial growth		0	3
A	colloidal deposition		0	4
Q	_____ is an example of inorganic membranes	M		1
A	alumina		1	1
A	polypropylene		0	2
A	Both (a) and (b)		0	3
A	None of the above		0	4
Q	A raw water reservoir would be an example of which membrane pretreatment method (where the goal is to reduce the loading and fouling potential of the water fed to the membrane)?	M		1
A	filtration		0	1
A	clarification		1	2
A	chemical treatment		0	3
A	centrifugation		0	4

Q	Pervaporation method involves	M	1
A	Removal of ions	0	1
A	Production of potable water	0	2
A	Purification of aqueous streams	0	3
A	Separation and concentration of liquid mixture.	1	4
Q	Adsorption equilibrium is called as	M	1
A	Adsorption isotherm	1	1
A	Equilibrium adsorption	0	2
A	Particulates adsorption	0	3
A	Surface adsorption	0	4
Q	A vertical cylindrical tube filled with adsorbent beads is	M	1
A	Agitated reactor	0	1
A	Tray reactor	0	2
A	Fixed bed reactor	1	3
A	Column reactor	0	4
Q	CSTR stands for	M	1
A	Continuous simple tank reactor	0	1
A	Continuous simple tank reaction	0	2
A	Continuous stirred tank reactor	1	3
A	Continuous stirred tank reaction	0	4
Q	The reversible phenomenon occurring at the surface of solid is	M	1
A	Desorption	0	1
A	Adsorption	1	2
A	Absorption	0	3
A	Equilibrium	0	4
Q	The methods used to adsorb solutes from the liquid phase is	M	1
A	Batch adsorption	1	1
A	Continuous adsorption	0	2
A	CSTR adsorption	0	3

A	Discontinuous adsorption		0	4
Q	The process where solid particles of specified size and shape are formed from a homogeneous phase is	M		1
A	Packing		0	1
A	Finishing		0	2
A	Crystallization		1	3
A	Formulation		0	4
Q	Crystallization occurs only in	M		1
A	Saturated solution		1	1
A	Unsaturated solution		0	2
A	Solute		0	3
A	Solvent		0	4
Q	Subsequent to nucleation or the addition of seed material formation of	M		1
A	Saturated solution		0	1
A	Unsaturated solution		0	2
A	Crystal growth		1	3
A	Supersaturation		0	4
Q	Supersaturated solutions are thermodynamically	M		1
A	Stable		0	1
A	Volatile		0	2
A	Non-volatile		0	3
A	Unstable		1	4
Q	The degree of supersaturation of a solution is measured in terms of	M		1
A	Supersaturation equivalent		0	1
A	Supersaturation coefficient		1	2
A	Supersaturation solution		0	3
A	Supersaturation solute		0	4

Q	That point when the humidity decreases linearly with the drying conditions is known as	M	1
A	Constant drying period	0	1
A	Falling-rate period	1	2
A	Heating region	0	3
A	Critical region	0	4
Q	Dryers can generate internal heating in the feed by	M	1
A	Dielectric or inductive heating	1	1
A	Convection	0	2
A	Conduction	0	3
A	Evaporation	0	4
Q	Which dryer used radiation for drying?	M	1
A	Spray dryer	0	1
A	Drum dryer	0	2
A	Flash dryer	0	3
A	Microwave dryer	1	4
Q	The moisture content of solid in excess of the equilibrium moisture content is referred as	M	1
A	Bound moisture	0	1
A	Free moisture	1	2
A	Moisture	0	3
A	Total Moisture	0	4
Q	A propeller agitator	M	1
A	Produces mainly axial flow	1	1
A	Used for mixing high viscous pastes	0	2
A	Runs at slow speed	0	3
A	Used for low viscous fluids	0	4

Q Find the weight of the wet solid if dry solid is 2 kg and the moisture is 0.5 kg.

A 2 kg

A 2.5 kg

A 3 kg

A 3.5 kg

Q Find the moisture content in dry basis if the weight of dry solid is 5 kg and the moisture is 2 kg.

A 0.2

A 0.3

A 0.4

A 0.5

Q How does the heat transfer occurs in the indirect-heat continuous dryers?

A Conduction

A Convection

A Radiation

A Circulation

Q Which of the following is not the component of aeration and agitation system?

A Impeller

A Baffles

A Stirrer gland and bearing

A Thermometer

Q Find the moisture content in wet basis if the weight of the dry solid is 3 kg and the weight of the moisture is 2 kg.

A 0.1

A 0.2

M

0

1

0

0

M

0

0

1

0

M

1

0

0

0

M

0

0

0

1

M

0

0

1

1

2

3

4

1

1

2

3

4

1

1

2

3

4

1

1

2

3

4

1

1

2



A	0.3		0	3
A	0.4		1	4
	Moisture content of a substance which exerts as equilibrium vapour pressure less than of the pure liquid at the same			
Q	temperature is referred to as	M		1
A	Bound moisture		1	1
A	Unbound moisture		0	2
A	Moisture		0	3
A	Total Moisture		0	4
	_____agents prevent the reformation of disulphide bonds between the amino acid molecules.			
Q		M		1
A	Chaotropic		1	1
A	Reducing		0	2
A	Oxidising		0	3
A	Hydrating		0	4
Q	How are gamma interferon produced?	M		1
A	Produced by virus-infected leukocytes		0	1
A	Produced by virus-infected fibroblasts		0	2
A	Produced by activated NK cells		1	3
Q	Choose the correct statement	M		1
A	Taq polymerase is having high processivity		0	1
	Processivity is defined in this case as a			
A	synthesis of DNA by polymerase		1	2
	It requires a 5' end for the elongation to			
A	take place		0	3

A	The maximum size of the molecules which can be synthesized is 10kbp		0	4
Q	HCCF collection from mammalian cell culture stands for	M		1
A	Hybridoma cell culture fluid		0	1
A	Hyper cell culture fluid		0	2
A	Harvested cell culture fluid		1	3
A	High cell culture fluid		0	4
Q	_____ solvent is used for extraction of Penicillin	M		1
A	Butyl Acetate		1	1
A	Alkyl Acetate		0	2
A	Sodium Acetate		0	3
A	Ethyl Acetate		0	4
Q	Which of the following fungal strain is used for production of penicillin?	M		1
A	Penicillium chrysogenum		1	1
A	Streptomyces nodosus		0	2
A	Bacillus subtilis		0	3
A	Bacillus polymyxa		0	4
Q	How is alpha interferon produced?	M		1
A	Produced by virus-infected leukocytes		1	1
A	Produced by virus-infected fibroblasts		0	2
A	Produced by activated NK cells		0	3
A	Produced by bacterial activated leukocytes		0	4
Q	The major hazards of Monoclonal antibodies are	M		1
A	Difficult in purification		0	1
A	Contamination with retroviral particles from mouse myeloma cells		1	2

A	Non specificity		0	3
A	Infection		0	4
	Most suitable long term storage method for recombinant Tissue Plasminogen			
Q	Activator is	M		1
A	Freezing		0	1
A	Crystallization		0	2
A	Drying		0	3
A	Lyophilization		1	4
	Which of the following enzyme is not present in <i>S. cerevisiae</i> ?			
Q		M		1
A	Maltase		0	1
A	Invertase		0	2
A	Zymase		0	3
A	Cellulase		1	4
	Regeneration of anion exchange Resin is usually done by using			
Q		M		1
A	sodium hydroxide		1	1
A	sodium chloride		0	2
A	calcium chloride		0	3
A	hydrochloric acid		0	4
	Regeneration of cation exchange Resin is usually done by using			
Q		M		1
A	hydrochloric acid		1	1
A	sodium hydroxide		0	2
A	sodium chloride		0	3
A	calcium chloride		0	4
	In some cases, physisorption of a gas adsorbed at low temperature may change			
Q	into chemisorption at ____	M		1
A	low temperatures		0	1
A	high temperatures		1	2
A	high adsorbent concentration		0	3

A	low adsorbent concentration		0	4
Q	Chemisorption involves _____	M		1
A	no activation energy		0	1
A	high activation energy		1	2
A	very low activation energy		0	3
A	moderately low activation energy		0	4
Q	Physisorption involves _____	M		1
A	no activation energy		0	1
A	high activation energy		0	2
A	very high activation energy		0	3
A	low activation energy		1	4
Q	Chemisorption is _____	M		1
A	Exothermic and irreversible		1	1
A	Exothermic and reversible		0	2
A	Endothermic and irreversible		0	3
A	Endothermic and reversible		0	4
	_____ buffers are used in conjunction			
Q	with anion exchangers	M		1
A	Anionic		0	1
A	Cationic		1	2
A	Neutral		0	3
A	Phosphate		0	4
Q	_____ is not an anionic buffer	M		1
A	acetate		0	1
A	barbiturate		0	2
A	phosphate		0	3
A	Tris		1	4
	The membrane separation technique is			
	competing with other separation			
Q	technologies in terms of	M		1
A	Energy efficiency		0	1
A	High separation capacity		0	2

A	Selective separation and capital investments		0	3
A	All of the above		1	4
Q	Microfiltration and ultrafiltration fall in which category of membrane operations?	M		1
A	Molecular separations		1	1
A	Chemical transformations		0	2
A	Mass and energy transfer between different phases		0	3
A	None of the above		0	4
Q	Dialysis in our kidney is a	M		1
A	Pressure driven separation process		0	1
A	Thermally driven separation process		0	2
A	Concentration driven separation process		1	3
A	None of the above		0	4
Q	Membrane selection depends on a variety of factors including	M		1
A	The composition of the feed solution		0	1
A	Operating parameters		0	2
A	Application types and separation goals		0	3
A	All of the above		1	4
Q	The flux of each component in pervaporation is proportional to	M		1
A	concentration gradient		0	1
A	diffusivity in the dense layer		0	2
A	Both (a) and (b)		1	3
A	None of the above		0	4
Q	The first commercial application of pervaporation was for	M		1
A	ethanol-water separation		1	1

A	protein purification		0	2
A	citric acid purification		0	3
A	bioseparation of antibiotics		0	4
Q	The separation mechanism in electrodialysis is _____	M		1
A	sieving		0	1
A	solution diffusion		0	2
A	ion migration		1	3
A	sieving and diffusion		0	4
Q	Concentration polarization at the membrane surface is a _____	M		1
A	Short term and irreversible effect		0	1
A	short term and reversible effect		1	2
A	long term and irreversible effect		0	3
A	long term and reversible effect		0	4
Q	A continuous type crystallizer designed to make large, uniform crystals is	M		1
A	Oslo crystallizer		0	1
A	Krystal crystallizer		0	2
A	Swenson walker crystallizer		1	3
A	Cooling crystallizer		0	4
Q	Which are the types of crystallization?	M		1
A	Evaporative crystallization		1	1
A	Cycling crystallization		0	2
A	Mixing crystallization		0	3
A	Cooling crystallization		0	4
Q	Crystallisation is based on the	M		1
A	Difference in melting point		0	1
A	Difference in boiling point		0	2
A	Difference in pressure		0	3

A	Difference in solubility		1	4
Q	Which of the following is known as mother liquor?	M		1
A	Solvent		0	1
A	Solute		0	2
A	Solution		0	3
A	Filtrate		1	4
Q	What is not an advantage of using mechanical agitation?	M		1
A	High purity		0	1
A	Uniform crystal size		0	2
A	High purity		0	3
A	Low rate of primary nucleation		1	4
Q	The smallest portion of a crystal which when repeated in different directions generates the entire crystal is called:	M		1
A	Lattice points		0	1
A	Crystal lattice		0	2
A	Unit cell		1	3
A	None of the mentioned		0	4
Q	A process in which solid particles of specified size and shape are formed from a homogeneous phase is	M		1
A	Saturation		0	1
A	Concentration		0	2
A	Crystallization		1	3
A	Finishing		0	4
Q	Which of the following is not a common method used for purification?	M		1
A	Sublimation		0	1
A	Crystallisation		0	2

A	Electrolysis		1	3
A	Chromatography		0	4
Q	Which one of the following is used to completely remove water and helps in preservation of foods?	M		1
A	Desiccation		1	1
A	Dehydration		0	2
A	Drying		0	3
A	Dewatering		0	4
Q	Dehydration removes moisture _____ efficiency as Desiccation	M		1
A	With less		1	1
A	With more		0	2
A	With same		0	3
A	With very much larger		0	4
Q	How the liquid does gets separated in freeze dryer?	M		1
A	Boiling		0	1
A	Distillation		0	2
A	Freezing and crystallization		1	3
A	Evaporation		0	4
Q	Which materials are not used in drying in a freeze dryer?	M		1
A	Seafood		0	1
A	Fruits		0	2
A	Pharmaceuticals		0	3
A	Dyes		1	4
Q	Which of the following method is technically and economically sound to dry out slurry from sewage plant?	M		1
A	Tray Dryers		0	1
A	Spray Dryers		0	2
A	Drum Dryer		1	3



A	Lyophilization		0	4
Q	During drying process, why does the moisture content does not drop to 0 oC?	M		1
A	Inability to dry out bound moisture		1	1
A	Saturation of water vapours in the drying chamber		0	2
A	Low grade drying instrument		0	3
A	Inability to dry out unbound moisture		0	4
Q	The non-agitated fermentations are carried out in vessels of a height/diameter ratio of _____	M		1
A	1 as 2		0	1
A	5 as 1		1	2
A	3 as 2		0	3
A	4 as 1		0	4
Q	TAQ polymerase is sourced from _____	M		1
A	Escherichia coli		0	1
A	Pseudomonas aeruginosa		0	2
A	Aspergillus niger		0	3
A	Thermophilus aquaticus		1	4
Q	What are antibiotics?	M		1
A	Nutrient supplements		0	1
A	Anti-cancer drugs		0	2
A	Anti-microbial drugs		1	3
A	Anti-ulcer drugs		0	4
Q	_____ is a cleaved and converted into biologically active form of Insulin	M		1
A	ProInsulin		1	1
A	Prep insulin		0	2
A	B-Insulin		0	3

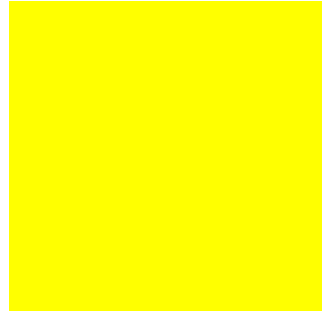
A	Greater Insulin		0	4
Q	Which of the following reagent is used for refolding of tissue plasminogen activator?	M		1
A	Arginine		1	1
A	Proline		0	2
A	Threonine		0	3
A	Valine		0	4
Q	Which following method is used to inactivate endogenous virus from Monoclonal antibodies?	M		1
A	Viral filtration		1	1
A	Adsorption		0	2
A	Chemical inactivation		0	3
A	High pH		0	4
Q	Which of the following activity is not present in Taq polymerase?	M		1
A	5'-3' polymerase		0	1
A	5'-3' exonuclease		0	2
A	3'-5' exonuclease		1	3
A	3'- 5'polymerase		0	4
Q	During dehydration step 200 Proof Ethanol grading refers to	M		1
A	100% absolute (undenatured) Ethyl Alcohol		1	1
A	90% absolute (undenatured) Ethyl Alcohol		0	2
A	80% absolute (undenatured) Ethyl Alcohol		0	3
A	70% absolute (undenatured) Ethyl Alcohol		0	4
Q	Leavening agent for yeast describes as	M		1

A	Expansion of dough		0	1
A	Results in light airy physical structure		1	2
A	Development of flavor		0	3
A	Development of fragrance		0	4
	The equilibrium characteristics of the solubility of a gas in liquid helps to determine the	M		1
Q	Rate		1	1
A	Concentration		0	2
A	Time		0	3
A	No existence of equilibrium characteristics		0	4
	As per the equilibrium solubility curve, the temperature increases partial pressure increases resulting in decreasing ....	M		1
Q	Concentration		0	1
A	Equilibrium		0	2
A	Solubility		1	3
A	Absorption		0	4
	Packed columns are better analyzed by:	M		1
Q	Mass transfer coefficients		1	1
A	Equilibrium stage methods		0	2
A	Graphical methods		0	3
A	Algebraical methods		0	4
	At the interface of liquid and vapor, which interface exists?	M		1
Q	Chemical		0	1
A	Physical		1	2
A	Thermal		0	3
A	No equilibrium exists		0	4

Q	Find the false statement for the better choice of the absorbent.	M		1
A	Gas solubility should be high		0	1
A	Vapour pressure should be low		1	2
A	Viscosity should be high		0	3
A	Low freezing point		0	4
Q	Find the most common example for absorption.	M		1
A	Ammonia and air in solvent water		1	1
A	Ammonia and Carbon dioxide in solvent water		0	2
A	Methane and air in solvent water		0	3
A	Methane and Carbon dioxide in solvent water		0	4
Q	Which of the following is not an example of ideal solution?	M		1
A	Solution of benzene in toluene		0	1
A	Solution of ethyl and propyl alcohol		0	2
A	Paraffin hydrocarbon gas in paraffin oil		0	3
A	Solution of isobutane and olefins		1	4
Q	According to Raoult's law, for a pure component solution the partial pressure is equals to	M		1
A	Total pressure		0	1
A	Vapour pressure		1	2
A	Atmospheric pressure		0	3
A	Mole fraction of respective phase		0	4
Q	Active insulin consists of how many polypeptide chains?	M		1
A	1		0	1
A	2		1	2
A	3		0	3

A 4  
\_\_\_\_\_ affect the selectivity  
and flux through the membrane.

- Q
- A Concentration polarization
- A membrane fouling
- A Both (a) and (b)
- A Solubility



M

0 4  
1  
0 1  
0 2  
1 3  
0 4