

Q=QUESTION A=ANSWER	question_description answer_description	question_explanation answer_explanation	question_type answer_isright	question_difficulty answer_position
Q	LMTD correction factor is applied in _____Heat Exchanger		M	1
A	1-1 cocurrent		0	1
A	Double pipe		0	2
A	All multipass		1	3
A	All involving liquid/liquid heat transfer		0	4
Q	LMTD correction factor is used in heat exchanger design for		M	1
A	Double pipe heat exchanger		0	1
A	Multipass shell and tube heat exchanger		1	2
A	Fouling fluids		0	3
A	Counter flow of hot and cold fluids		0	4
Q	Thickness of flat heads and covers (t) must be equal to _____(Where D_e is effective diameter of the flat head, P is the pressure, f is allowable stress of the material and C is a factor depending upon the method of shell attachment.)		M	
A	$CD_e\sqrt{(p/f)}$		1	1
A	$CD_e\sqrt{(p.f)}$		0	2
A	$CD_e(p/f)$		0	3
A	$C\sqrt{(D_e.p/f)}$		0	4
Q	In a shell and tube heat exchanger, shortest center to center distance between adjacent tube is		M	1
A	Called tube pitch		1	1
A	Called tube clearance		0	2
A	Always less than diameter of tube		0	3
A	Always greater than diameter of tube		0	4
Q	In most of the shell and tube heat exchanger, the tube pitch as compared the tube diameter is		M	1
A	Less		0	1
A	1.25-1.50 times		1	2
A	2.5 times		0	3

A	One-fourth		0	4
Q	Triangular pitch tube layout as compared to square pitch in a shell and tube heat exchanger_____	M		1
A	Permits the use of less tube in a given shell diameter.		0	1
A	Facilitates comparatively easier external cleaning because of larger clearance		0	2
A	Permits the use of more tubes in a given shell diameter.		1	3
A	Permits the use of less tube in a given heat exchanger		0	4
Q	25 percent cut segmental baffle means that the baffle	M		1
A	Height is 75% of the I.D. of the shell		1	1
A	Height is 25% of the I.D. of the shell		0	2
A	Spacing is 75% of its height		0	3
A	Width is 25% of its height		0	4
Q	In shell and tube heat exchangers, straight tie rod are used to	M		1
A	Hold baffle in space		1	1
A	Fix the tubes in position		0	2
A	Account for thermal strain		0	3
A	Fix the tubes in outside shell		0	4
Q	Most common baffle used in industrial shell and tube heat exchanger is	M		1
A	75% cut segmental baffle		0	1
A	25% cut segmental baffle		1	2
A	Orifice baffle		0	3
A	Disk and doughnut baffle		0	4
Q	High pressure fluid in a shell and tube heat exchanger should preferably be routed through the	M		1
A	Tubes to avoid the expense of high pressure shell construction		1	1
A	Shell side for smaller total pressure drop		0	2
A	Shell side if the flow is counter – current and tube side if the flow is co-current		0	3
A	Shell side for large overall heat transfer co-efficient		0	4
Q	In a shell and tube heat exchanger, the clearance of the tube is generally	M		1
A	Not less than one-fourth of the tube diameter or 3/16”		1	1

A	More than the tube diameter		0	2
A	Equal to the diameter		0	3
A	Not equal to the diameter		0	4
Q	The <i>LMTD</i> correction factor (F_T) is defined as the	M		1
A	Ratio of true temperature difference to the <i>LMTD</i>		1	1
A	Ratio of <i>LMTD</i> to the true temperature difference		0	2
A	Differenced of true temperature difference and the <i>LMTD</i>		0	3
A	Geometric mean of the true temperature difference and the <i>LMTD</i>		0	4
Q	The minimum baffle height should be	M		1
A	Equal to the impeller diameter		0	1
A	Twice the impeller diameter		1	2
A	Twice the tank diameter		0	3
A	3/4 of the tank height		0	4
Q	In chemical process equipments, the conical bottom heads used, usually has an apex angle of	M		1
A	20°		0	1
A	40°		0	2
A	60°		1	3
A	80°		0	4
Q	Shell side heat transfer co-efficient in case of square pitch as compared to the triangular pitch under similar condition of fluid	M		
A	More		0	1
A	Same		0	2
A	Less		1	3
A	Twice		0	4
Q	Which of the following material is seldom used for pressure vessel construction ?	M		1
A	Rimmed stell		1	1
A	Mild steel		0	2
A	Killed steel		0	3
A	Semi-killed steel		0	4
Q	Wrought iron is pure iron with low content of	M		1
A	Manganese and graphite		0	1

A	Carbon an Magnus		1	2
A	Iran and carbon		0	3
A	Carbon and graphite		0	4
Q	Gray cast iron hardness number is	M		1
A	160 dash 190 BNH		0	1
A	180 dash 220 BNH		0	2
A	180 dash 240 BNH		1	3
A	200 dash 240 BNH		0	4
Q	Cylindrical and spherical shell thin wall having ratio of outside diameter thickness to exceeding	M		1
A	3		0	1
A	2		0	2
A	1		0	3
A	4		1	4
Q	$F_a = PD/4t$ where D is considered for	M		1
A	Mean diameter		1	1
A	Minor diameter		0	2
A	Major diameter		0	3
A	Axial diameter		0	4
Q	For torrispherical elliptical and hemispherical head internal pressure taken as _____time of external pressure	M		1
A	1.87		0	1
A	1.77		0	2
A	1.67		1	3
A	1.57		0	4
Q	Stress created in a flat plate due to the pressure acting as a _____ load	M		1
A	Uneven distribution		0	1
A	Uniform distribution		1	2
A	Force distribution		0	3
A	Pressure distribution		0	4
Q	According to method of attachment of flat head to shell edge fixity factor change so far forged head fixity factor (C) is	M		1

A	3		0	1
A	0.2		0	2
A	0.5		0	3
A	0.4		1	4
Q	Flat ring gasket material thickness range is _____ mm	M		1
A	0.1 to 2.5		0	1
A	0.3 to 1.8		0	2
A	0.5 to 3.5		0	3
A	0.5 to 3.0		1	4
Q	In bolt design number of Bolt consider should be multiple of	M		1
A	2		0	1
A	4		1	2
A	6		0	3
A	8		0	4
Q	A designer use principle for a design of pressure vessel component on	M		1
A	Types of system		0	1
A	Type of weight		0	2
A	Type of height		0	3
A	Type of product		1	4
Q	Depending upon the ___ various requirements are given with weightage and specification	M		1
A	Types of system		0	1
A	Type of weight		0	2
A	Type of height		0	3
A	Type of product		1	4
Q	Individual component for design of pressure vessel component is based on	M		1
A	Forces acting on component		1	1
A	Rate of material		0	2
A	Types of system		0	3
A	Types of product		0	4
Q	pressures vessel component involved systematic approach of specification is	M		1

A	Unknown to known solution		0	1
A	Known to unknown solution		1	2
A	Define solution		0	3
A	Approach solution		0	4
Q	The design of pressure vessel each component define specification of function element	M		1
A	Specific function of element		0	1
A	Determine forces acting on element		0	2
A	Design individual component		1	3
A	Determine failure model		0	4
Q	Rod made of plain carbon steel force applied 5K Newton and area is 228mm ² what is a stress value in N/mm ²	M		1
A	21.42		1	1
A	21.92		0	2
A	22.42		0	3
A	22.92		0	4
Q	Unit of modulus elasticity is	M		1
A	N/mm		0	1
A	N/mm ²		0	2
A	N/mm ⁴		1	3
A	N/mm ³		0	4
Q	Unit of Stress is	M		1
A	N/mm		0	1
A	N/mm ²		1	2
A	N/mm ⁴		0	3
A	N/mm ³		0	4
Q	Pressure design consideration in vessel design is known as	M		1
A	Industrial design		1	1
A	Information design		0	2
A	Process design		0	3
A	Machine design		0	4
Q	Column support for the roof of a cylindrical storage tank must be provided for_____	M		1
A	Small diameter tank		0	1

A	Large Diameter Tank		1	2
A	Small diameter tall tanks		0	3
A	All tanks irrespective of their heights and diameters		0	4
Q	Liquid/petroleum fuel storage tanks are built underground (as in case of petrol pumps), when the storage capacity is less than _____ kilolitres.	M		1
A	20		0	1
A	30		0	2
A	45		1	3
A	85		0	4
Q	Storage tank operate under _____ pressure from pressure vessel	M		1
A	High		0	1
A	Medium		0	2
A	Low		1	3
A	Same		0	4
Q	Fixed roof tank are meant for liquid _____ flash point	M		1
A	High		1	1
A	Medium		0	2
A	Low		0	3
A	Same		0	4
Q	Material used for storage vessel having maximum tensile stress with joint efficiency is	M		1
A	155 μ /mm ²		0	1
A	165 μ /mm ²		1	2
A	175 μ /mm ²		0	3
A	118 μ /mm ²		0	4
Q	Indian standard IS 226 - 1975 structural steel standard quality up to _____ mm thickness	M		1
A	10		0	1
A	15		0	2
A	20		1	3
A	25		0	4

Q	For storage tank maximum allowable stress shall be _____ to the minimum yield stress	M		1
A	0.5		0	1
A	0.6		0	2
A	0.8		0	3
A	0.7		1	4
Q	While permissible stress parameter design temperature range for storage tank is----	M		1
A	10° C to 200° C		0	1
A	-10° C to 200° C		1	2
A	10° C to 240° C		0	3
A	-10° C to 240° C		0	4
Q	Storage tank bottom plate constructed by _____ welding	M		1
A	Spot		0	1
A	Butt		1	2
A	Plasma		0	3
A	Stick		0	4
Q	While two plug joining thickness of the weld is in _____mm	M		1
A	06_10		0	1
A	06_12		1	2
A	06_14		0	3
A	06_16		0	4
Q	The joint efficiency factor for the tank for the double weld joint is	M		1
A	0.8		0	1
A	0.85		1	2
A	0.9		0	3
A	0.95		0	4
Q	Drain pipe system tested under the water pressure for leakage at	M		1
A	35 N/cm ²		1	1
A	30 N/cm ²		0	2

A	25 N/cm ²		0	3
A	20 N/cm ²		0	4
Q	Self supporting cone roof maximum angle value is	M		1
A	35		0	1
A	34		0	2
A	36		0	3
A	37		1	4
Q	Thermal stress used in a joint like	M		1
A	Expansion		1	1
A	Stress		0	2
A	Process		0	3
A	Machine		0	4
Q	The ratio of increasing length with original length is called	M		1
A	Elongation		0	1
A	Strain		0	2
A	Percentage of elongation		1	3
A	Yield stress		0	4
Q	Cast iron and alloy basic carbon percentage is	M		1
A	3 to 4%		1	1
A	1 to 2%		0	2
A	0.5 to 1%		0	3
A	0.1%		0	4
Q	The following type of layout is preferred for low volume production of non standard products	M		
A	Product layout			1
A	Process layout		0	1
A	Fixed position layout		1	2
A	Combination layout		0	3
			0	4
	The following type of layout is preferred to manufacture a standard product in large quantity			
Q		M		1
A	Product layout		1	1
A	Process layout		0	2
A	Fixed position layout		0	3

A	Combination layout		0	4
	If all the processing equipment and machines are arranged according to the sequence of operations of a product the layout is known as			
Q		M		1
A	Product layout		1	1
A	Process layout		0	2
A	Fixed position layout		0	3
A	Combination layout		0	4
Q	Which process is also called product recovery?	M		1
A	Upstream processing		0	1
A	Mid-stream processing		0	2
A	Downstream processing		1	3
A	Biological processing		0	4
	Regional factors for location planning include all of the following except:			
Q		M		1
A	Raw materials		0	1
A	Markets		0	2
A	Labor considerations		0	3
A	Attitudes		1	4
Q	Process layout is used for:	M		1
A	Repetitive processing		1	1
A	Intermittent processing		0	2
A	Bioprocess		0	3
A	Chemical process		0	4
Q	The inputs to a transformation process include all of the following except	M		1
A	Material		0	1
A	People		0	2
A	Information		0	3
A	Transportation		1	4
Q	Process selection is primarily considered during:	M		1
A	Planning		1	1
A	Organizing		0	2
A	Leading		0	3

A	Controlling		0	4
Q	In the mechanical design process the first step is to _____.	M		1
A	Brainstorm solutions		0	1
A	Prepare rough sketches		0	2
A	Prepare a budget		0	3
A	Identify the problem		1	4
Q	Pressure design and detail machine design is a	M		1
A	Design analysis		0	1
A	Design activity		1	2
A	Design application		0	3
A	Design operation		0	4
Q	The function of a _____ is to transfer heat from one fluid to another	M		1
A	Heat exchanger with cooling water		0	1
A	Heat exchanger		1	2
A	Heat exchanger with reboiler		0	3
A	Heat exchanger with preheater		0	4
Q	In industry, a _____ is a type of packed bed used to perform Separation processes	M		1
A	Packed column		1	1
A	Packed column with feed in between		0	2
A	Plate column		0	3
A	Packed between reactor		0	4
Q	At the _____, the low pressure gas is changed to high pressure gas	M		1
A	Expander		0	1
A	Ejector		0	2
A	Blower		0	3
A	Compressor		1	4
Q	_____ consisting of a movable plug element and a stationary ring seat in a gate	M		1
A	Gate valve		0	1
A	Ball valve		0	2
A	Globe valve		1	3
A	Middle Valve			4
Q	It indicate a pressure in pressure tank	M		1

A	Orifice		0	1
A	Pressure indicator		1	2
A	Process indicator controller		0	3
A	Rapture dice		0	4
Q	Governor is used for _____	M		1
A	Controlling the load		0	1
A	Controlling the weight		0	2
A	Controlling the speed		1	3
A	Controlling the operation		0	4
Q	As per hooks law stress is ____ to strain	M		1
A	Infinity		0	1
A	Equal		0	2
A	Proportional		1	3
A	Less than		0	4
Q	The function of a _____ heath cooling water is to transfer heat from one fluid to another	M		1
A	Pressure vessel		0	1
A	Heat exchanger		1	2
A	Storage tank		0	3
A	Expander		0	4
Q	At the _____, the low temperature gas is changed to high temperature gas	M		1
A	Expander		1	1
A	Ejector		0	2
A	Blower		0	3
A	Compressor		0	4
Q	An injector is a system of ducting and nozzles used to direct the flow of a high-pressure fluid	M		1
A	Expander		0	1
A	Ejector		1	2
A	Blower		0	3
A	Compressor		0	4
Q	_____ require very little space along the pipe axis and hardly restrict the flow of fluid when the gate is fully opened	M		1

A	Gate valve		1	1
A	Ball valve		0	2
A	Globe valve		0	3
A	Middle Valve		0	4
Q	_____ is a device used for measuring flow rate, for reducing pressure or for restricting flow	M		1
A	Orifice		1	1
A	Pressure indicator		0	2
A	Process indicator controller		0	3
A	Rapture dice		0	4
Q	_____ consisting of a movable plug or disc element and a stationary ring seat in a generally spherical body	M		1
A	Gate valve		0	1
A	Ball valve		0	2
A	Globe valve		1	3
A	Middle Valve		0	4
Q	_____ tray arrangement is recommended for distribution column having diameter upto four feet	M		1
A	Cross flow		1	1
A	Split flow		0	2
A	Radial flow		0	3
A	Straight flow		0	4
Q	Operating velocity in the absorption power is design at pressure drop _____ mm	M		1
A	1 - 5		0	1
A	20 - 40		1	2
A	1000 - 1500		0	3
A	100 - 150		0	4
Q	In between the distillation column and bubble cap having minimum clearance is _____	M		1
A	76		0	1
A	96		0	2
A	38		1	3
A	88		0	4

Q	Distillation and absorption column also known as tower is essentially a tall _____ shell with number of nozzle	M		1
A	Horizontal cylindrical		0	1
A	Vertical cylindrical		1	2
A	Spherical		0	3
A	Square		0	4
Q	Packed column are _____ for depending with liquid containing large consideration of solid	M		1
A	Suitable		0	1
A	Stable		0	2
A	Expensive		0	3
A	Not suitable		1	4
Q	A packed column are design for _____	M		1
A	Low pressure		1	1
A	High pressure		0	2
A	Medium pressure		0	3
A	Atmospheric pressure		0	4
Q	Which type of packing is most suitable for corrosive service	M		1
A	Random packing		1	1
A	Structured packing		0	2
A	Asbestos		0	3
A	Foiled seed		0	4
Q	Chimney play has _____ down corner with number of nozzle	M		1
A	1		0	1
A	2		0	2
A	4		0	3
A	0		1	4
Q	Stress concentration is generally denoted by	M		1
A	Ks		0	1
A	Ky		0	2
A	Ka		0	3
A	Kt		1	4

Q	In distillation process Concentration is _____ on selective			
A	componant	M		1
A	Infinite		0	1
A	Decrease		0	2
A	Constant		0	3
A	Increase		1	4
Q	Find the distillation preferred for the Relative volatility =			
A	Vapour pressure of A/ Vapour pressure of B = 360/355 then			
A	value of Relative volatility is = _____ unit composition	M		1
A	1.01		0	1
A	1.014		1	2
A	1.018		0	3
A	1.016		0	4
Q	_____ Entainer increases the relative vrelatily.	M		1
A	Multi-component distillation		0	1
A	Reactive distillation		0	2
A	Azeotropic distillation		1	3
A	Vapour pressure		0	4
Q	Relative volatility increases by formation of _____	M		1
A	Low boiling		1	1
A	High boiling		0	2
A	Medium heat		0	3
A	Constant heat		0	4
Q	The use of solvent for increasing the relative volatility is for	M		1
A	Multi-component distillation		0	1
A	Reactive distillation		0	2
A	Azeotropic distillation		0	3
A	Extractive distillation		1	4
Q	Less risk of contamination the because of short growth period	M		1
A	in _____ fermentation			
A	Continuous stirred tank		1	1
A	Bubble column		0	2
A	Batch operation		0	3
A	Fluidized bed rotter		0	4

Q	Industrial fermentors hold up to _____ litter of culture		M	1
A	100000		0	1
A	150000		0	2
A	200000		1	3
A	250000		0	4
	_____ for mentor is having poor mixing difficult to control	M		1
Q	pH when addition of acid			
A	Tray		0	1
A	Packed bed fermenter		1	2
A	Forced		0	3
A	Pneumatic		0	4
	The microorganism are disappeared in liquid nutrient medium at	M		1
Q	maintained environment condition _____			
A	Tray		0	1
A	packed bed		0	2
A	Submerged		1	3
A	Airlift		0	4
	Bubble column bioreactor is usually cylindrical with an aspect	M		1
Q	ratio of _____			
A	4_5		0	1
A	4_6		1	2
A	4_7		0	3
A	4_8		0	4
	In _____ fermenter sparged zone is known as risen and	M		1
Q	zero that receive no gas at downstream			
A	Batch operated		0	1
A	Continuous stirred tank		0	2
A	Airlift		1	3
A	Bubble column		0	4
	In _____ process when micro orgasm added into	M		1
	medium which support its growth the culture passes through			
Q	number of stage is known as growth curve			
A	Continuous		0	1
A	Batch		1	2

A	Feb - batch		0	3
A	Airlift		0	4
Q	Number of bacteria increase exponentially in lock phase so expansion means _____	M		1
A	Specific growth rate		0	1
A	Constant growth rate		0	2
A	Increased growth rate		1	3
A	Decreased growth rate		0	4
	The total amount of biomass in the vessel increase but biomass concentration is meant and _____	M		1
Q	Increase		0	1
A	Decrease		0	2
A	Constant		1	3
A	Regulate		0	4
Q	Fresh medium is added in continuously fermenting vessel	M		1
A	Batch operated		0	1
A	Continuous stirred tank		1	2
A	Airlift		0	3
A	Bubble column		0	4
	_____ material is preferable for the construction of small-scale fermenter	M		1
Q	Quartz		0	1
A	Glass		1	2
A	Iron steel		0	3
A	proof		0	4
Q	The _____ is non-toxic and corrosion proof	M		1
A	Quartz		0	1
A	Glass		1	2
A	Iron steel		0	3
A	proof		0	4
Q	The _____ is largest diameter for glass fermenter	M		1
A	50 cm		0	1
A	70 cm		0	2
A	60 cm		1	3



