

Q=QUESTION	question_description	question_explanation	question_type	question_difficulty
A=ANSWER	answer_description	answer_explanation	answer_isright	answer_position
	To get similar mass transfer characteristics in a packed column for the condition is:			
Q			M	1
A	Empty bed contact time of the test plant is double of the full scale plant		0	1
A	Empty bed contact time of the test plant is half of the full scale plant		0	2
A	Empty bed contact time of the test plant is different from that of the full scale plant		0	3
A	Empty bed contact time is equal for the test plant and full scale		1	4
Q	What is the ratio of filtration rate in a pilot plant in adsorption studies to that of the filtration rate in actual		M	1
A	3		0	1
A	1		1	2
A	half		0	3
A	quarter		0	4
Q	What is the breakthrough volume in kL of an adsorption column for a volumetric flowrate of 200kL per		M	1
A	1400000		0	1
A	14		0	2
A	14000		0	3
A	1400		1	4
Q	which of this is incorrect for moving bed adsorption		M	1
A	The adsorbent can be regenerated as soon as its role in the adsorption step has been completed		0	1
A	Heat transfer is better than in fixed bed		0	2
A	The equipment required will be more complex than fixed bed		0	3
A	Attrition of the adsorbent is not an issue		1	4
Q	Which of the following is not a commercial application of reactive distillation?		M	1
A	Esterification of acetic acid with ethanol		0	1
A	Reaction of formaldehyde and methanol		0	2
A	Reaction of isobutene and methanol		0	3
A	Oxidation of ethyl alcohol		1	4
Q	If the feed is _____ boiling azeotrope the solvent enters the column with the feed.		M	1
A	Maximum		1	1
A	Minimum		0	2
A	Low		0	3
A	High		0	4

A	Super critical extraction chromatography?		0	4
Q	It provides unequal bandwidths	M		1
A	It provides fast overall separation		1	1
A	It provides maximum resolution		0	2
A	It provides maximum sensitivity		0	3
Q	chromatography?	M	0	4
A	Pressure capability is high			1
A	Maintenance is frequent		0	1
A	Limited reservoir capability		1	2
A	Slight change of flow rate when extremely high pressure compresses the solvent		0	3
Q	columns?	M	0	4
A	Capillary columns			1
A	Guard columns		0	1
A	Short-fast columns		0	2
A	Small bore columns		0	3
Q	Which of the following cannot be done to reduce ripple in High pressure liquid chromatography?	M	1	4
A	Using bellows			1
A	Using restrictors		0	1
A	Using long nylon tube between pump and column		0	2
A	Avoiding the use of the solvent pump		0	3
Q	Which of the following is not true about Hydraulic capacitance flow control system used in HPLC?	M	1	4
A	It can be used only for liquids with low viscosity			1
A	It is irrespective of solvent compressibility		1	1
A	It maintains a constant flow		0	2
A	It smoothens high pressure pump pulsations		0	3
Q	Which of the following will improve the efficiency of the separation process in liquid chromatography?	M	0	4
A	Increase in sample size, increase in column diameter			1
A	Reduction in sample size, increase in column diameter		0	1
A	Increase in sample size, reduction in column diameter		0	2
A	Reduction in sample size, reduction in column diameter		0	3
Q	Which of the following are the practical problems that arise due to the decrease in column diameter?	M	1	4
A	Requirement of large particle size and high pressure drop			1
A	Requirement of large particle size and low pressure drop		0	1
			0	2

A	Requirement of small particle size and high pressure drop		1	3
A	Requirement of small particle size and low pressure drop		0	4
Q	Which of the following columns are not used in liquid or high performance liquid chromatography?	M		1
A	Analytical column		0	1
A	Separation column		0	2
A	Guard column		0	3
A	Capillary column		1	4
Q	Which of the following is not a Column-type Liquid chromatography?	M		1
A	Gel permeation		0	1
A	Ion exchange		0	2
A	Liquid-solid		0	3
A	Paper		1	4
Q	phase?	M		1
A	Ion exchange chromatography		0	1
A	Exclusion chromatography		0	2
A	Affinity chromatography		1	3
A	Gel permeation chromatography		0	4
Q	following is the not a type of membrane based on structure and separation method	M		1
A	porous membrane		0	1
A	non porous membrane		0	2
A	carrier membranes		0	3
A	nanoporous membrane		1	4
Q	Which membranes are prepared by sintering?	M		1
A	microfiltration		1	1
A	ultrafiltration		0	2
A	filtration		0	3
A	nanofiltration		0	4
Q	phase inversion is a transformation of polymer from	M		1
A	liquid to solid state		1	1
A	solid to liquid state		0	2
A	solid to gas state		0	3
A	liquid to gas state		0	4
Q	which of the technique does not generate the new polymers in membrane preparation?	M		1
A	dip coating		1	1

A	interfacial polymerization		0	2
A	in situ polymerization		0	3
A	plasma polymerization		0	4
Q	The upper temperature limit for polymeric membranes is	M		1
A	500 C		1	1
A	1000 C		0	2
A	100 C		0	3
A	300 C		0	4
Q	following is not the membrane charecterization technique	M		1
A	dew point method		1	1
A	bubble point method		0	2
A	scanning electron microscopy		0	3
A	mercury intrusion porometry		0	4
Q	the transport through nonporous membrane is	M		1
A	permeability = solubility * diffusivity		1	1
A	diffusivity = solubility * permeability		0	2
A	permeability = solubility / diffusivity		0	3
A	solubility = permeability * diffusivity		0	4
Q	in osmosis the flow of molecules is due to	M		1
A	chemical potential		1	1
A	vapor pressure		0	2
A	partial pressure		0	3
A	density		0	4
Q	following is not a ceramic membrane	M		1
A	polypropylene		1	1
A	alumina		0	2
A	zirconia		0	3
A	titania		0	4
Q	What does haemodialysis removes other than harmful wastes?	M		1
A	Protein		0	1
A	Salt		1	2
A	Insulin		0	3
A	Glycogen		0	4
Q	The typical reverse osmosis assembly consist of following components	M		1

A	pre treatment, membrane assembly, post treatment		1	1
A	pre treatment , post treatment, membrane assembly		0	2
A	membrane assembly, pre treatment , post treatment		0	3
A	pre treatment		0	4
Q	What is the bubble point method used for?	M		1
A	To determine the pore size distribution		0	1
A	To determine size of all pores		0	2
A	To determine size of largest pore		1	3
A	To determine membrane thickness		0	4
Q	What is perporometry used for?	M		1
A	To determine the size distribution of active pores		1	1
A	To determine the size distribution of the dead pores		0	2
A	To determine the size distribution of the membrane		0	3
A	To see the permeability of the solvent through the membrane		0	4
Q	How is the resistance to solvent flow determined?	M		1
A	By measuring pore size distribution		0	1
A	By measuring amount of air passing		0	2
A	By measuring the volume of solvent passed after a certain time		0	3
A	By calculating water permeability		1	4
Q	What is the advantage of track etching?	M		1
A	Pores are large		0	1
A	Narrow size distribution		1	2
A	Dense membrane		0	3
A	Less expensive		0	4
Q	Which of the following is not true about membrane separations?	M		1
A	Components which are passed through the membrane is called permeate		0	1
A	Components which are not passed through are called retentate		0	2
A	Non-porous membrane is never used		1	3
A	Membrane separations require a driving force		0	4
Q	What is the driving force in Microfiltration?	M		1
A	Pressure difference		1	1
A	Pervaporation		0	2
A	Difference in fugacity		0	3
A	Concentration difference		0	4

Q	The selection of membrane does not depend on which property?	M		1
A	Pore size distribution		0	1
A	Water permeability		0	2
A	Perporometry		0	3
A	Film thickness formed		1	4
Q	What is the bubble point method used for?	M		1
A	To determine the pore size distribution		0	1
A	To determine size of all pores		0	2
A	To determine size of largest pore		1	3
A	To determine membrane thickness		0	4
Q	following is the seperation process which uses size of the molecule property for the seperation	M		1
A	filtration		1	1
A	distillation		0	2
A	extraction		0	3
A	adsorption		0	4
Q	following is the seperation process which uses vapor pressure property for the seperation	M		1
A	filtration		0	1
A	distillation		1	2
A	extraction		0	3
A	adsorption		0	4
Q	following is the seperation process which uses Charge property for the seperation	M		1
A	ion exchange		1	1
A	filtration		0	2
A	distillation		0	3
A	extraction		0	4
Q	Which of the following methods are liquid samples injected into the column in gas chromatography?	M		1
A	Gas tight syringe		0	1
A	Micro-syringe		1	2
A	Rotary sample valve		0	3
A	Solid injection syringes		0	4
Q	chromatography?	M		1
A	Glass		0	1
A	Metal		0	2
A	Diatomaceous earth		1	3

A	Stainless steel		0	4
Q	Capillary columns are open tubular columns constructed from which of the following materials?	M		1
A	Glass		0	1
A	Metal		0	2
A	Stainless steel		0	3
A	Fused silica		1	4
Q	Which of the following is not an ideal characteristic of a detector used in gas chromatography?	M		1
A	Linear response to the solutes		0	1
A	Short response time		0	2
A	High reliability		0	3
A	Sensitive to the changes in the flow rate of a carrier gas		1	4
Q	Which of the following is not a type of detector used in gas chromatography?	M		1
A	Argon ionisation detector		0	1
A	Thermal conductivity detector		0	2
A	UV visible spectrometric detector		1	3
A	Electron capture detector		0	4
Q	Which of the following is not the advantage of thermal conductivity detector used in gas chromatography?	M		1
A	Simple in construction		0	1
A	High sensitivity		1	2
A	Large linear dynamic range		0	3
A	Non-destructive character		0	4
Q	and polychlorinated biphenyls?	M		1
A	Flame ionization detector		0	1
A	Thermal conductivity detector		0	2
A	Argon ionisation detector		0	3
A	Electron capture detector		1	4
Q	Filter photometer detector is primarily responsive to which of the following compounds/elements?	M		1
A	Volatile sulphur or phosphorous compounds		1	1
A	Nitrogen		0	2
A	Halogen		0	3
A	Potassium		0	4
Q	elements?	M		1
A	Nitrogen		0	1
A	Phosphorous		1	2

A Halogen
A Carbon
Q Which of the following is not true about High pressure liquid chromatography (HPLC)?
A It requires high pressure for the separation of the species
A There is no need to vaporise the samples
A It is performed in columns
A It has high sensitivity
Q chromatography?
A Independent of viscosity
A Pulse-less flow
A High pressure capability
A Unlimited solvent capacity

0 3
0 4
M 1
0 1
1 2
0 3
0 4
M 1
0 1
0 2
0 3
1 4

