Please note that all the answers marked are not right, there are chances for certain answers to be incorrect. Learn at your own risk!!! (But more than 80% of the answers are right)

'N' plug flow reactors in series with a total volume 'V' gives the same conversion as a single plug flow reactor of volume 'V' for _____ order reactions.	1. any 2. first 3. second 4. third
0n-off control which is a special case of proportional control, has a band width of about _____ percent.	1. 100 2. 25 3. 75 4. 0
1 centipoise is equivalent to	1. 1 centistoke 2. 2.42 lb/ft.hr 3. 2.42 lb/ft.second 4. 1 gm/cm.second
1 torr is equal to _____ mm Hg column.	1. 10 2. 1000 3. 100 4. 1
1000 kg of wet solids are to be dried from 60% to 20% moisture. The mass of water removed in kilograms is	1. 200 2. 500 3. 400 4. 520
2 litres of nitrogen at N.T.P. weighs _____ gms.	1. 14 2. 28 3. 2.5 4. 1.25
25 per cent cut segmental baffle means that the baffle	1. Spacing is 75% of its height. 2. Width is 25% of its height. 3. Height is 75% of the I.D. of the shell. 4. Height is 25% of the I.D. of the shell.
40% of incident radiant energy on the surface of a thermally transparent body is reflected back. If the transmissivity of the body be 0.15, then the emissivity of surface is	1. 0.75 2. 0.4 3. 0.45 4. 0.55
6 Kg of carbon is burnt with an amount of air containing 18 gm oxygen. The product contains 16.5 gms CO2 and 2.8 gms CO besides other constituents. What is the degree of conversion on	1. 75% 2. 20% 3. 95% 4. 100%

the basis of disappearance of limiting reactant ?	
_____ centrifuge is normally used in sugar mills.	1. Perforated horizontal basket continuous 2. Disc-bowl 3. Tubular bowl 4. Suspended batch basket
_____ controller has the maximum stabilising time.	1. PD 2. P 3. PID 4. PI
_____ diffusion is used for separating the isotopes of methane.	1. Forced 2. Pressure 3. Thermal 4. Concentration
_____ is defined as the geometric mean of the relative rejections and the relative recoveries of two minerals	1.Refractive Index 2. Selectivity index 3. Concentration ratio 4. Separation efficiency
_____ is the static characteristics of an instrument,	1. Time lag 2. dynamic error 3. Response 4. Sensitivity Drift
_____ is undesirable in thermocouples used in industries,	1. Non-linear relation of emf to temperature 2. Oxidation resistance 3. Corrosion resistance 4. Linear relation of emf to temperature
_____ mill is normally used for grinding of talc.	1. Ultrafine 2. Fine 3. Compartment 4. Ring roll
_____ shaped roof is the most commonly used roof for cylinderical storage tanks.	1. Flanged 2. Flat 3. Conical 4. Dome
_____ tray arrangement is recommended for distillation column having diameter upto 4 ft.	1. Split flow 2. Cascade 3. Cross flow 4. Radial flow
A backmix reactor	1. is same as plug-flow reactor. 2. is same as ideal stirred tank reactor. 3. is most suitable for gas phase reaction.

	4. employs mixing in axial direction only.
A barometer measures the _____ pressure.	1. dynamic 2. absolute as well as gauge 3. absolute 4. gauge
A batch reactor is characterised by	1. variation in reactor volume. 2. variation in extent of reaction and properties of the reaction mixture v 3. very low conversion. 4. constant residence time.
A bed consists of particles of density 2000 kg/m3. If the height of the bed is 1.5 m and its porosity 0.4, the pressure drop required to fluidize the bed is :	1. 2.561 k Pa 2. 2.113 k Pa 3. 14.86 k Pa 4. 1177 k Pa
A bypass stream in a chemical process is useful, because it	1. facilitates better control of the process. 2.changes the product 3. improves the conversion. 4. increases the yield of products.
A catalyst	1. can not be recovered chemically unchanged at the end of a chemica 2. initiates a reaction. 3. is capable of reacting with any one of the reactants. 4. lowers the activation energy of reacting molecules.
A chemical reaction occurs when the energy of the reacting molecules is	1. less than the activation energy of the reaction 2. more than the activation energy of the reaction 3. equal to the activation energy of the reaction 4. equal to or more than the activation energy of the reaction
A control volume refers to	1. a specified mass 2. a fixed region in space 3. a reversible process only 4. an isolated system
A cube at high temperature is immersed in a constant temperature bath. It loses heat from its top, bottom and side surfaces with heat transfer coefficient of h1, h2 and h3 respectively. The average heat transfer coefficient for the cube is:	1. h1+h2+h3 2. (h1*h2*h3)^0.3 3. (h1+h2+4h3)/6 4. (h1+h2+4h3)/3
A cylinderical pressure vessel of volume 6 m3 has to be designed to withstand a maximum internal pressure of 10 atm. The allowable design stress of the material is 125N/mm2 and corrosion allowance is 2 mm. The thickness of the vessel for a length/diameter ratio of 3 will be close to	1. 5 mm 2. 6 mm 3. 8 mm 4. 10 mm

A double-pipe heat exchanger is to be designed to heat 4 kg/s of a cold feed from 20 to 40 °C using a hot stream available at 160 °C and a flow rate of 1 kg/s. The two streams have equal specific heat capacities and the overall heat transfer coefficient of the heat exchanger is 640 W/m2 K. Then the ratio of the heat transfer areas required for the co -current to counter-current modes of operation is	1. 0.73 2. 1.085 3. 0.92 4. 1.25
A first order irreversible reaction, A --> B is carried out separately in a constant volume as well as in a variable volume reactor for a particular period. It signifies that _____ in the two reactors.	1. conversion in both will be the same but concentrations will be different 2. both the conversion as well as concentrations will be different 3. concentration in both will be the same but conversion will be different 4. both conversion as well as concentration are same
A first order reaction requires two equal sized CSTR. The conversion is	1. less when they are connected in series. 2. same whether they are connected in series or in parallel. 3. more when they are connected in series. 4. more when they are connected in parallel.
A first order system with unity gain and time constant t is subjected to a sinusoidal input of frequency w = 1/t. At infinite time, The ratio of output to input amplitude is	1. 0.705 2.0.7 3. 1 4. 0.707
A fluid in equilibrium means	1. its viscosity is zero 2. shear stresses are acting on the fluid but no flow behavior is manifested 3. it is free from shear stresses 4. a hypothetical situation because fluids are never in equilibrium
A fluidized bed is formed when	1. Fluid friction is zero 2. Gravity force is less than fluid friction 3. Pressure force is equal but acts in opposite direction to the gravity force 4. Sum of fluid friction and pressure force is equal but opposite to gravit
A forced circulation long tube vertical evaporator as compared to the natural circulation evaporator	1. employs a centrifugal pump placed between external downtake from inlet to tube bundle. 2. not economical to use 3. employs high velocity, high heat transfer rate and less heating surfac 4. is economical in operation.
A gas at 0°C is cooled at constant pressure until its volume becomes half the original volume. The temperature of the gas at this state will be	1. 0°K 2. - 136.5°K 3. -136.5°C 4. -273°C

A good quality coal should have	1.high moisture content 2. high ash content 3. high volatile content 4.high fixed carbon
A grey body has an emissivity	1.less than 1 2.greater than 1 3.equal to 1 4.constant with variation in temperature
A grey body is one whose absorptivity	1. does not vary with temperature and wavelength of the incident ray 2. is equal to its emissivity 3. varies with temperature 4. varies with wavelength of the incident ray
A high space velocity means that a given	1. reaction can be accomplished with large reactor 2. conversion can be obtained with a high feed rate. 3. both reaction can be accomplished with small reactor and conversion can be obtained with a high feed rate. 4. reaction can be accomplished with small reactor.
A hot body will radiate heat most rapidly, if its surface is	1. white & rough 2. black & rough 3. white & polished 4. black & polished
A liquid is in equilibrium with its vapor at its boiling point. On an average, the molecules in the liquid and gaseous phases have equal	1. potential energy. 2. kinetic energy. 3. temperature. 4. intermolecular forces of attraction.
A liquid mixture contains 30% o-xylene, 60% p-xylene and 10% m-xylene (all percentages in w/w). Which of the following statements would be true in respect of this mixture ?	1. The mixture exhibits an azeotrope at 101.3 kPa 2. The composition of the mixture in mol percent is : o-xylene 30, p-xyle xylene 10 3. The mixture contains optical isomers 4. The composition of the mixture, in percent by volume is : o-xylene 30 m-xylene 10
A liquid of density 1000kg/m3 flows through a pipe diameter 1 inch at velocity of 1.5 m/s, given friction factor 0.00025, calculate the frictional pressure drop per unit length?	1. 88.5 N/m2 2. 80.5 N/m2 3. 10 N/m2 4. 100 N/m2
A methanol-water vapor liquid system is at equilibrium at 60°C and 60 kPa. The mole fraction of methanol in liquid is 0.5 and in vapor is 0.8. Vapor pressure of methanol and water at 60°C are 85 kPa and 20 kPa respectively.	1. 1.2 2. 1.6 3. 7.5 4. 0.3

Assuming vapor phase to be an ideal gas mixture, what is the activity coefficient of water in the liquid phase ?	
A perfect black body is a perfect _____ of radiation.	1. neither absorber nor emitter 2. absorber 3. absorber and emitter 4. emitter
A photochemical reaction is _____ light.	1. accompanied with emission of 2. catalysed by 3. used to convert heat energy into 4. initiated by
A piece of metal of specific gravity 13.6 is placed in mercury of specific gravity 13.6, what fraction of it volume is under mercury?	1. the metal piece will be immersed in mercury by half 2. the metal piece will simply float over the mercury 3. metal piece will sink to the bottom 4. whole of the metal piece will be immersed with its top surface just at mercury level
A piece of wood having weight 5 kg floats in water with 60% of its volume under the liquid. The specific gravity of wood is	1. 0.75 2. 0.83 3. 0.4 4. 0.6
A pipe of I.D. 4 m is bifurcated into two pipes of I.D. 2 m each. If the average velocity of water flowing through the main pipe is 5 m/s, the average velocity through the bifurcated pipes is	1. 20 m/s 2. 2.5 m/s 3. 5 m/s 4. 10 m/s
A plait point is the point on the solubility curve, where the tie line reduces to a point. What is the number of plait point for a ternery system containing two pairs of partially miscible liquids ?	1. 2 2. 3 3. 0 4. 1
A pressure of 25 m of head of water is equal to	1. 25 kN/m2 2. 2500 kN/m2 3. 245 kN/m2 4. 2.5kN/m2
A reversible process requires that	1. there be no viscous or friction in the system 2. heat transfer occurs from system to surroundings only 3. temperature of the system and surroundings be equal 4. pressure of the system and surroundings be equal
A rhinoceros is weighed on a large 2 m x 2 m scale at the zoo. If the rhinoceros weighs 40 000 N, how much pressure is exerted on the pad	1. 160 kPa 2. 404 kPa 3. 10 kPa 4. 100 kPa

beneath the scale?	
A sand mixture was screened through a standard 10-mesh screen. The mass fraction of the oversize material in feed, overflow and underflow were found to be 0.38, 0.79 and 0.22 respectively. The screen effectiveness based on the oversize is	1. 0.50 2. 0.58 3. 0.68 4. 0.62
A satellite in space exchanges heat with its surroundings by	1. convection 2. diffusion 3. radiation 4. conduction
A ship whose hull length is 100 m is to travel at 10 m/sec. For dynamic similarity, at what velocity should a 1:25 model be towed through water ?	1. 10 m/sec 2. 50 m/sec 3. 25 m/sec 4. 2 m/sec
A simple pitot tube measures the	1. average velocity 2. maximum velocity 3.Viscosity 4. point velocity
A solution is made by dissolving 1 kilo mole of solute in 2000 kg of solvent. The molality of the solution is	1. 2 2. 1 3. 0.5 4. 0.05
A solution of KOH in water has a molarity of 7.0 and a KOH content of 30.21% (weight). What is the density of the solution?	1. 900 kg/m3 2. 1200 kg/m3 3. 1300 kg/m3 4. 1288 kg/m3
A steam pipe is to be insulated by two insulating materials put over each other. For best results, the arrangement of better insulating and inferior insulating materials should be _____	1. better insulation should be put over pipe and inferior one as the second layer 2. in any order 3.inferior insulation should be put over pipe and better one as the secon 4. unpredictable
A system with a double pole at the origin is unstable since the corresponding term in the time domain	1. grows linearly with time. 2. is a constant. 3. grows exponentially with time. 4. decays linearly with time.
A typical example of a physical system with under damped characteristic is a	1. U-tube manometer. 2. spring loaded diaphragm valve. 3. CSTR with first order reaction. 4. thermocouple kept immersed in a liquid filled thermowell.

A vapor whose partial pressure is less than its equilibrium vapor pressure is called a _____ vapor.	1. saturated 2. super heated 3. sub saturated 4. super saturated
A very dilute solution is prepared by dissolving 'x1' mole of solute in 'x2' mole of a solvent. The mole fraction of solute is approximately equal to	1. 1/x2 2. 1 - (x1/x2) 3. x2/x1 4. x1/x2
A vessel of volume 1000 m3 contains air which is saturated with water vapour. The total pressure and temperature are 100 kPa and 20°C respectively. Assuming that the vapour pressure of water at 20°C is 2.34 kPa, the amount of water vapour (in kg) in the vessel is approximately	1. 25 2. 34 3. 17 4. 20
Above atmospheric pressure the specific heat of a gas at constant pressure (Cp)	1. increases first and then decreases with increase in pressure 2. decreases with increase in pressure 3. increases with increase in pressure 4. remains unaffected with change in pressure
Absorption factor method is used to calculate the number of ideal stages, when	1. both operating and equilibrium lines are parallel. 2. operating line lies below the equilibrium line. 3. operating line lies above the equilibrium line. 4. pressure drop in the column is very high.
According to Lambert's law for radiation, the total emissive power from a radiating plane surface in any direction is	1. inversely proportional to secant of the angle of emission 2. directly proportional to tangent of the angle of emission 3. inversely proportional to co-secant of the angle of emission 4. directly proportional to sine of the angle of emission
All gases have approximately the same compressibility factor at the same	1. volume and pressure 2. temperature and pressure 3. reduced temperature and reduced pressure 4. critical temperature and critical pressure
Among the following, which metal has the highest thermal diffusivity?	1. Potassium 2. Silver 3. Iron 4. Silumin
An adequate clearance between the tray and the shell wall of a distillation column is provided to	1. Drain the liquid from the tray when the unit is not in operation. 2. Allow for thermal expansion and facilitate installation. 3. Avoid back-trapping. 4. Flood the tray
An exothermic reaction takes place in an adiabatic reactor. The product temperature	1. is always less than 2. is always equal to 3. is always greater than

_____ reactor feed temperature.	4. may be greater or less than
An ideal flow of any fluid must fulfill the following	1. Newton's law of viscosity 2. Pascal' law 3. Newton's law of motion 4. Continuity equation
An ideal gas can be liquified, because	1. its molecular size is very small. 2. its critical temperature is more than 0°C. 3. forces operative between its molecules are negligible. 4. it gets solidified directly without becoming liquid.
An imbalanced equation is against the	1. law of gaseous volumes 2. law of constant proportions 3. law of conservation of mass 4. law of multiple proportions
An isentropic process is always	1. reversible and adiabatic 2. irreversible and adiabatic 3. reversible and isothermal 4. frictionless and irreversible
Apex angle of conical heads used in the bottom heads of chemical process equipments is usually	1. 60° 2. 45° 3. 30° 4. 75°
Applying a pressure drop across a capillary results in a volumetric flow rate Q under laminar flow conditions. The flow rate for the same pressure drop, in a capillary of the same length but half the radius is	1. Q/2 2. Q/8 3. Q/16 4. Q/4
Arrhenious equation represents graphically the variation between the _____ and temperature.	1. activation energy 2. frequency factor 3. rate constant 4. rate of reaction
As the difference between the wall temperature and bulk temperature increases, the boiling heat transfer co-efficient	1. goes through a minimum 2. continues to decrease 3. continues to increase 4. goes through a maximum
As the reflux ratio in a distillation column is increased from the minimum, the	1. total cost first decreases and then increases. 2. number of plates decreases very slowly first and then more and more rapidly. 3. liquid flow increases while the vapor flow decreases for a system. 4. slope of the operating line in stripping section decreases.

As the reflux ratio, in a continuous counter-current extraction is increased, the number of stages	1. can either increase or decrease, depends on the system 2. remain unchanged 3. increase 4. decrease
As the temperature for an exothermic reactions increases, the equilibrium constant	1. unchanged 2. increases and then decrease 3. increases 4. decreases
At 60° C, vapour pressure of methanol and water are 84.562 kPa and 19.953 kPa respectively. An aqueous solution of methanol at 60° C exerts a pressure of 39.223 kPa; the liquid phase and vapour phase mole fractions of methanol are 0.1686 and 0.5714 respectively. Calcuylate the activity co-efficient of methanol.	1. 0.214 2. 3.144 3. 1.572 4. 0.786
At a constant volume, for a fixed number of moles of a gas, the pressure of the gas increases with rise of temperature due to	1. increase in molecular attraction. 2. increased collision rate among molecules. 3. decrease in mean free path. 4. increase in average molecular speed.
At a temperature of 0°K, the molecules of a gas have only _____ energy.	1. translational 2.molecular 3. rotational 4. vibrational
At minimum reflux ratio for a given separation	1. number of plates is zero 2. separation is most efficient 3. number of plates is infinity 4. minimum number of the theoretical plates is required
At the critical temperature and pressure the specific heat of a gas at constant-pressure (Cp)	1. is equal to 0.24 keal/(kmol.K) 2. reaches a value of infinity 3. is equal to 1 keal/(kmol.K) 4. reaches a value of zero
At the same gas flow rate, the pressure drop in a packed tower being irrigated with liquid _____ that in dry packed tower.	1. is greater than 2. cannot be predicted as data are insufficient 3. is lower than 4. is same as
At the stagnation point,	1. both pressure and velocity is zero 2. velocity is zero 3. pressure is zero 4. neither pressure non velocity is zero
At what conditions of reflux ratio, number of theoretical plates in a distillation column is	1. total 2. average

minimum ?	3. minimum 4. maximum
Balls for ball mills are never made of	1. cast iron 2. lead 3. forged/cast steel 4. alloy steel
Bode diagram are generated from output response of the system subjected to which of the following input?	1. Impulse 2. Sinusoidal 3. Step 4. Ramp
Bode stability method uses _____ loop transfer function.	1. open 2. closed 3. either open or closed 4. neither open nor closed
Bond crushing law	1. states that the work required to form particle of any size from very lar proportional to the square root of the surface to volume ratio of the prod 2. states that the work required for the crushing is proportional to the ne created. 3. calls for relatively less energy for the smaller product particles, than c law. 4. is less realistic in estimating the power requirements of commercial c
Boundary layer separation is caused by the	1. reduction of pressure gradient to zero 2. adverse pressure gradient. 3. boundary layer thickness reducing to zero. 4. reduction of pressure to vapour pressure.
Bulk of the convective heat transfer resistance from a hot tube surface to the fluid flowing in it, is	1. in the central core of the fluid 2. uniformly distributed throughout the fluid 3. mainly confined to a thin film of fluid near the surface 4. linearly distributed throughout the fluid
Buoyancy depends on	1. pressure of the liquid displaced 2. viscosity of the liquid 3. depth of immersion 4. mass of liquid displaced
Calculate the change in entropy when one gram of ice at 00C is converted into steam at 1000C. Latent heat of fusion of ice = 80 cal/g. Latent heat of vaporization = 540 cal/g mean specific heat of water between 00C and 1000C = 1.	1. 1.449 cal/K 2. 14.49 cal/K 3. 20.52 cal/K 4. 2.052 cal/K
Total power requirement…70%	1. 35.7 W 2. 5.0 W 3. 25.7 W

	4. 15.7 W
Capacity (in tons/hr) of jaw/gyratory crusher is equal to (where, L = length of the receiving opening, cm S = greater width of the discharge opening, cm)	1. 0.01 L.S 2. 0.087 L.S 3. L.S/0.087 4. L.S
Carboxymethyl cellulose (CMC) is added in detergents to act as a/an	1. anti soil redeposition agent 2. optical brightening agent 3. builder 4. surfactant
Cascade control means	1. on-off control. 2. one feed-back loop. 3. feed forward control. 4. more than one feed-back loop.
Catalyst used in the manufacture of sulphuric acid by chamber & contact processes are respectively	1. V2O5 on a porous carrier & oxides of nitrogen 2. oxides of nitrogen & Cr2O3 3. V2O5 & Cr2O3 4. oxides of nitrogen & V2O5 on a porous carrier
Cement clinker is reduced to fine size by a	1. roll crusher 2. hammer mill 3. ball mill 4. tube mill
Check valves are used	1. at high pressure. 2. for controlling water flow. 3. for unidirectional flow. 4. in bends.
Chemisorption (chemical adsorption) is	1. characterised by adsorption of heat. 2. same as "Van der Waals" adsorption. 3. a reversible phenomenon. 4. an irreversible phenomenon.
Compositional analysis of _____ is done using mass spectrometer.	1. a solid 2. an alloy 3. an isotope 4. natural gas
Concentration of a solution expressed in terms of _____ is independent of temperature.	1. normality 2.mass 3. molality 4. molarity
Concentration of hydrogen peroxide is done by	1. dehydration 2. crystallisation 3. atmospheric distillation

	4. vacuum crystallization
Consider a convergent divergent nozzle; a compressible fluid flows through the nozzle. The process-taking place in the divergent section may be described as an isentropic expansion. For this case, the stagnation temperature	1. is minimum at the throat 2. is maximum at the throat 3. changes linearly in the direction of flow 4. is constant
Contact process of sulphuric acid manufacture	1. eliminates absorber 2. is obsolete 3. yields acid of higher concentration than chamber process 4. yields acids of lower concentration than chamber process
Convection heat transfer happens predominantly due to	1. Conduction in the boundary layer 2. Bulk motion of the fluid 3. Newton's law of cooling 4.high viscosity
Convective heat transfer co-efficient in case of fluid flowing in tubes is not affected by the tube length/diameter ratio, if the flow is in the _____ zone	1. laminar 2. transition 3. highly turbulent 4. both laminar and transition
Conversion increases with increase in temperature in case of a an _____ reaction.	1. irreversible 2. reversible endothermic 3. autocatalytic 4. reversible exothermic
Cork is a good insulator because it has	1. free electrons 2. atoms colliding frequency 3. porous body 4. low density
Cumene is the starting material for the production of	1. isoprene 2. phenol and acetone 3. styrene 4. benzoic acid
DDT stands for	1. diphenyl-dichloro-trichloromethane 2. dichloro-diphenyl-trichloroethane 3. dichloro-diphenyl-trichloromethane 4. diethyl-diphenyl-trichloromethane
Dead zone in an instrument must be less than _____ percent of the scale.	1. 1.3 2. 8 3. 0.2 4. 3

dehydrogenation of isopropanol produces	1. formaldehyde 2. trichloroethylene 3. acetone 4. propyl alcohol
Derivative kick occurs in ------- controller.	1. P 2. PD 3.ON-OFF 4. PI
Diatomaceous earth is a/an	1. filter aid 2. catalyst 3. explosive 4. filter medium
Dietus-Boelter equation used for the determination of heat transfer coss-efficient is valid	1. Laminar internal flow 2. Laminar external flow 3. Turbulent external flow 4. Turbulent internal flow
Differential method for analysing the kinetic data is used	1. when rate expressions are very simple. 2. for testing complicated mechanisms. 3.when datas are insufficient 4. when the data are scattered.
Dissolving a solute in a solvent does not change its	1. vapour pressure 2. specific heat 3. viscosity 4. density
Drag force acting on a body does not depend upon the	1. projected area of the body. 2. density of the fluid. 3. density of the body. 4. velocity of the body.
Dry bulb temperature of unsaturated air is more than its _____ temperature.	1. both dew point and wet bulb 2. neither dew point nor wet bulb 3. dew point 4. wet bulb
During the course of a chemical reaction, the rate of a reaction	1. decreases as the reaction proceeds 2. increases as the reaction proceeds 3. cannot be predicted 4. remains constant throughout the reaction.
During the manufacture of sulphuric acid, the temperature of molten sulphur is not increased beyond 160°C, as	1. it is very corrosive at elevated temperature 2. its viscosity is not reduced on further heating 3. it decomposes on further increasing the temperature 4. its density changes drastically

During the transient convective cooling of a solid object, Biot number ~ 0 indicates	1. negligible convection at the surface of the object 2. significant temperature gradient within the object 3. significant thermal resistance within the object 4. uniform temperature throughout the object
Dust laden air can be purified using a	1. cyclone separator 2. gravity settler 3. bag filter 4. tubular centrifuge
Economics of 'Solvay Process' depends upon the efficiency of	1. ammoniation of salt solution 2. ammonia recovery and size of the plant 3. ammonia recovery 4. carbonating tower and size of the plant
Effectiveness - NTU method is applied whenever	1. Maximum heat transfer possible needs to be calculated 2. exit temperatures of both hot & cold streams needs be calculated 3. accurate results are needed 4. efficiency of the heat exchanger needs to be calculated
Emissivity of a white polished body in comparison to a black body is	1. depends upon the shape of body 2. same 3. higher 4. lower
Epoxy resin	1. is an elastomer 2. cannot be used for surface coatings 3. is a polyester 4. is a good adhesive
Equal masses of CH4 and H2 are mixed in an empty container. The partial pressure of hydrogen in this container expressed as the fraction of total pressure is	1. 1/2 2. 8/9 3. 5/9 4. 1/9
Equation Cp-Cv = R is	1. true for ideal as well as real gases 2. not true for any gas 3. true for an ideal gas only 4. true for any real gas
Fenske equation determines the	1. maximum number of ideal plates 2.minimum number of theoretical plates 3. height of the distillation column 4. optimum reflux ratio
Fermentation of molasses to produce ethyl alcohol is done at _____ °C	1. <-5 2. 100 - 150 3. 20 - 30 4. 250 – 300

Fibrous material is broken by a	1. rollcrusher 2. squirrel-cage disintegrator 3. tube mill 4. ball mill
Film condensation is promoted on a/an _____ surface	1. oily 2. coated 3. dirty 4. clean & smooth
Filtration of water in a paper mill is done by a/an _____ filter.	1. vacuum leaf 2. plate and frame 3. open sand 4. sparkler
First law of thermodynamics is based on the	1. law of conservation of momentum 2. law of conservation of mass 3. law of equitation of energy 4. law of conservation of energy
Flash distillation is suitable for the separation of components	1. which form minimum boiling azeotrope. 2. having very close boiling points. 3. which form maximum boiling azeotrope. 4. having very wide boiling points.
Flow of filtrate through the cake in a plate and frame filter press is best described by the _____ equation.	1. Kozney-Karman 2. Hagen-Poiseulle 3. Kremser 4. Fanning
Flow rate through an orifice is _____ the pressure differential.	1. proportional to 2. proportional to the square root of 3. inversely proportional to the square root of 4. inversely proportional to the square of
Fluid flow at increasing rate through a diverging pipe is an example of _____ flow	1. non-steady non-uniform 2. steady uniform 3. steady non-uniform 4. non-steady uniform
Fluid is a substance which offers no resistance to change of	1. flow 2. volume 3. shape 4. pressure
Foot valves provided in pumps are _____ valves.	1. three/four way 2. directional control 3. pressure reducing 4. relief

For a binary mixture with low relative volatility,	1. use steam distillation. 2. use high pressure distillation. 3. an azeotrope may be formed during distillation. 4. use molecular distillation.
For a cylinderical internally pressurised vessel, which of the following closure types would withstand highest pressure, if each closure is of the same material and thickness ?	1. hemispherical 2. ellipsoidal (2 : 1) 3. conical 4. flat plate
For a cylinderical vessel of moderate height, the weld joint efficiency for joints parallel to the cylinderical axis is given as 1.0, while for joints along the girth (circumference) it is given as 0.8. In calculating the shell wall thickness using code formula for an internally pressurised cylinderical vessel, what value of weld joint efficiency should be used ?	1. 0.5 2. 1.0 3. 0.8 4. 0.9
For a fixed number of ideal stages in a distillation column, as the reflux ratio is increased, the difference in composition between the top and bottom product streams	1. increases 2. passes through a maximum 3. remains unaffected 4. decreases
For a given rotameter operating on a definite fluid, the drag force on the float	1. varies as the square of the flow rate 2. varies as the square root of the flow rate 3. varies linearly with the flow rate 4. is constant
For a non-spherical particle, the sphericity	1. is always less than 1. 2. is the ratio of volume of a sphere having the same surface area as th actual volume of the particle. 3. has the dimension of length. 4. is defined as the ratio of surface area of a sphere having the same v particle to the actual surface area of the particle
For a particle settling in water at its terminal settling velocity, which of the following is true ?	1. Drag = weight 2. Buoyancy = weight + drag 3. Drag = buoyancy + weight 4. Weight = buoyancy + drag
For a real gas obeying van der Waals equation CP-CV is	1. R 2. < R 3. zero 4. > R
For an evaporator or condenser, LMTD for a parallel flow is	1. greater than that of counter flow 2. lesser than that of counter flow 3. same as that counter flow

	4. greater than cross flow
For an ideal gas mixture undergoing a reversible gaseous phase chemical reaction, the equilibrium constant	1. decreases with pressure. 2. increases with pressure. 3. is independent of pressure. 4. increases /decreases with pressure depending on the stoichiometric reaction.
For an ideal monoatomic gas the specific heats ratio is	1. 1.33 2. 1.67 3. 1.4 4. 1
For an input forcing function, X(t) = 2t^2, the Laplace transform of this function is	1. 2/(s*s*s) 2. 4/(s*s) 3. 2/(s*s) 4. 4/(s*s*s)
For an isothermal second order aqueous phase reaction, A --> B, the ratio of the time required for 90% conversion to the time required for 45% conversion is	1. 2 2. 22 3. 4 4. 11
For evaporation of viscous solution in a multiple effect evaporator, the prefered feeding scheme is	1. Mixed 2. backward 3. parallel 4. forward
For every 10°C rise in temperature, the rate of chemical reaction doubles. When the temperature is increased from 30 to 70°C, the rate of reaction increases _____ times.	1. 16 2. 12 3. 8 4. 32
For high conversion in a highly exothermic solid catalysed reaction, use a _____ bed reactor.	1. fixed bed reactor followed by a fluidised 2. fluidised bed reactor followed by a fixed 3. fixed 4. fluidised
For identical flow rate, feed composition and for elementary first order reactions, 'N' equal sized mixed reactors in series with a total volume 'V' gives the same conversion as a single plug flow reactor of volume 'V' for constant density systems. This is true, when the value of 'N' is	1. =1 2.Infinity 3. >1 4. 1
For Indian standard (IS) screens, the mesh number is equal to its aperture size expressed to the nearest deca-micron (0.01 mm). Aperture width of IS screen of mesh number 50 will be	1. 5000 2. 500 3. 5 4. 50

approximately _____ microns.	
For manometer, a better liquid combination is one having	1. higher surface tension 2. lower surface tension 3. surface tension is no criterion 4. high density and viscosity
For nearly isothermal operation involving large reaction time in a liquid-phase reaction, the most suitable reactor is a _____ reactor.	1. batch 2. stirred tank 3. tubular flow 4. fixed bed
For raschig rings(whose length and diameter are equal), the sphericity is	1. 1 2. <1 3. 0.5 4. 2
For shell and tube heat exchanger, with increasing heat transfer area, the purchased cost per unit heat transfer area	1. passes through a maxima 2. remains constant 3. increases 4. decreases
For steady, isentropic flow of a compressible fluid through a convergent-divergent nozzle, sonic conditions can occur	1. anywhere between the inlet of the converging section and the throat 2. only at the throat 3. anywhere between the throat and the outlet of the diverging section 4. only at the outlet of the diverging section
For the same feed, feed quality and separation (in a distillation column), with the increase of total pressure, the number of ideal plates will	1. increase 2. data insufficient, can't be predicted 3. remain same 4. decrease
For the same heat load and mass flow rate in the tube side of a shell and tube heat exchanger, one may use multipass on the tube side, because it	1. increases the outlet temperature of cooling medium 2. increases the overall heat transfer coefficient 3. decreases the outlet temperature of cooling medium 4. decreases the pressure drop
For the transfer of solution of thick slurry, the pump used is a _____ pump.	1. centrifugal 2. reciprocating 3. gear 4. diaphragm
For transporting pasty material, one will use a/an	1. apron conveyor 2. screw conveyor 3. belt conveyor 4. bucket elevator
For turbulent fluid flow through pipes, the kinetic energy and momentum correction factors are	1. 4 2. 0.5 3. 1

practically equal to	4. 2
For two non-interacting first order systems connected in series, the overall transfer function is the _____ of the individual transfer functions.	1. sum 2. difference 3. ratio 4. product
Fouling factor	1. accounts for additional resistances to heat flow 2. does not provide a safety factor for design 3. is a dimensionless quantity 4. increases heat transfer rate
Fourier's law of heat conduction is valid for	1. one dimensional cases only 2. regular surfaces having non-uniform temperature gradients 3. three dimensional cases only 4. two dimensional cases only
Fractional solvent extraction	1. employs only one solvent 2. not depends on temperature 3. employs two solvents 4. results in low interfacial tension
Frasch process is for	1. making oxygen 2. producing helium 3. making nitrogen 4. mining sulphur
Free alkali in a toilet soap is _____ that in a laundary shop	1. more than 2. less than 3. same 4.product
Free flowing granular materials can be best dried in a _____ drier.	1. freeze 2. drum 3. cylinder 4. rotary
Froth flotation is the most suitable for treating	1. quartzite 2. sulphide ores 3. iron ores 4. iron ore
Fusel oil is a/an	1. mixture of higher molecular weight alcohols (a by-product obta production of alcohol from molasses) 2. extract from medicinal herbs 3. essential oil 4. extract from petroleum jelly

Fusion of bauxite and _____ produces high alumina cement.	1. coke 2. alum 3. quartz 4. limestone
Gas chromatography is used for the measurement of	1. pressure 2. temperature 3. concentration 4. flow rate
Gases having same reduced temperatures and reduced pressures	1. will not deviate from ideal gas behaviour to the same degree and the same compressibility factor. 2. deviate from ideal gas behaviour to the same degree and have n compressibility factor. 3. have nearly the same compressibility factor. 4. deviate from ideal gas behaviour to the same degree.
Gelatine which is a nitrogenous organic protein is obtained by the hydrolysis of	1. tannin 2. molasses 3. carbohydrate 4. collagen
Generalized compressibility factor chart is a plot of	1. compressibility factor versus reduced pressure with reduced te parameter 2. compressibility factor versus absolute temperature with pressu 3. compressibility factor versus pressure with absolute temperatu 4. compressibility factor versus reduced temperature with reduce parameter
Generally, elliptical dished heads	1. resist half the pressure rating compared to hemi spherical hea cylindrical shell of the same thickness and diameter. 2. are approximately as strong as seamless cylindrical shell havi corresponding I.D and O.D. 3. as strong as a flat head. 4. are manufactured on 2:1 ratio of major to minor axis and is rec used for pressure vessels operating above a pressure of 1.5 MN/
Glycerine is not used in the	1. manufacture of pharmaceuticals 2. manufacture of explosive 3. detection of internal pressure of ear 4. conditioning and humidification of tobacco
Gun powder, which is an explosive comprises of charcoal, sulphur and	1. salt petre 2. glycerene 3. nitro glycerene

	4. dynamite
Half life period of a chemical reaction is	1. half of the space time of a reaction. 2. Half the space velocity 3. the time required to reduce the concentration of the reacting su its initial value. 4. half of the residence time of a reaction.
Heat flux increases with temperature drop beyond the Leiden frost point in the plot of heat flux vs. temperature drop for a boiling liquid, because	1. conduction becomes important 2. convection becomes important 3. sub-cooled boiling occurs 4. radiation becomes important
Heat in BTU necessary to increase the temperature of 1 lb of gas and its accompanying vapour by 1°F is called the	1. sensible heat 2. specific heat 3. humid heat 4. latent heat
Heat transfer by radiation mainly depends upon	1. nature of the body 2. temperature, nature and geometry of the body 3. kind and extent of its surface 4. temperature
Heat transfer coefficient in forced convection is not influenced by	1. Thermo physical properties of the fluid 2. Velocity of the fluid 3. Gravity acting on the fluid 4. Geometry & roughness of the system
Heat transfer in liquid and gases takes place by	1. convection and radiation 2. radiation 3. convection 4. conduction
Heat transfer in the laminar sublayer in case of a liquid flowing through a pipe, is mostly by	1. friction effect 2. conduction 3. eddies current 4. convection
Helium is produced on commercial scale from	1. Argon 2. coke oven gas 3. air 4. natural gas
Hess law of constant heat summation is based on conservation of mass. It deals with	1. Heat of combustion. 2. equilibrium constant. 3. changes in heat of reaction.

	4. reaction rate
Highly viscous liquids & pastes are agitated by	1.curved blade impeller 2. multiple blade paddles 3. propellers 4. turbine agitators
Hole diameter of the seive trays in the distillation column ranges from _____ mm.	1. 1 to 3 2. 12.5 to 18.5 3. 3 to 12.5 4. 4 to 8
Hot, lumpy & abrasive materials are best transported by using a/an _____ conveyor.	1. belt 2. flight 3. screw 4. apron
How many kilogram of CS2 will contain 42 kg of carbon?	1.86.45 2. 3.5x103 3. 266.45 4. 76.13
Hydrogen gas is not produced commercially (for nitrogeneous fertiliser manufacture) by	1. steam reforming of naphtha 2. electrolysis of water 3. iron-steam reaction 4. its cryogenic separation from coke oven gas
If (ΔG (free energy change) for a chemical reaction is very large and negative, then the reaction is	1. just feasible. 2. not feasible. 3.unpredictable as (ΔG is no measure of feasibility of a reaction. 4. very much feasible.
If all the variables of a stream are independent of time it is said to be in	1. unsteady flow 2. steady flow 3. constant flow 4. uniform flow
If mercury in a barometer is replaced by water, the height of 3.75 cm of mercury will be following cm of water	1. 52.2 cm 2. 52 cm 3. 50 cm 4. 51 cm
If no resistance is encountered by displacement, such a substance is known as	1. gas 2. water 3. ideal fluid 4. fluid
If the path of liquid across the plate is very long as in case of large diameter tower, Murphree efficiency can be _____ percent.	1. 100 2.50 3. > 100

	4. < 100
If the pressure of a gas is reduced to half & its absolute temperature is doubled, then the volume of the gas will	1. be reduced to l/4th. 2. increase four times. 3. increase two times. 4.Increased three times
If the pressure of an ideal gas contained in a closed vessel is increased by 0.4 per cent when heated through 1 oC. its initial temperature must be	1. 250 K 2. 2500 K 3. 25 oC 4. 2500 oC
If the temperature of a solid surface changes form 27°C to 627°C, then its emissive power changes in the ratio of	1. 3 2. 9 3. 81 4. 27
If the time required to change the concentration of reactant to half its original value is independent of the initial concentration, the order of reaction is	1. one 2. three 3. two 4. zero
In a binary distillation column, if the feed contains 30 mol% of vapor, what will be the slope of the q line?	1. 2.33 2. 0.88 3. 1.22 4. 0.72
In a closed loop system, the process to be controlled is an integrating process with transfer function l/2s. The controller proposed to be used in an integral controller with transfer function 1/T1s. When a step change in set point is applied to such a closed loop system, the controlled variable will exhibit	1. underdamped response. 2. undamped response. 3. unstable response. 4. overdamped response.
In a distillation column,…….. Reflux conditions: (i) Reflux stream is completely liquid and is at its bubble point. (ii) Reflux stream is below its bubble point.	1. Condenser and reboiler loads are the same in both the cases 2. Reboiler load is the same in both the cases but condenser load is hig 3. Condenser load is the same in both the cases but reboiler load is hig 4. Both condensor and reboiler loads are higher in case (ii) as compare
In a feed-back control system G and H denote open loop and close loop transfer functions respectively. The output-input relationship is	1. G/H 2. G/(1+GH) 3. H/G 4. H/(1+G)
In a gas-liquid absorption column, for obtaining	1. by passing should be completely avoided. 2. both gas as well as liquid streams should be distributed uniformly

the maximum absorption efficiency	3. gas stream should be distributed uniformly. 4. liquid stream should be distributed uniformly.
In a heat exchanger, floating head is provided to	1. increase log mean temperature gradient 2. relieve stresses caused by thermal expansion 3. increase the heat transfer area 4. facilitate cleaning of the exchanger
In a multipass shell and tube heat exchanger, the baffles on shell side is primarily provided for	1. fixing the tubes. 2. increasing pressure drop. 3. reducing scale deposition. 4. creating turbulence.
In a multipass shell and tube heat exchanger, the problem of differential expansion between the shell and tube passes is taken care of by using a	1.neither U-bend nor floating head tube sheet 2. U-bend 3. either U-bend or floating head tube sheet 4. floating head tube sheet
In a multiple effect evaporator, the effect of boiling point elevation is to	1. reduce the economy 2. increase the economy 3. reduce the capacity 4. increase the capacity
In a reversible chemical reaction having two reactants in equilibrium, if the concentration of the reactants are doubled, then the equilibrium constant will	1. remain the same 2. be halved 3. also be. doubled 4. become one fourth
In a shell and tube heat exchanger, "the tube pitch" is defined as the	1. Tangent to tangent distance 2. O.D. of the tube for square pitch. 3. Shortest centre to centre distance between adjacent tubes. 4. Shortest distance between two adj acent tube holes.
In a slab under steady state conduction if the thermal conductivity increases along the thickness, the temperature gradient along the direction will become	1. Steeper 2. Cannot be deteremined 3. Constant 4. Flatter
In a solution containing 0.30 Kg mole of solute and 600 kg of solvent, the molality is	1. 1 2. 2 3. 0.6 4. 0.5
In a static fluid	1. fluid pressure is zero 2. resistance to shear stress is small 3. linear deformation is small 4. only normal stresses can exist
In a zero order reaction, reactants concentration	1. time for half change is half the time taken for completion of the reacti

does not change with time and the	2. time for half change is independent of the initial concentration. 3. time for completion of the reaction is independent of the initial concer 4. reaction rate is trebled when the initial concentration is trebled.
In a/an _____ reactor, there is exchange of heat with the surroundings with sizeable temperature variation.	1. isothermal 2. non-adiabatic 3.isochoric 4. adiabatic
In an azeotropic mixture, the equilibrium vapor composition of the more volatile component is always	1. Less than the liquid composition of the more volatile component. 2. equal to liquid composition of the more volatile component 3. Greater than the liquid composition of the less volatile component 4. equal to the liquid composition of the less volatile component
In an exothermic chemical reaction, the reactants compared to the products have	1. same energy. 2. more energy 3. higher temperature 4. less energy
In an incompressible fluid, the Mach number is always	1. Infinity 2. 0 3. 100 4. 1
In autocatalytic reactions,	1. no catalyst is used. 2. one of the reactants acts as a catalyst. 3. one of the products acts as a catalyst. 4. catalysts have very high selectivity.
In batch distillation with constant reflux, overhead product composition _____ with time.	1. increases 2. may increase on decrease, depends on the system 3. does not vary 4. decreases
In case of a centrifugal pump, the ratio of total delivered pressure to pressure developed with the impeller is called the _____ efficiency.	1. volumetric 2. overall 3. manometric 4. mechanical
In case of a solution (not of a solid in a liquid), whose total volume is more than the sum of volumes of its components in their pure states, solubility is	1. decreased with the increase in pressure. 2. unchanged by the pressure change. 3. increased with the increase in pressure. 4. independent of the temperature.
In case of binary distillation, increasing the reflux ratio above optimum does not result in the increase of	1. tower height and diameter 2. area between operating line and 45° diagonal x-y diagram. 3. condenser and reboiler surfaces. 4. tower cross-section.

In case of bubble cap distillation column of diameter greater than 1.2 metres, the cap diameter is roughly about _____ cms.	1. 20 2. 30 3. 40 4. 10
In case of parallel flow heat exchanger, the lowest temperature theoretically attainable by the hot fluid is _____ the outlet temperature of the cold fluid.	1. either more or less than (depending upon the fluid) 2. less than 3. more than 4. equal to
In case of the irreversible unimolecular type, first order reaction, the fractional conversion at any time for constant volume system as compared to variable volume system is	1. more 2. either more or less, depends on other factors 3. same 4. less
In case of vertical tube evaporator, with increase in liquor level, the overall heat transfer co-efficient	1. may increase or decrease; depends on the feed 2. is not affected 3. increases 4. decreases
In Conduction process the molecules of the solid pass the heat from one to another	1. themselves move from one place to another. 2. without themselves moving from one place to another. 3. without themselves moving from their positions. 4. by electronic virtue
In continuous filtration (at a constant pressure drop), filtrate flow rate varies inversely as the	1. washing time only. 2. square of the viscosity. 3. filtration time only. 4. square root of the velocity.
In Cornell's method which of the following data is required?	1. Gas mass transfer coefficient 2. Physical properties of fluids 3. Overall resistance 4. liquid side mass transfer coefficient
In distillation columns, the number of bubble caps per tray primarily depends upon the	1. allowable liquid velocity 2. allowable gas velocity 3. allowable gas and liquid velocities 4. feed composition
In distillation, overhead product contains	1. only saturated liquid 2. two components 3. only one component 4. any number of components
In extraction, as the temperature increases, the area of hetrogeneity (area covered by binodal curve)	1. decreases 2. remains unchanged 3. increases and decreases 4. increases

In free convection heat transfer transition from laminar to turbulent flow is governed by the critical value of the	1. Grashoff number 2. Reynolds number 3. Reynolds number and Grashoff number 4. Prandtl number and Grashoff number
In free convection heat transfer, Nusselt number is function of	1. Grashoff no., Prandtl no. and Reynold no. 2. Prandtl no. and Reynold no. 3. Grashoff no. and Prandtl no. 4. Grashoff no. and Reynold no.
In heat exchangers, degree of approach is defined as the difference between temperatures of	1. hot medium inlet and outlet 2. hot medium outlet and cold water inlet 3. hot medium outlet and cold water outlet 4. cold water inlet and outlet
In paper industry, paper is dried in a _____ dryer.	1. tunnel 2. conveyor 3. festoon 4. heated cylinder
In premitive days, _____ was being manufactured by Leblanc Process.	1. washing soda 2. calcium carbide 3. soda ash 4. alum
In rectifying section of a continuous distillation column, the	1. vapour is enriched with low boilers. 2. liquid is stripped of high boilers. 3. Temperature reduced 4. vapour is enriched with high boilers.
In regenerator type heat exchanger, heat transfer takes place by	1. a complete separation between hot and cold fluids 2. generation of heat again and again 3. flow of hot and cold fluids alternately over a surface 4. direct mixing of hot and cold fluids
In reversible polytropic process	1. the internal energy remains constant 2. the temperature remains constant 3. true heat transfer occurs 4. the entropy remains constant
In second order underdamped system,	1. decay ratio = (overshoot)2 2. decay ratio = overshoot 3. overshoot increases for increasing damping co-efficient. 4. large damping co-efficient means smaller damping.
In simple distillation, the temperature _____ throughout the process .	1. decreases 2. remains constant 3. increases 4. increase and decrease

In stripping section of continuous distillation column, the	1. liquid is stripped of high boiler. 2. liquid is enriched with high boiler 3. vapour is stripped of low boiler. 4. liquid is enriched
In sulphate pulp manufacture, the pressure and temperature in the digestor is	1. 10 atm., 170-180°C 2. 1 atm., 170 - 180°C 3. 10 atm., 800 °C 4. l atm., 800°C
In the absorption of ammonia in water, the main resistance to absorption is by the _____ phase.	1. both liquid and gas 2. gas 3. liquid 4. neither liquid nor gas
In the case of turbulent flow through a horizontal isothermal cylinder of diameter 'D', free convection heat transfer coefficient from the cylinder will:	1. Vary as D^0.5 2. Vary as D^0.25 3. Vary as D^0.75 4. Be independent of diameter
In the constant rate period of the rate of drying curve for batch drying,	1. rate of drying decreases abruptly. 2.cracks develop on the surface of the solid. 3. surface evaporation of unbound moisture occurs. 4.rate of drying increases abruptly.
In the Lurgi coal gasifier	1. low carbon conversion efficiency is achieved 2. entrainment of solids is higher 3. large quantity of coal can be processed 4. coking coals cannot be used
In the manufacture of sulphuric acid from elemental sulphur, the following sequence of major operations is followed :	1. furnace , converter , evaporator 2. furnace , converter , absorber 3. converter , furnace , absorber 4. furnace , evaporator , absorber
In the polytropic process equation pv^n = constant, if n = 0, the process is termed as	1. adiabatic 2. constant volume 3. constant pressure 4. constant temperature
In the polytropic process equation pv^n = constant, if n is infinitely large, the process is termed as	1. isothermal 2. constant volume 3. constant temperature 4. constant pressure
In triangular co-ordinates, the ternery composition point falls _____ of the triangle.	1. in the corners 2. Outside 3. on the sides 4. inside

Internal energy of a perfect gas depends on	1. temperature only 2. temperature, specific heats and enthalpy 3. temperature, specific heats and entropy 4. temperature, specific heats and pressure
Jigging is a technique by which different particles can be	1. separated by particle size. 2. separated by particle density. 3. mixed 4. separated by particle shape.
Laminar flow region is said to exist during agitation of a liquid in an agitator, when the value of Reynolds number is	1. >100 2. <10 3. <100 4. >10
Laplace operator can be used for	1. only linear systems 2. both linear and non-linear 3. only non-linear systems 4. neither linear nor non-linear systems.
Leaching of sugar from sugar beets is done by	1. dilute sulphuric acid 2. cold water 3. hot water 4. lime water
Leaching rate is higher at	1. large particle size 2. high density 3. high temperature 4. low temperature
Leidenfrost point is a term concerned with the	1. boiling of a liquid on a hot surface 2. heat transfer between two highly viscous liquids 3. concentration of a corrosive solution by evaporation 4. condensation of the saturated vapor on a cold surface
Length/diameter ratio of a ball mill is	1. 1.5 2. >1 3. <1 4. 1
Let dh be the hydrodynamic entrance length for mercury in laminar flow in a pipe under isothermal conditions. Let dt be its thermal entrance length under fully developed hydrodynamic conditions. Which ONE of the following is TRUE ?	1. dh > dt 2. dh < dt only if the pipe is vertical 3. dh < dt 4. dh = dt
Limiting reactant in a chemical reaction decides the	1. equilibrium constant. 2. reaction speed 3. conversion

	4. rate constant
Liquid that does not flow at all until a threshold shear stress is attained is known as	1. Dilatant fluid 2. Pseudoplastic 3. Newtonian liquid 4. Bingham Plastic
LMTD correction factor which is to be applied for a cross-flow heat exchanger increases with increase in the number of shell passes. Its value for a single pass cross flow heat exchanger is	1. 0 2. 1 3. <1 4. >1
Log mean temperature difference in case of multi-pass shell and tube heat exchanger is always	1. more than arithmetic mean value. 2. less 3. more than geometric mean value. 4. less than arithmetic mean value.
Lug support is meant for supporting _____ vessels.	1. large horizontal cylindrical 2. tall but empty 3. small 4. thick walled tall
Lurgi coal gasifier is a pressurised _____ bed reactor	1. fluidized 2. moving 3. entrained 4. fixed
Melting of ice is an example of an _____ process.	1. isometric 2.isobaric 3. adiabatic 4. isothermal
Mercury manometer (U-tube type) exemplifies a _____ order system.	1. first 2. zero 3. second 4. third
Minimum baffle spacing recommended in a shell and tube heat exchanger is equal to	1. 5 cms 2. 40% of the I.D. of the shell 3. I.D. of the shell 4. 25 cms
Minimum reflux ratio in a distillation column results in	1. optimum number of trays. 2. minimum reboiler size. 3. maximum condenser size. 4. minimum number of trays.
Moisture contained by a substance in excess of the equilibrium moisture is called the	1. free 2. bound 3. critical

_____ moisture.	4. unbound
Molar heat capacity of water in equilibrium with ice at constant pressure is	1. 0 2.Infinity 3. 1 4.2
Molarity is defined as the number of gm moles of solute per _____ of solvent.	1. litre 2. kg 3. gram 4. cc
Molecularity of a reaction	1. may not be equal to the order of reaction. 2. is always equal to the overall order of reaction. 3. can't have a fractional value. 4. may not be equal to the order of reaction and can't have a fractional
Moore filter is a _____ filter.	1. sand 2. rotary 3. leaf 4. press
Most commonly used rubber vulcanising agent is	1. sulphur 2. platinum 3. bromine 4. alumina
Most widely and commonly used coagulant for the removal of suspended impurities in water is	1. slaked lime 2. bleaching powder 3. alum 4. copper sulphate
NaOH contains _____ percent oxygen	1. 40 2. 20 3. 10 4. 1
Nominal size of a pipe is an indication of its _____ diameter.	1. Inner 2. Outer 3. Approximate 4. Exact
Nominal size of the discharge pipe of a pump is usually _____ the nominal size of the inlet pipe.	1. larger than 2. twice 3. same as 4. smaller than
Number of gm moles of solute dissolved in 1 kg	1. molarity 2. formality

of solvent is called its	3. normality 4. molality
Oils are partially hydrogenated (not fully) to manufacture vanaspati, because fully saturated solidified oils	1. cause cholesterol build up and blood clotting 2. have affinity to retain harmful sulphur compounds 3. always contain some amount of nickel (as their complete removal is 4. are prone to rancid oxidation
One mole of methane undergoes complete combustion in a stoichiometric amount of air. The reaction proceeds as CH4 + 2O2 ¿ CO2 + 2H2O. Both the reactants and products are in gas phase. ¿H°298 = - 730 kJ/mole of methane. Mole fraction of water vapour in the product gases is about	1. 0.40 2. 0.33 3. 0.19 4. 0.67
Ordinary diffusion process is also called _____ diffusion	1. concentration 2. pressure 3. forced 4. thermal
Ordinary glass is not a/an	1. material with sharp definite melting point 2. amorphous isotropic material 3. electrical insulator 4. supercooled liquid
Overall efficiency of the distillation column is	1. same as the Murphree efficiency. 2. the ratio of number of actual plates to ideal plates. 3. the ratio of number of ideal plates to actual plates 4. always more than the point efficiency.
Oxidation of ortho-xylene in presence of _____ catalyst is done to produce phthalic anhydride on commercial scale.	1. nickel 2. iron 3. alumina 4. vanadium
Phosphoric acid is prepared from	1. iron ore 2. rock phosphate 3. cryolite 4. chalcopyrite
Pick out the correct statement.	1. A fat is converted into oil by its hydrogenation 2. There is no difference between a fat and an oil so far as its physical concerned 3. Vegetable oils are classified as drying, non-drying and semi drying o their fatty acids content 4. All vegetable oils except coconut oil, contains fatty acids having mor carbon atoms
Pick out the false statement ? In a heat	1. always greater than the exit temperature of the cold fluid in parallel f

exchanger, Exit temperature of hot stream is	2. always greater than the entry temperature of the cold fluid in parallel 3. always greater than the entry temperature of the cold fluid in counter 4. always greater than the exit temperature of the cold fluid in counter fl
Pick out the odd one out with respect to conduction	1. Electro magnetic phenomena 2. Lattice vibration 3. Particle collision 4. Free electron theory
Pick out the system with minimum boiling azeotrope at 1 atm	1. ethyl alcohol-water 2. methylene -benzene 3. benzene-toluene 4. hydrochloric acid-water
Pick out the wrong statement about the design of a sieve plate column.	1. Width of the calming section provided at the inlet and outlet sides of t for column diameter below 1.5 metres and 100 mm for larger diameter 2. For segmental downcomers, the chord length is 60-80% of the colum initial value of downcomer area of 12% is taken in the design. 3. Minimum recommended downcomer residence time for the disengag entrained vapour is the same for both foaming and non-foaming liquids seconds. 4. An increased weir height improves the tray efficiency at the cost of hi drop; optimum wear height being 40-90 mm for column pressure above 6-12 mm for vacuum columns.
Pick out the wrong statement pertaining to 'Horton sphere' used for the storage of liquid ammonia.	1. Horton sphere is used for the storage of liquid at sub-zero temperatu pressure upto 200 kg/cm2 . 2. Diameter of Horton sphere is normally 6 to 25 metres and it is suppo nos. tubular or rolled section column. 3. Thickness of spherical shell is half that of the cylinderical vessel unde pressure condition. Besides, the ratio of surface area to volume is less any other shape ; hence insulation required is less. 4. Horton sphere is used for the storage of gases and volatile liquid at a pressure of 1 to 10 kg/cm2 .
Pick out the wrong statement pertaining to the design of a horizontal tube evaporator.	1. Its usual dimensions are: tube dia = 2-3 cms; evaporator body dia = evaporator height = 2.5-4 metres. 2. It is suitable for process, in which the final product is a liquor instead 3. It is unsuitable for concentrating those liquids, which form a scale or 4. Liquor flows inside the tube, while the steam is outside submerging t
Pick out the wrong statement pertaining to the rotary dryer.	1. Hold up of a rotary drier is defined as the fraction of the dryer volume solid at any instant. The best performance for rotary drier is obtained, w in the range of 0.05 to 0.15. 2. Rotary dryer is suitable for drying sticky material. 3. Recommended peripherial speed of a rotary drier is in the range of 1 metres/minute. 4. Flights (located in the inside shell of rotary dryer) lift the material bein shower it down through the current of hot air/gases. It extends from the which is about 8-12% of the inside diameter of shell.

Pick out the wrong statement pertaining to the use of valve tray, seive tray and bubble cap trays in continuous distillation column.	1. Murphree efficiency of all the three trays are nearly equal, however th is generally higher for seive and valve trays than the bubble cap. 2. Maintenance cost for valve and seive trays are comparatively more t tray due to their relatively complicated construction features. 3. Valve trays have the highest turn down ratio (i.e. the ratio of the high vapour flow rates) and thus provides the maximum flexible operating ra 4. Bubble cap trays though most expensive are the best in situations, w rates is to be handled and a positive liquid seal is essential at all flow ra
Pick out the wrong statement.	1. Packed towers are preferred over plate towers for handling corrosive liquids. 2. Packed towers are preferred for vacuum operation, because the pres the packing is less and they (packings) also lessen the possibility of tow 3. Due to uneven supply and improper distribution of liquid, problem of channeling occurs. 4. Diameter of randomly packed tower is normally less than 1.2 metres.
Pick up the wrong case. Heat flowing from one side to other depends directly on	1. face area 2. time 3. temperature difference 4. thickness
ne oil used in froth flotation technique acts as a/an	1. frother 2. collector 3. activator 4. modifier
Planck's radiation law holds good for	1. black bodies 2. polished bodies 3. heat exchangers 4. all coloured bodies
Plate efficiency	1. increases due to foaming. 2. increases due to weeping and dumping of liquid. 3. increases due to liquid entrainment. 4. is a function of the mass transfer between liquid and vapour.
Polycaprolactum is commercially known as	1. nylon-66 2. rayon 3. dacron 4. nylon-6
Potassium is kept & transported under	1. kerosene oil 2. liquid ammonia 3. water 4. alcohol
Power consumption during turbulent flow in agitation tank is proportional to the _____ of the liquid.	1. density 2. thermal conductivity 3. viscosity 4. surface tension

Prandtl number < 1 indicates that	1. heat transfer is predominant than momentum transfer 2. momentum transfer and heat transfer are at same pace 3. mass transfer is possible 4. momentum transfer is predominant than heat transfer
Process degree of freedom indicates _____ number of controllers to be used.	1. the minimum 2. nothing about the 3. both maximum and the minimum 4. the maximum
Production of one ton of cement requires about _____ tons of limestone	1. 1.2 2. 0.6 3. 2.2 4. 3.8
Property of a fluid by which its own molecules are attracted is called	1. adhesion 2. cohesion 3. viscosity 4. surface tension
Pure oxygen is mixed with air to produce an enriched air containing 50 volume % of O2. The ratio of moles of air to oxygen is	1. 0.5 2. 0.2. 3. 0.58 4. 1.72
q in Mc cabe Thiele method is given by	1. HL-HV/HF-HV 2. Hf-HG/ HG-HL 3. HG-HF/ HG-HL 4. HG-HL/ HG-HF
Radiation energy is emitted by all the substances, which are above	1. room temperature 2. 0°C 3. 0 K 4. 100°C
Rain drops fall from a great height under gravity. Select the only correct statement from the following?	1. Their velocity go on increasing until they hit the earth with the same v 2. Their velocity go on increasing until they hit the earth with the same v velocities of different drops are different. 3. They fall with terminal velocities which are different for drops of differ 4. They fall with a terminal velocity which is the same for every drop
Range of compressibility co-efficient of the commercial compressible cake obtained in filtration operation is	1. 0.2 to 0.4 2. 0.01 to 0.1 3. 0.2 to 0.8 4. 0.1 to 0.3

Rate constant for a first order reaction does not depend upon reaction time, extent of reaction and the initial concentration of reactants ; but it is a function of reaction temperature. In a chemical reaction, the time required to reduce the concentration of reactant from 100 gm moles/litre to 50 gm moles/litre is same as that required to reduce it from 2 gm moles/litre to 1 gm mole/litre in the same volume. Then the order of this reaction is	1. 0 2. 2 3. 1 4. 3
Rate determining step in a reaction consisting of a number of steps in series is the _____ step.	1. slowest 2. intermediate 3. data insufficient; can't be predicted 4. fastest
Raw materials for Solvay Process for manufacture of the soda ash are	1. ammonia, salt and limestone 2. Sodium Carbonate and Brine 3. salt, limestone and coke or gas 4. ammonia limestone and coke
Raw materials used for producing _____ cement does not contain iron oxide.	1. slag 2. white 3. pozzolan 4. waterproof
Reboiler is considered as one theoretical plate, because	1. constant temperature in reboiler 2. vapour is recycled to the column. 3. of the assumption that vapour and liquid leaving the reboiler are in equilibrium 4. reboiler itself contains one plate.
Recycling in a chemical process facilitates	1. increased yield 2. decrease conversion 3. yield more by product 4. decreased yield
Relative humidity is the ratio of the	1. actual humidity to saturation humidity. 2. saturation humidity to actual humidity 3. partial pressure of the vapour to the vapour pressure of the liquid at gas temperature. 4. partial pressure of the vapour to the vapour pressure of the liquid at r
Reset rate is the another term used for _____ time.	1. integral 2. dead 3. derivative 4. dead

Response of a linear control system for a change in set point is called	1. servo problem 2. transient response 3. regulator problem 4. frequency response
Response of a system to a sinusoidal input is called _____ response.	1. impulse 2. frequency 3. impluse 4. unit step
Rose oil is extracted from rose leaves using _____ distillation.	1. steam 2. extractive 3. low pressure 4. high pressure
Screw conveyors are	1. suitable for highly abrasive materials. 2. suitable for sticky materials. 3. run at very high rpm. 4. suitable for sand
Sensible heat is the heat required to	1. change vapour into liquid 2. increase the temperature of a liquid of vapour 3. convert water into steam and superheat it 4. change liquid into vapour
Separation of a mixture of two gases by absorption in the liquid solvent depends upon the difference in their	1. relative volatility 2. density 3. viscosity 4. solubility
Separation of two or more components of a liquid solution can not be achieved by	1. liquid extraction 2. absorption 3. evaporation 4. fractional crystallisation
Shape factor for a cylinder whose length equals its diameter is	1. 2.5 2. 2 3. 0.5 4. 1.5
Shear stress in a fluid flowing in a round pipe	1. remains constant over the cross-section. 2. is zero at the wall and increases linearly to the centre. 3. is zero at the centre and varies linearly with the radius. 4. varies parabolically across the cross-section.
Shell side heat transfer co-efficient in case of square pitch as compared to the triangular pitch under similar condition of fluid flow and tube size is	1. Less 2. More 3. Twice 4. Same

Shell side pressure drop in a shell and tube heat exchanger does not depend upon the	1. tube diameter & pitch 2. viscosity, density & mass velocity of shell side fluid 3. Property of shell side fluid and tube bundle configuration 4. baffle spacing & shell diameter
Shrinkage volume in cement setting does not depend upon the	1. drying period 2. ambient temperature fluctuation 3. sand to cement ratio 4. water to cement ratio
Skirt support is the most suitable for supporting _____ vessels.	1. tall vertical 2. large horizontal 3. small horizontal 4. thick walled vessel
Slope of countercurrent flow rotary drier is in the range of _____ meter/metre.	1. 0 to 0.08 2. 0 to 1.5 3. 0 to 0.8 4. 0 to 2.2
Smaller sized packings are generally dumped to the packed columns, and the large ones of size greater than _____ mm are stacked individually, which provides better control over bed porosity and offers lower gas pressure drop.	1. 100 2. 25 3. 50 4. 75
Smoker's equation for the calculation of number of equilibrium stages in a continuous binary distillation column is used, when the	1. number of equilibrium stages in only stripping section is to be calcula 2. feed is not at its bubble point. 3. relative volatility is close to one (e.g., separation of close boiling isomers). 4. number of equilibrium
Solid particles separation based on the difference in their flow velocities through fluids is termed as the	1. sedimentation 2. elutriation 3. clarification 4. classification
Solution made by dissolving equimolar amounts of different solutes in the same amount of a given solvent will have the	1. elevation in boiling point in the ratio of their molecular weights. 2. different elevation in boiling point. 3. boiling point only 4. same elevation in boiling point.
Solutions which distill without change in composition are called	1. saturated 2. ideal 3. supersaturated 4. azeotropic
Solvent extracted oil	1. has low free fatty acid content 2. has more of unsaturates 3. is odourless

	4.has less saturates
Specific rate constant for a second order reaction	1. both varies with temperature and depends on the natures of the recta 2. depends on the nature of the reactants. 3. varies with temperature. 4. is independent of temperature.
Specific volume of a gas is	1. equal to its density 2. the reciprocal of its density 3. directly proportional to pressure 4. the volume of gas at S.T.P.
Spherical shaped pressure vessel is considered to be the most ideal, because it can	1. be supported very easily 2. be designed without wind load considerations. 3. withstand higher pressure for a given metallic shell thickness. 4. be fabricated very easily.
Starting raw material for the manufacture of alum is	1. gypsum 2. alumina 3. bauxite 4. ammonium bicarbonate
STATEMENT: (A) In a closed system at constant T and P, a spontaneous process will increase Gibbs free energy, G, until a maximum value for G is reached at equilibrium. (B) For an isolated system, a process that would move the system to a less constrained equilibrium state will decrease the entropy of the system. SELECT:	1. Only B is true 2. A and B are true 3. A and B are false 4. Only A is true
STATEMENT: (A) The fugacity of a component in a perfect gas mixture is equal to its partial pressure. (B). At low pressure the fugacity of a liquid is equal to its vapor pressure.	1. A and B are true 2. Only B is true 3. A and B are false 4. Only A is true
Steam economy is defined as the amount of evaporation per unit amount of steam used, while the capacity is the total evaporation obtained per hour. Use of multiple effect in evaporation	1. increases capacity. 2. increases economy. 3. does not affect the capacity. 4. decreases capacity
Study of chemical kinetics is the easiest in the case of _____ reactions.	1. surface 2. reversible 3. irreversible 4. side

Styrene butadiene rubber (SBR) is	1. another name of silicone rubber 2. a natural rubber 3. a synthetic polymer 4. a synthetic monomer
Sucrose content in the raw juice extracted from sugar cane is about _____ percent.	1. 1-2 2. 80 - 85 3. 15-20 4. 50 – 60
Sulphur addition in soap is done to	1. increase its cleansing action 2. fasten lather formation 3. improve the soap texture 4.cure pimples & dandruff
Sulphuric acid mist is arrested by using a _____ scrubber.	1. co-current 2. packed wet 3. hollow wet 4. venture
Sulphuric acid solution having a specific gravity of 1.20 at room temperature is used mainly for the	1. car battery solution 2. fertiliser manufacture 3. water treatment 4. synthesis of oleum
Temperature control of an exothermic chemical reaction taking place in a CSTR is done with the help of cooling water flowing in a jacket around the reactor. The types of valve and controller action to be recommended are	1. air to close valve with the controller direct acting. 2. air to close valve with the controller indirect acting. 3. air to open valve with the controller indirect acting. 4. air to open valve with the controller direct acting.
Temperature profile in steady state heat transfer is	1. linear 2. hyperbolic 3. asymptotic 4. parabolic
The 'shanks system' is used for	1. adsorption 2. crystallization 3. drying 4.leaching
The _____ of a vapor pressure thermometer is a primary element.	1. bulb 2. Bourdon tube 3.glass 4.pointer
The _____ of a vapor pressure	1.Glass 2. pointer

thermometer is a secondary element.	3. bulb 4. Bourdon tube
The actual temperature drop across the heating surface in an evaporator depends on the	1. feed, depth of liquid over heating surface and pressure difference 2. pressure difference between steam chest and vapour space 3. depth of liquid over heating surface 4. feed
The amount of heat flow through a body by conduction is	1. is given by stefan-Boltzmann law 2. inversely proportional to the thickness of the body 3. independent of the material of the body 4. indirectly proportional to the surface area of the body
The amplitude ratio for the sinusoidal response of _____ is < 1.	1. second order system 2.Zero Order System 3. transportation lag 4. first order system
The assumption made in Elis method in distillation is that enthalpy concentration lines of vapor and liquid are	1. both parallel and straight 2. straight 3. parallel 4. neither parallel nor straight
The atomic heat capacities of all solid elements	1. approaches a value of infinity at absolute zero temperature 2. decreases greatly with decrease in temperature 3. remains unaffected with change in temperature 4. increases greatly with decrease in temperature
The boundary layer exists on account of	1. Gravitational effect 2. Fluid density 3. Fluid viscosity 4. Surface tension
The capillary rise at 20°C in a clean glass tube of 1 mm bore containing water is approximately	1. 10 mm 2. 1 mm 3. 30 mm 4. 15 mm
The catalyst used in shift converter is	1. silica gel 2. alumina 3. nickel 4. vanadium
The catalyst used in the production of elemental sulphur from H2S (by oxidation-reduction) is	1. nickel 2. platinum 3. alumina 4. silica gel
The catalytic activity of enzymes is due to their capacity to lower the _____ energy.	1. activation 2. kinetic

	3.pressure 4. potential
The centre to centre distance between two consecutive baffles in a shell and tube heat exchanger is called the baffle pitch or baffle spacing, which is more than 1/5th the I.D. of the shell. Which of the following is not a function of the baffles ?	1. To increase the tube side heat transfer co-efficient by inducing turbul 2. To reduce the induced vibration in the tubes. 3. To provide support to the tube bundle. 4. To increase the residence time of shell side fluid.
The circumferential (hoop) stress in a thin walled cylinderical vessel under internal pressure is	1. pd/4t 2. pd/t 3. pd/2t 4. pd/3t
The closed loop pole of a stable second order system could be	1. complex conjugate with positive real parts. 2. both real and negative. 3. one real positive and the other real negative. 4. both real and positive.
The closed loop pole of a stable second order system could be	1. both real and positive. 2. both real and negative. 3. complex conjugate with positive real parts. 4. one real positive and the other real negative.
The compressibility factor of any gas	1. is always greater than 1 2. is always equal to 1 3. is always less than 1 4. may be less than or equal to or greater than 1 depending on the nature of the gas
The controlling resistance in a rotary drum vacuum filter is the _____ resistance.	1. filter medium 2. piping 3. vacuum 4. cake
The dimensions of rate constant for reaction 3A --> B are (l/gm mole)/min. Therefore the reaction order is	1. 1 2. 0 3. 2 4. 3
The drug used in contraceptives is	1. methyl salicylate 2. sulphadizene 3. mestranol 4. pencillin
The ends of a cylinderical vessel can be closed by a head, which can be one of the four shapes. For the same thickness, choose the one which	1. Flat plate 2. Hemispherical 3. Ellipsoidal 4. Torispherical

can withstand the highest pressure.	
The energy distribution of an ideal reflector at higher temperatures is largely in the range of	1. wavelength has nothing to do with it 2. shorter wavelength 3. longer wavelength 4. remains same at all wavelengths
The energy required per unit mass to grind limestone particles of very large size to 100 µm is 12.7 kWh/ton. An estimate (using Bond?s law) of the energy to grind the particles from a very large size to 50 µrn is	1. 18 kWh/ton 2. 6.35 kWh/ton 3.9.0 kWh/ton 4. 25.4 kWh/ton
The entropy _____ in an irreversible cyclic process.	1. zero 2. decreases 3. increases 4. remains constant
The entropy of water at 0°C is assumed to be	1. 1 2. 10 3. 0 4. -1
The equilibrium constant for the reaction CO(g) + H2O(g) --> CO2(g) + H2(g) is K = 1.03 × 105 at 298.15 K. Calculate the standard reaction Gibbs energy at this temperature.	1. -2.40 kJ mol-1 2. -255 kJ mol-1 3. -12.4 kJ mol-1 4. -28.6 kJ mol-1
The equilibrium liquid composition compared to the vapor composition in case of azeotropic mixture is	1. less 2. more 3. same 4. either more or less; depends on the system
The expression for critical thickness of insulation for a cylinder is given as	1. k/h 2. 1/h 3. 1/(hk) 4. h/k
The first law of thermodynamics for steady flow	1. is an expression of the conservation of linear momentum 2. is primarily concerned with heat transfer 3. accounts for all energy entering and leaving a control volume 4. is an energy balance for a specified mass of fluid
The fluid forces considered in the Navier Stokes equation are	1. gravity, pressure and viscous 2. gravity, pressure and turbulent 3. pressure, viscous and turbulent 4. gravity, viscous and turbulent

The fluid property, due to which, mercury does not wet the glass is	1. cohesion 2. adhesion 3. viscosity 4. surface tension
The fluid used in hydraulic controller is	1. water 2. air 3. oil 4. steam
The fluid used in pneumatic controller is	1. water 2. steam 3. air 4. oil
The fractional volume change between no conversion and complete conversion, for the isothermal gas phase reaction, 2A --> R, is	1. 1 2. 0.5 3. -0.5 4. 1.5
The fractional volume change of the system for the isothermal gas phase reaction, A- 3B , between no conversion and complete conversion is	1. 0.5 2. 1 3. 2 4. 3
The fugacity of a gas in a mixture is equal to the product of its mole fraction and its fugacity in the pure state at the total pressure of the mixture?. This is	1.Raoults law 2. Henry's law 3. called Lewis-Randall rule 4. the statement as per Gibbs-Helmholtz
The function of a transducer is to	1. modify the input signal. 2. codify/decodify the input signal. 3. amplify the input signal. 4. convert the primary signal into a more useful quantity, usually an electric impulse.
The function of manholes provided in the shell of a distillation column is to	1. Guard against foaming & entrainment by dumping antifoaming agent 2. To remove the product 3. Give access to the individual trays for cleaning, maintenance and ins 4. Keep a check on the liquid gradient over the plate by direct visual ob
The Grashof Number is	1. Thermal diffusivity/mass diffusivity 2. inertial force/surface tension force 3. buoyancy force / viscous force 4. sensible heat / latent hea
The half life period of a first order reaction is given by (where, K = rate constant.)	1. 6.93 K 2. 0.693/K 3. 1.5 K

	4. 2.5 K
The heat capacity of a substance is	1. higher for solid state than for liquid state. 2. lower for liquid state than for gaseous state. 3. greater for liquid state than for solid state. 4. equal for solid and liquid states below melting point.
The increase in the rate of reaction with temperature is due to	1. increase in the number of effective collisions. 2. decrease in Vapor Pressure. 3. increase in the average kinetic energy of the reacting molecules. 4.decrease in activation energy.
The inlet pressure in a constant rate filtration	1. increases continuously 2. decreases gradually 3. remains constant 4.increases
The insulation ability of an insulator with the presence of moisture would	1. increase 2. decrease 3. remain unaffected 4.varies in a random manner
The kinematic viscosity is the	1. ratio of density of the liquid to the absolute viscosity 2. product of absolute viscosity and mass of the liquid 3. product of absolute viscosity and density of the liquid 4. ratio of absolute viscosity to the density of the liquid
The main size reduction operation in ultrafine grinders is	1. compression 2. attrition 3. impact 4. cutting
The most common packing used in industrial operations is _____ rings.	1. single spiral 2. cross-partition 3. lessing 4. raschig
The most efficient equipment for the removal of sub-micronic dust particles from blast furnace gas is the	1. venturi atomiser 2. electro-static precipitator 3. cyclone separator 4. gravity settling chamber
The most unsuitable reactor for carrying out reactions in which high reactant concentration favours high yields is	1. backmix reactor 2. PFR in series 3. plug flow reactor 4.auto catalytic reactor
The net positive suction head (NPSH) of a	1. suction minus vapor pressure of the liquid at suction temperature.

centrifugal pump is defined as the sum of the velocity head and the pressure head at the	2.inlet vapour pressure 3. discharge minus vapor pressure of the liquid at the discharge temper 4. suction
The normal range of velocity of steam in pipes is _____ m/sec.	1. 80 - 100 2. 10 -20 3. 1 - 5 4. 0.1 - 0.5
The onset of turbulence is characterized by	1. a sudden rapid increase in the thickness of boundary layer 2. a sudden increase in viscosity in the direction of flow 3. a sudden rapid decrease in the thickness of the boundary layer 4. a sudden decrease in velocity in the direction of flow
The operating velocity in the absorption tower is usually 40-50% of the flooding velocity. Packed absorption towers are normally designed for a pressure drop of about _____ mm of water column per metre height of packing.	1. 1000-1500 2. 1-5 3. 100-150 4. 20-40
The operation of a rotameter is based on	1. rotation of a turbine. 2. variable flow area. 3. pressure at a stagnation point. 4. pressure drop across a nozzle.
The optimum ratio of the actual liquid rate to the minimum liquid rate for gas absorption generally lies between	1. 0 to 1 2. 0.5 to 1.5 3. 1.2 to 2 4. 2 to 3.5
The performance of a cascade of CSTR's can be improved by adding	1. more CSTR's in parallel. 2. a P.F. reactor in series. 3. a P.F. reactor in parallel. 4. more CSTR's in series.
The process used for the manufacture of ethyl alcohol from molasses is	1. dehydrogenation 2. dehydration 3.fermentation 4. distillation
The processes occuring in open system which permit the transfer of mass to and from the system, are known as	1. adiabatic processes 2.isentropic processes 3. flow processes 4. non-flow processes
The processes or systems that do not involve heat are called	1. thermal processes 2. isothermal processes 3. equilibrium processes 4. adiabatic processes

The purpose of tanning in leather industry is to	1. impart water resistance 2. stiffen the leather 3. smoothen the leather 4. make it flexible
The rate constant of a chemical reaction increases by 100 times when the temperature is increased from 400 °K to 500 °K. Assuming transition state theory is valid, the value of E/R is	1. 8764°K 2. 9210°K 3. 8621°K 4. 8987°K
The rate constant of a first order reaction depends on the	1. temperature. 2. concentration of the product. 3. time. 4. concentration of the reactant.
The rate of forward reaction, at chemical equilibrium is____the rate of backward reaction.	1. less than 2. either less than or equal to 3. equal to 4. more than
The ratio of average fluid velocity to the maximum velocity in case of laminar flow of a Newtonion fluid in a circular pipe is	1. 0.66 2. 0.5 3. 1 4. 2
The ratio of kinematic viscosity to thermal diffusivity is called the _____ number.	1. Peclet 2. Prandtl 3. Stanton 4. Nusselt
The ratio of knucle radius to crown radius in a torisphrecal head should not be less than	1. 7/100 2. 6/100 3. 5/100 4. 8/100
The ratio of shear stress to shear strain is called	1. modulus of elasticity 2. shear modulus 3. modulus of rigidity 4. bulk modulus
The ratio of volume of mixed reactor to the volume of P.F.R. (for identical flow rate, feed composition and conversion) for zero order reaction is	1. 0 2. 1 3. > 1 4. 8
The reaction A --> B is conducted in an isothermal batch reactor. If the conversion of A increases linearly with holding time, then the order of the reaction is	1. 2 2. 0 3. 1.5 4. 1

The reaction between oxygen and organic material is a/an _____ reaction.	1. exothermic 2. endothermic 3. photochemical 4. biochemical
The reaction in which one of the products of reaction acts as a catalyst is called a/an _____ reaction.	1.catalytic 2. photochemical 3.autocatalytic 4.reversible
The reaction in which the rate equation corresponds to a stoichiometric equation, is called a/an _____ reaction.	1. elementary 2. non-elementary 3. autokinetic 4. parallel
The reactions with low activation energy are	1. non-spontaneous 2. fast 3. always spantaneous 4. slow
The reason why a catalyst increases the rate of reaction is that, it	1. increases the activation energy. 2. decreases the molecular collision diameter. 3. decreases the energy barrier for reaction. 4.decreases the activation energy.
The response of two tanks of same size and resistance in series is	1.Un damped 2. critically damped 3. under damped 4. over damped
The resultant upward pressure of a fluid on a floating body is equal to the weight of the fluid displaced by the body. This definition is according to	1. Buoyancy 2. Equilibrium of a floating body 3. Archimedes' principle 4. Bernoulli's theorem
The reverse process of fractional crystallisation is called	1. leaching 2. stripping 3. differential distillation 4. absorption
The Schmidt no is the ratio of	1. the momentum diffusivity to the thermal diffusivity 2. the thermal diffusivity to the mass diffusivity 3. the mass diffusivity to the momentum diffusivity 4. the momentum diffusivity to the mass diffusivity
The SI unit of Cp is	1. J/m3.K 2. J/kg.K 3. J/kg 4. W/kg.K

The temperature above which a substance can exists only in its gaseous state and cannot be liquefied regardless of the magnitude of pressure exerted on it is called	1. saturation temperature 2. boiling point 3. inversion temperature 4. critical temperature
The temperature at which a real gas obeys Boyle's law is termed as the	1. triple point 2. inversion temperature 3. eutectic point 4. Boyle's temperature
The temperature in a simple distillation process remains	1. Decreases 2. Increases 3. Increase and then decrease 4. Constant
The term cooling range in a cooling tower refers to the difference in the temperature of	1. cold water inlet and dry bulb temperature 2. hot water entering the tower and the cooled water leaving the tower. 3. cold water leaving the tower and the wet bulb temperature of the surr 4. hot water entering the tower and the wet bulb temperature of the surr
The terminal velocity of a particle moving through a fluid varies as dp. What is the value of n for Newton's law regime ?	1. 0.5 2. 1.5 3. 2 4. 1
The time constant of a first order process with resistance R and capacitance C is	1. R - C 2. RC 3. R + C 4. 1/RC
The total emissive power is defined as the total amount of radiation emitted by a black body per unit_____ and unit _____.	1. time and area 2.length and mass 3.time and temperature 4.length and temperature
The transfer function for a P-D controller is	1. Kc td s 2. Kc/td s 3. Kc(1+td s) 4. Kc(1 +1/td s)
The unit of 'time constant' of a system is the same as that of	1. 1/time 2. area 3. velocity 4. time
The unit of viscosity in CGS system is commonly known as Poise. The dimension of Poise is	1. g/cm.s 2. g/cm.s2 3. g.cm2/s 4. g.cm/s

The value of gas constant ?R? is _____ kcal/kg.mole.°C.	1. 4.789 2. 2.79 3. 1.987 4. 3.99
The value of Prandtl number for air is about	1. 0.3 2. 0.5 3. 0.7 4. 0.1
The value of the wavelength for maximum emissive power is given by	1. Stefan's law 2. Planck's law 3. Wien's law 4. Fourier's law
The vapor pressure of the solvent decreased by 10 mm Hg, when a non-volatile solute was added to the solvent. The mole fraction of the solute in the solution is 0.2. What should be the mole fraction of the solvent, if the decrease in vapor pressure of the solvent is required to be 20 mm Hg. ?	1. 0.1 2. 0.6 3. 0.4 4. 0.2
The vapor pressures of benzene and toluene are 3 and 4/3 atmospheres respectively. A liquid feed of 0.4 moles of benzene and 0.6 moles of toluene is vapourised. Assuming that the products are in equilibrium, the vapor phase mole fraction of benzene is	1. 0.8 2. 0.6 3. 0.4 4. 0.2
The velocity profile for turbulent flow through a closed conduit is	1.logarithmic 2. linear 3. hyperbolic 4.Parabolic
The volume of an ideal gas is 100 cm3 at 100 oC. If the pressure is held constant at what temperature will the gas have a volume of 200 cm3?	1. 50 oC 2. 200 oC 3. 746 oC 4. 473 Oc
The weight fraction of methanol in an aqueous solution is 0.64. The mole fraction of methanol XM satisfies	1. XM < 0.5 2. XM = 0.5 3. 0.5 < XM < 0.64 4. XM = 0.64
There is no correspondence between stoichiometry and the rate equation in case of a/an _____ reaction.	1. elementary 2. autocatalytic 3. non-elementary 4. multiple

Thermal conductivity of air with rise in temperature	1. increases 2. decreases 3. remains constant 4. may increase or decrease depending on temperature
Thermal contact resistance decreases the temperature	1. constantly 2. Instantaneously 3. Linearly 4. Parabolically
Thermal wells are used in the temperature measurement to	1. increase the sensitivity. 2. reduce measuring lag. 3. guard against corrosive and oxidizing action on thermocouple materials 4. increase the fidelity.
Thermistor, which has high temperature co-efficient of resistivity, is used as the sensing element in resistance thermometer. It is a/an	1. liquid semi-conductor 2. solid semi-conductor 3. conductor 4. insulator
Thermocouple in a thermal well behaves as a true	1. first order system. 2. second order system (underdamped). 3. multiple first order system. 4. second order system (overdamped).
Thermocouple is suitable for measuring	1. very high temperatures only. 2. liquid temperatures only. 3. both high and low temperatures. 4. very low temperatures only.
Thin spherical shells subjected to internal pressure, develop _____ stress	1. radial 2. circumferential 3. both radial and circumferential 4. neither radial nor circumferential
Time constant is the	1. same as dead time. 2. time required by the manipulated variable to reach 63.2% of its ultima 3. same as transportation lag. 4. time taken by the controlled variable to reach 63.2% of its full change
To get ultra fine particles, the equipment used is a	1. ball mill 2. rod mill 3. hammer crusher 4. fluid energy mill
To increase the absorption factor, (where, G = gas flow rate, S = solvent flow rate)	1. decrease both 'G' and 'S'. 2. increase both 'G' and 'S'. 3. increase 'S' and decrease 'G' 4. increase 'G' and decrease 'S'

Transfer function of transportation lag is	1. e^TS 2. e^-TS 3.e^TS2 4. e^-TS/S
Traveling into the mountains often causes your ears to "pop". The "popping" of your ears as your altitude increases is caused by	1. air moving into your ears due to convection 2. high pressure air in your ears rapidly escaping as it moves to an area 3. high pressure air from the surroundings moving rapidly into the low p your ears. 4. air moving out of your ears due to convection.
Triangular pitch tube layout as compared to square pitch in a shell and tube heat exchanger	1. permits the use of less tubes in a given shell diameter. 2. permits the use of more tubes in a given shell diameter. 3. facilitates comparatively easier external cleaning because of large cl 4. Reduces fouling.
Triple superphosphate is manufactured by reacting	1. ammonium phosphate with phosphoric acid 2. phosphate rock with nitric acid 3. phosphate rock with sulphuric acid 4. phosphate rock with phosphoric acid
Tube height in a calendria type evaporator is normally less than	1. 1.0 m 2. 3.5 m 3. 5.5 m 4. 2.0 m
Two balls of same material and finish have their diameters in the ratio of 2 : 1 and both are heated to same temperature and allowed to cool by radiation. Rate of cooling by big ball as compared to smaller one will be in the ratio of	1. 1 : 1 2. 2 : 1 3. 1 : 2 4. 4 : 1
Two iron pipes of the same nominal diameter but different schedule numbers will have the same	1. mean diameter 2. Wall thickness 3. Inside diameter 4. Outside diameter
Two particles are called to be equal settling, if they are having the same	1. specific gravity. 2. shape 3. size 4. terminal velocities in the same fluid & in the same field of force.
Two plates of equal thickness (t) and cross-sectional area, are joined together to form a composite. If the thermal conductivities of the plates are k and 2k then, the effective thermal	1. 2k/3 2. 3k/4 3. 4k/3 4. 3k/2

conductivity of the composite is	
Two spherical particles, one of dia d1 and the other of dia d2 , settle freely through a pool of liquid and the settling is in accordance with Stoke's law. d1:d2 = 1 : 2. Therefore, u1 : u2 is equal to	1. 1 : 2 2. 4 : 1 3. 2 : 1 4. 1 : 4
Type of glass used in optical work is the _____ glass	1. lead 2. fibre 3. soda-lime 4. borosilicate
Ultracentrifuges running at speeds upto 100000 rpm is normally used for the	1. separation of isotopes based on their density or molecular weights di 2. dewaxing of lubricating oil. 3. separation of cream from milk. 4. concentration of rubber latex.
Under which of the following conditions is the law PV = RT obeyed most closely by a real gas?	1. Low pressure and high temperature 2. Low pressure and low temperature 3. High pressure and low temperature 4. High pressure and high temperature
Uniform flow occurs when	1. the direction and magnitude of the velocity at all points are identical 2. the velocity of successive fluid paiticles, at any point, is the same at s of time 3. the magnitude and direction of the velocity do not change from point to point in the fluid 4. the fluid particles move in plane or parallel planes and the streamline identical in each pleasure
Variables affecting the rate of homogeneous reactions are	1. pressure and temperature only. 2. pressure, temperature and composition. 3. temperature and composition only. 4. pressure and composition only.
Viscose Rayon is Chemically	1.Cellulose Xanthate 2. cellulose nitrate 3.Poly saccharides 4.Poly Lactic Acid
Vulcanisation of rubber	1. converts its plasticity into elasticity 2. increases its ozone & oxygen reactivity 3. increases its oil & solvent resistance 4. decreases its tensile strength
Water flows turbulently through a smooth pipe. At the centre line the velocity gradient is	1. zero 2. between zero and one

	3. two 4. infinity
Weeping in a distillation column	1. results due to very high gas velocity. 2. provides large interfacial surface for mass transfer. 3. increases tray efficiency. 4. results due to very low gas velocity.
Weight of 56 litres of ammonia at N.T.P. is _____ gm.	1. 2.5 2. 56 3. 8600 4. 42.5
Wetted wall tower experiment determines the	1. vapour pressure 2. volumetric co-efficient. 3. mass transfer co-efficient. 4. molal diffusivity.
What is the difference in two specific heats Cp and Cv of one gram of helium ? The molecular weight of helium is 4. Assume that helium behaves as an ideal gas.	1. 0.5 kcal/(kg.K) 2. 1 kcal/(kg.K) 3. 8 kcal/(kg.K) 4. 2 kcal/(kg.K)
What is the Laplace transform of impulse input having magnitude 'X' ?	1. 1/X 2. 1 3. X 4. 2/X
What is the order of a chemical reaction whose rate is determined by the variation of one concentration term only ?	1. third 2. first 3. zero 4. second
What is the steam economy in case of a single effect evaporator system ?	1. 0.1 2. >1 3. 1 4. <1
What is the total pressure exerted by a mixture of 0.45 kg mole of benzene, 0.44 kg mole of toluene and 0.23 kg mole of o-xylene at 100°C, if their vapor pressures at 100°C are 1340, 560 and 210 mmHg respectively ?	1. 801.5 2. 880.5 3. 756.2 4. 780.5
What is the unit of the rate constant in a chemical reaction in which 10% of the reactant decomposes in one hour, 20% in two hours, 30% in three hours and so on ?	1. Moles/litre.second 2. Litre/second 3. Litre/mole 4. Litre/mole.second

What should be the tube layout pattern if the fouling fluid is on tube side?	1. Both triangle and square pattern 2. Square pattern 3. Rotated Triangle 4. Triangle pattern
What type of flight is used in rotary dryer processing a granular solid	1. 45°-flight or 90°-flight 2. straight flight 3. 45°-flight 4. 90°-flight
When a bare thermocouple is covered by a protective sheath, the response becomes	1. faster and oscillatory. 2. slower and oscillatory. 3. slower and non-oscillatory. 4. faster and non-oscillatory.
When a correctly written chemical equation is balanced	1. the number of atoms of each kind on each side should be equal 2. all molecules are diatomic 3. all substances are in the same physical state 4. the sum of the coefficient on both sides is the same
When the damping co-efficient is unity, the system is	1. Overdamped. 2. Highly fluctuating. 3. Underdamped. 4. Critically damped.
When the feed to a distillation column is a saturated liquid, slope of the feed line is	1. -1 2. infinity 3. unity 4. zero
When the liquid phase and vapour phase of a binary system obeys Raoult's and Dalton's law respectively, the relative volatility is the ratio of	1. partial pressure of component A to the total pressure. 2. vapour pressure of component A to the total pressure. 3. vapour pressure of component A to that of component B. 4. vapour pressure of component A to the partial pressure of A.
When the momentum of one fluid is used for moving another fluid, such a device is called a/an	1. acid egg 2. jet pump 3. blower 4. dryer
When the temperature of an ideal mono atomic gas is increased from 27 oC to 927 oC the kinetic energy will be increasing	1. four times 2. same 3. eight times 4. twice
When two bodies are in thermal equilibrium with a third body, they are also in thermal equilibrium with each other. This statement is called	1. Zeroth law of thermodynamics 2. First law of thermodynamics 3. Second law of thermodynamics 4. Kelvin Planck?s law

When vaporisation takes place through a blanketting film of gas, the phenomenon is termed as _____ boiling.	1. nucleate 2. pool 3. film 4. transition
When will an object sink in a fluid?	1. When the force due to gravity exceeds the buoyant force on the obje 2. When the force due to gravity is less than the buoyant force on the object 3. When the force due to gravity equals the downward pressure on the 4. When the force due to gravity is equal to the buoyant force on the ob
Where does the maximum stress occur in case of laminar flow of incompressible fluid in a closed conduit of diameter ?d??	1. At d/4 from the wall 2. At the wall 3. At the centre 4. At d/8 from the wall
Where does the maximum tensile strength occur in a thick cylindrical vessel subjected to internal pressure ?	1. At the inner surface. 2. At the mid thickness of the cylindrical wall. 3. At the outer surface. 4. Outside the surface
Which among the following doesn't pertain to radiation phenomena?	1.Its a mode of heat transfer 2. requires no medium for travel 3. Propagates at speed of sound 4. Electromagnetic wave phenomena
Which of the fluid forces are not considered in the Reynolds equation of flow ?	1. Turbulent forces 2. Compressibility forces 3. Viscous forces 4. Pressure forces
Which of the following agitators having a large blade area, rotating at slow speed is used for mixing high viscosity liquids (> 50000 centipoise) ?	1. Helical screw 2. Flat blade turbine 3. Propeller 4. Curved blade turbine
Which of the following binary systems is an example of a maximum boiling azeotrope ?	1. Water-hydrochloric acid. 2. Acetone-carbon disulphide. 3. Water-ethyl alcohol. 4. n-heptane-n-octane.
Which of the following contains least amount of Nitrogen?	1. Coke oven gas 2. Blast furnace gas 3. Producer gas 4. Water gas (blue gas)
Which of the following controllers has maximum offset ?	1. PID 2.PI 3. P 4.on-off

Which of the following controllers has the least maximum deviation?	1. P-I-D controller 2. P-controller 3. P-D controller 4. P-I controller
Which of the following denotes the effect of compressibility in fluid flow ?	1. Weber number 2. Mach number 3. Euler number 4. Reynolds number
Which of the following forced convection heat transfer equation accounts for the liquid viscosity effect for viscous liquids ?	1. Fensky's equation 2. Dittus-Boeltier equation 3. Sieder-Tate equation 4. Nusselt equation
Which of the following has sodium bicarbonate as its main constituent ?	1. Washing soda 2. Baking soda 3. Baking powder 4.table salt
Which of the following is a characteristic of an ideal plug flow reactor ?	1.Radial dispersion 2. Axial dispersion 3. Uniform mixing 4. Flat velocity profile
Which of the following is a detergent ?	1. Benzene hexachloride 2. Alkyl benzene sulphonate 3. Polytetraflouroethylene 4. Cellulose nitrate
Which of the following is a path function	1. Work 2. Specific volume 3. Temperature 4. Pressure
Which of the following is a pressure filter ?	1. Plate and flame filter. 2. Sand filter. 3. Rotary drum filter. 4. Leaf filter (Moore filter).
Which of the following is an extensive property?	1. Temperature 2. Specific volume 3. Volume 4. Pressure
Which of the following is an intensive property?	1. Volume 2. Density 3. Internal energy 4. Enthalpy

Which of the following is an organo-metal-lic compound ?	1. Tetra-ethyl lead 2. Cumene 3. Isopropyl alcohol 4. Zeolite
Which of the following is an undesirable dynamic characteristic of an instrument ?	1. Time lag 2. Static error 3. Reproducibility 4. Dead zone
Which of the following is directly concerned with the heat transfer ?	1. Sherwood number 2. Euler number 3. Grashoff number 4. Peclet number
Which of the following is expected to have highest thermal conductivity	1. Steam 2. Solid ice 3. Water 4. Melting ice
Which of the following is not the internal constraints?	1. Standards & codes 2. Resources 3. Physical Laws 4. Time
Which of the following is not a differential pressure flow meter ?	1. Rotameter 2. Orificemeter 3. Venturimeter 4. Flow nozzle
Which of the following is not a mechanical pressure sensing element ?	1. U-tube 2. Bellows 3. Bourdon tube 4. Diaphragm
Which of the following is not a part of the Blake jaw crusher?	1. Toggles 2. Hanger 3. Check plates 4. Pitman
Which of the following is not a property of the system ?	1. Heat 2. Specific volume 3. Pressure 4. Temperature
Which of the following is not a raw material used for the manufacture of ordinary glass?	1. Soda ash 2. Silica 3. Limestone 4. Iron oxide

Which of the following is not a second order instrument ?	1. Mercury in glass thermometer with covering. 2. Pressure gauge with one bellow, two tubes and a tank. 3. Bare mercury in glass thermometer. 4.U tube manometer
Which of the following is not a unit of pressure ?	1. Torr 2. Newton/m2 3. Parsec 4. Ata, bar or pascal
Which of the following is not a valid assumption in continuous binary distillation for calculating the number of equilibrium stages by Mc-Cabe-Thiele's method ?	1. Reflux is not a saturated liquid. 2. Molar latent heat of the two components are equal. 3. Heat of mixing of normal liquid is assumed to be zero. 4. Sensible heat changes for vapour & liquid are negligibly small.
Which of the following is not a wet classifier ?	1.Bag filter 2. Hydrocyclones 3. Dorr Oliver rake classifier 4.gravity settling tank
Which of the following is not an ultrafine grinder (colloid mill)?	1. Toothed roll crusher 2. Hammer mills with internal classification 3. Agitated mills and fluid energy mills 4. Micronizers
Which of the following is not categorized as a mechanical operation?	1. Humidification 2. Size enlargement 3. Filtration 4. Agitation
Which of the following is not endothermic in nature ?	1. Steam reforming of naphtha. 2. Gasification of carbon. 3. Thermal cracking of fuel oil. 4. Combustion of sulphur.
Which of the following is the dynamic characteristics of an instrument ?	1. Dead zone 2. Sensitivity 3. Fidelity 4. Reproducibility
Which of the following is the main constituent of the mother liquor produced in salt industry ?	1. Bromine 2. Salt petre 3. Glauber's salt 4. Quick lime
Which of the following is the most adverse factor challenging the choice of mercury electrolytic cell process for the production of caustic soda?	1. High cost of mercury. 2. High specific gravity of mercury. 3. Non-availability of high purity mercury 4. Pollution of water stream by mercury

Which of the following is the most common type of baffle used in industrial shell and tube heat exchanger ?	1. Orifice baffle. 2. Disk and doughnut baffle. 3. 75% cut segmental baffle. 4. 25% cut segmental baffle.
Which of the following is the most suitable for cleaning of fine coal dust (<0.5 mm) ?	1. Spiral separator 2. Trough washer 3. Froth floatation 4. Baum jig washer
Which of the following is the most suitable for extraction in a system having very low density difference ?	1. Pulsed extractor 2. Packed tower extractor 3. Centrifugal Extractor 4.Mixer-settler extractor
Which of the following is the most suitable for handling fibrous and dense slurries ?	1. Radial propeller agitator 2. Turbine agitator 3. Cone type agitator 4. Propeller agitator
Which of the following judges the accuracy of an instrument ?	1. Drift 2.Response 3. Dead zone 4. Static error
Which of the following must be stored in silos and not in open yard ?	1. Coke breeze 2. High V.M. bituminous coal 3. Sand 4.peas
Which of the following packing materials provides for maximum mass transfer ?	1. Cross-partition rings. 2. Raschig rings. 3. Lessig rings. 4.Berl saddles
Which of the following plates has higher turndown ratio in distillation operation?	1. Bubble cap plates 2. Packed column 3.valve plate 4. Sieve plates
Which of the following predicts the behavior of an ideal solution ?	1. Amgat's law 2. Boyle's law 3. Trouton's rule 4. Raoult's law
Which of the following property of air does not increase with rise in temperature	1. dynamic viscosity 2. density 3. thermal diffusivity 4. thermal conductivity

Which of the following provides maximum contact surface for a liquid-vapour system?	1. Packed tower 2. Seive-plate column 3. Wetted wall column 4. Bubble-cap plate column
Which of the following pumps used for slurries?	1. Centrifugal Pump 2. Reciprocal Pump 3. Reciprocal Pump, Rotary Pump and Centrifugal Pump 4. Rotary Pump, Centrifugal Pump
Which of the following quantities is appreciably dependent on the solubility of a gas in the solvent?	1.specific interfacial area 2. NTU 3. HTU 4.thermal conductivity
Which of the following ratios defines the recycle ratio in a chemical process ?	1. recycle feed stream/gross feed stream 2. Recycle stream/gross feed stream 3. Recycle stream/fresh feed stream 4. Gross feed stream/recycle feed stream
Which of the following remains constant during sensible cooling process ?	1. Specific humidity 2. Partial pressure of vapour 3. Both specific humidity and partial pressure of vapor 4. Neither specific humidity nor partial pressure of vapor
Which of the following statements explains why oil has a greater viscosity than water?	1. Oil molecules always move slower than water molecules 2. Oil molecules have more space in between them than water molecul 3. Oil molecules have a more complicated shape than water molecules 4. Oil molecules are less dense than water molecules
Which of the following statements is incorrect?	1. A catalyst does not alter the state of equilibrium in a chemical reactio 2. A catalyst remains unchanged at the end of a chemical reaction 3. A catalyst is highly specific in its action 4. A catalyst initiates a reaction.
Which of the following statements regarding the viscosity of fluids is true?	1. Heating a gas increases its viscosity; heating a liquid decreases its v 2. Heating gases and liquids will decrease their viscosity 3. Heating gases and liquids will increase their viscosity 4. Heating a gas decreases its viscosity; heating a liquid increases its v
Which of the following sugars is the sweetest?	1. Sucrose 2. Glucose 3. Fructose 4. Lactose
Which of the following will favour the reverse reaction in a chemical equilibrium reaction ?	1. Removal of at least one of the products at regular interval. 2. Increasing the concentration of one or more of the products. 3. Increasing the concentration of one of the reactants. 4. Increasing the density

Which oil is preferred for paint manufacture ?	1. Saturated oil 2. Drying oil 3. Non-drying oil 4. Semi-drying oil
Which one gives the monochromatic emissive power for black body radiation ?	1. Stefan-Boltzman law 2. Wien's law 3. Kirchhoffs law 4. Planck's law
Which one of the following statements about a chemical equation is true?	1. Ions are conserved 2. Atoms are conserved 3. Mass is conserved 4. Mass as well as atoms are conserved
Which type of heat exchanger is preferred for heavy heat loads ?	1. Double pipe 2. Evaporator 3. Series and parallel set of shell and tube 4. Plate type
White phosphorous is stored under water, because	1. it does not react with water 2. it is poisonous 3. it is unstable 4. its kindling temperature in dry air is very low
With decrease in temperature, the equilibrium conversion of a reversible endothermic reaction	1. increases linearly with temperature 2. remains unaffected 3. decreases 4. increases
With increase in temperature, the solubility of gases in liquids, at fixed pressure	1.decreases 2. increases 3.no change 4.increase and decrease
With increase in the number of shell passes, the value of FT(Temperature correction factor)	1. remains same 2. remains same, only if the number of tube passes does not change. 3. decreases 4. increases
With rise in pressure, the solubility of gases in solvent, at a fixed temperature	1. decreases 2. increases 3. remains unchanged 4. decreases linearly
Wood charcoal is used for decolouration of sugar, because it _____ the coloured materials.	1. converts 2. adsorbs 3. reduces 4. oxidises

Workdone in a free expansion process is	1. positive 2. minimum 3. maximum 4. zero
Working principle of mercury in glass thermometer is	1. volumetric expansion. 2.Non linear Expansion 3. linear expansion. 4. pressure rise with temperature.
Xanthates are used in the froth flotation process as a/an	1. frother 2. conditioner 3. activator 4. collector
Zeolite removes both temporary as well as permanent hardness of water by precipitating calcium and magnesium present in water as insoluble zeolites. Used zeolite is regenerated by flushing with the solution of	1. calcium sulphate 2. sodium chloride 3. magnesium chloride 4. sodium sulphate
°API gravity of water at N.T.P. is about	1. 1 2. 10 3. 0 4. 100
A sample of well water contains 140 gm/m3 Ca2+ ions and 345 gm/m3 Na+ ions. The hardness of the sample of water, expressed in terms of equivalent CaCO3 in gm/m3 is (assuming atomic masses of Ca :40, Na : 23, C : 12, O : 16)	1. 350 2.485 3. 140 4. 345
Average molecular weight of air is about	1. 23 2. 79 3. 29 4. 21
Density of carbon dioxide is _____ kg/m3.	1. 44/22 2. 44/22.4 3. 22.4/44 4. 44/22400
Energy requirement (per unit mass of material crushed/ground) is highest for	1. jaw crusher 2. ball mill 3. rod mill 4. fluid energy mill
Fick's law relates to	1. Density 2. feed size

	3. final particle size 4. concentration
In actual operation of distillation column, the vapour is not distributed uniformly among the bubble caps, primarily because of the_____.	1. liquid gradient on the tray. 2. small downcomer liquid seal 3. lower skirt clearance. 4. lower static submergence.
In case of _____ reactions, the reaction rate does not decrease appreciably as the reaction proceeds.	1. series 2. catalytic 3. parallel 4. auto catalytic
N2 content in a urea sample was found to be only 42%. What is the actual urea content of the sample ? (molecular weight of urea = 60)	1. 90% 2. 95% 3. 80% 4. 98%
Sauter mean diameter is the same as the _____ mean diameter.	1. mass 2. arithmetic 3. volume-surface 4. geometric
Size reduction of ice and gypsum can be accomplished suitably by a _____ crusher.	1. Blake jaw 2. toothed roll 3. gyratory 4. ball mill
The equivalent diameter of channel of a constant non-circular cross-section of 3 cm by 6 cm will be _____ cms.	1. 20 2. 2 3. 12 4.6
The porosity of a compressible cake is	1. maximum at the filter medium. 2. same throughout the thickness of cake. 3. minimum at the upstream face. 4. minimum at the filter medium.
The term 'angle of nip' is concerned with the operation of the _____ crushers.	1. gyratory 2. roll 3. jaw 4. fluidenergy mill
Use of baffles in agitators help in minimizing the _____ tendency.	1. both swirling and vortex 2. vortex 3. swirling 4. neither swirling nor vortex

Which of the following is the most suitable for very high pressure gas phase reaction ?	1. Stirred tank reactor 2. Batch reactor 3. Fluidised bed reactor 4. Tubular flow reactor
_____ fuels require the maximum percentage of 'excess air' for complete combustion.	1. Solid 2. Nuclear 3. Gaseous 4. Liquid
_____ tower is the most suitable gas-liquid contacting device involving highly corrosive fluids.	1. Sieve plate 2. Packed 3. Bubble cap plate 4. wetted wall
_____ is the most suitable gas-liquid contacting device involving highly corrosive fluids.	1. Sieve plate 2. Packed column 3. Bubble cap plate 4.Perforated plate
Heat capacity of air can be approximately expressed as, Cp = 26.693 + 7.365 x10-3 T, where, Cp is in J/mole.K and T is in K. The heat given off by 1 mole of air when cooled at atmospheric pressure from 500°C to - 100°C is	1. 16.15 kJ 2. 10.73 kJ 3. 18.33 kJ 4. 18.11 kJ
In a distillation column, the minimum residence time for liquid in the downspout is about _____ seconds.	1. 1 2. 180 3. 8 4. 80
In a multiple effect evaporator system having 'n' effects, the amount of water evaporated per unit surface area in approximately equal to _____ times that in a single effect.	1. 0.5 n 2. 1.5 n 3. 1/n 4. 'n'
int efficiency (J) for a seamless pipe is	1. 1 2. 0.85 3. 1.2 4. < 0.5
Minimum recommended baffle spacing in a shell and tube heat exchanger is about (where, D = shell diameter)	1. 0.20 D 2. 0.50 D 3. 0.80 D 4. 0.66 D

Nitrobenzene (boiling point = 210.6°C) is steam distilled at 1 atm pressure.Nitrobenzene will distill off _____ °C	1. between 100 and 210 2. at > 210.6 3. at < 100 4.not distilled
Rate of adsorption increases as the	1. pressure decreases. 2. temperature increases. 3. temperature decreases. 4. size of adsorbent increases.
The length of straight rectangular weir used on cross-flow trays is generally _____ the column diameter.	1. 0.6 to 0.8 times 2. twice 3. equal to 4. 2 ft irrespective of (for column > 3ft)
Which of the following is not a graphical method (but is an analytical method) for the calculation of theoretical number of stages in case of continuous binary distillation?	1. Ponchon-Savarit method. 2.Kremser method. 3. McCabe-Thiele's method. 4. Sorel-Lewis method.
At the azeotropic composition of a binary mixture the relative volatility is	1. 0 2. ∞ 3. 1 4. <1
In liquid-liquid equilibrium studies, a system is called type II if	1. the A-C pair is immiscible 2. the B-C and A-B pairs are partly miscible 3. the B-C pair is completely miscible 4. A-B miscible
The cross over frequency of the process which is having the transfer function of G(s) = 5/(2s+1)4	1. 20 2. 0.1 3. 0.5 4. 0.05
Phase lag of the sinusoidal response of a first	1.

order system is	120° 2. <30° 3. 180° 4. 90°
Which of the following uses impact and attrition?	1. ball mill 2. tumbling mill 3. ultra fine grinders 4. hammer mill
The units of frequency factor in Arrhenius equation	1. are the same as that of rate constant 2. depend on the order of reaction 3. depend on temperature, pressure etc of the reaction 4. are cycles per unit time
Molecularity of an elementary reaction P + Q = R + S is	1.1 2.2 3.3 4.4
A proportional controller has a proportional band of 380 % and the gain will be?	1. 7.6 2. 0.263 3. 3.8 4. 0.132
Cavitation in centrifugal pumps is caused by	1.High fluid velocity at suction 2.low barometric pressure 3.low suction pressure 4.high suction pressure
Cavitation in centrifugal pumps may be eliminated by maintaining	1.suction pressure higher than vapour pressure of the liquid at the sucti 2. suction pressure sufficiently lower than vapour pressure of the liquid at temperature. 3.liquid velocity at the suction less than 0.3 ft/s

	4.suction pressure less than 1 atm.
Centrifugal pump is normally classified on the basis of the	1. rpm 2. number of blades in impeller 3. type of casing 4. impeller blade angle
consider distribution of the solute C in two partially miscible solvents A(carrier) and B(solvent). What is the selectivity of separation at the plait point?	1.1 2.very large 3.Zero 4.Less
Cooling water fouling factors vary in the range of 0.001 to 0.003. What is the SI unit ?	1. (kcal/hr. m. °C)-1 2. (W/m2.°K)-1 3. (BTU/hr.ft2 . °F)-1 4. (kcal/hr.m2 .°C)-1
For the following reaction, the rate constant at 373 K is 0.5 per minute. 0.5A + B = C The overall order of reaction is	1. 0.5 2. 1 3. 1.5 4. 0
Gases diffuse faster compared to liquids because of the reason that the liquid molecules	1. are held together by stronger inter-molecular forces. 2. move faster. 3. have no definite shape. 4. are heavier
If radius of a batch basket centrifuge is halved & the r.p.m. is doubled, then the	1.linear speed of the basket is doubled 2. linear speed of the basket is halved 3. centrifugal force is doubled 4. capacity of centrifuge is increased
Industrially, the process of sedimentation is conducted on a large scale in equipment called	1.sorting classifiers 2.cyclones 3.thickeners 4.filters
Length to diameter ratio of most rotary driers is in the range of	1. 4 to 10 2. 10 to 20 3. 20 to 30 4. 1 to 2
Most of the storage vessels/tanks are made cylindrical, because of the fact that a cylinder	1. is easy to fabricate. 2. has greater structural strength. 3. economical to design.

	4. both has greater structural strength and is easy to fabricate.
Pressure within a soap bubble is	1.less than the external pressure 2.greater than the external pressure 3.equal to the external pressure 4.equal to the vapour pressure at the prevailing temperature
The average velocity in the tubes of a 1-4 heat exchanger is _____ times that in 1-1 heat exchanger having the same size & number of tubes and operated at same liquid flow rate.	1. 1/4 2. 4 3. 1/2 4. 2
The continuity equation	1.relates mass rate of flow along a stream tube 2.expresses the relation between energy and work 3.requires that the Newton's second law of motion is satisfied at every p 4.relates the momentum per unit volume for two point on a stream line
The dimensions of rate constant for reaction 3A = B are ltr/(gmol.min). Therefore the reaction order is	1. 0 2.1 3. 2 4. 3
The Schedule number is an indication of	1.material density 2.pipe wall thickness 3.pipe size 4.pipe roughness
traces of solids are removed from liquid in a	1. classifier 2. clarifier 3. sparkler filter 4. rotary vacuum filter
Wet seiving is employed, when the product contains _____ materials.	1. abrasive 2. large quantity of very fine 3. coarse 4. non sticky