PROVISIONAL ANSWER KEY

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Question1:-A solution contains 4.9 g H_2SO_4 in 250 mL of solution. What is the normality ?

A:-0.2N

B:-0.4N

C:-0.8N

D:-1.0N

Correct Answer:- Option-B

Question2:-An ideal gas mixture contains 4 mol O_2 and 16 mol N_2. The total pressure is 5 atm, and the total volume is 100 L. Calculate
i. Partial pressure of O_2
ii. Partial volume of O_2

A:-0.5 atm, 10 L

B:-1 atm, 20 L

C:-2 atm, 40 L

D:-4 atm, 80 L

Correct Answer:- Option-B

Question3:-A recycle gas stream contains inert gases. To prevent inert buildup, 10 % of the recycle stream is purged. If recycle flow rate is 500 kmol/h, what is the purge rate ?

A:-25 kmol/h

B:-50 kmol/h

C:-75 kmol/h

D:-100 kmol/h

Correct Answer:- Option-B

Question4:-A feed of 1000 kg/h contains 10 wt% solids. Water is evaporated to obtain a product containing 40 wt% solids. What is the product flow rate ?

A:-100 kg/h

B:-250 kg/h

C:-400 kg/h

D:-500 kg/h

Correct Answer:- Option-B

Question5:-For an adiabatic system

A:-Q>0

B:-Q<0

C:-Q=0

D:-W=0

Correct Answer:- Option-C

Question6:-At vapor-liquid equilibrium

A:-Temperature is equal in both phases

B:-Pressure is equal in both phases

C:-Fugacity of each component is equal in both phases

D:-Mole fractions are equal in both phases

Correct Answer:- Option-C

Question7:-A reversible reaction : A$\rightleftharpoons$B starts with 1 mol of A. At equilibrium, 0.6 mol of A remains. What is the equilibrium conversion of A ?

A:-60%

B:-40%

C:-20%

D:-80%

Correct Answer:- Option-A

Question8:-For an irreversible process

A:-Sgen < 0

B:-Sgen = 0

C:-Depends on pressure

D:-Sgen>0

Correct Answer:- Option-D

Question9:-If Z < 1, the gas behavior is dominated by

A:-Repulsive forces

B:-Attractive forces

C:-Ideal behavior

D:-Critical behavior

Correct Answer:- Option-B

Question10:-
For a process
ΔH=-100 kJ/mol
ΔS=-0.2 kJ/mol.K
T=300 K
Calculate ΔG(Gibbs Free Energy)

A:--40 kJ/mol

B:--100 kJ/mol

C:--160 kJ/mol

D:-+40 kJ/mol

Correct Answer:- Option-A

Question11:-A fluid whose viscosity decreases with increasing rate of shear is called a

A:-Dilatant fluid

B:-Ideal fluid

C:-Newtonian fluid

D:-Pseudoplastic fluid

Correct Answer:- Option-D

Question12:-An inclined tube manometer is preferred over a vertical U-tube manometer when measuring

A:-Very high pressures

B:-Vacuum only

C:-Small pressure differences with greater accuracy

D:-Atmospheric pressure only

Correct Answer:- Option-C

Question13:-The Bernoulli equation for an ideal incompressible fluid along a streamline assumes

A:-Viscous effects are significant

B:-Frictional losses are negligible

C:-Energy is added by a pump between the two points

D:-Flow is necessarily turbulent

Correct Answer:- Option-B

Question14:-For a fully developed laminar flow in a circular pipe, the velocity profile is

A:-Parabolic with maximum velocity at the center

B:-Linear with radius

C:-Uniform across the pipe cross-section

D:-Maximum at the wall

Correct Answer:- Option-A

Question15:-Fluidization occurs when

A:-The particles settle completely at the bottom

B:-The fluid velocity is zero

C:-The drag force exerted by the fluid balances the weight of the particles

D:-The pressure drop becomes zero

Correct Answer:- Option-C

Question16:-In a packed bed of solid particles, the pressure drop generally

A:-Increases with increasing fluid velocity

B:-Remains constant

C:-Decreases with increasing fluid velocity

D:-Is independent of particle size

Correct Answer:- Option-A

Question17:-The pressure loss due to a sudden enlargement in a pipe is classified as

A:-Major loss

B:-Minor loss

C:-Hydrostatic loss

D:-Compressibility loss

Correct Answer:- Option-B

Question18:-The Hagen-Poiseuille equation is applicable for

A:-Turbulent flow in rough pipes

B:-Flow through open channels

C:-Compressible flow at high Mach numbers

D:-Laminar flow of a Newtonian fluid in a circular pipe

Correct Answer:- Option-D

Question19:-A Venturi meter and an Orifice meter of the same throat-to-pipe diameter ratio are installed in identical pipelines. Which statement is correct ?

A:-The Venturi meter generally has a higher coefficient of discharge and lower pressure loss.

B:-The Venturi meter causes greater permanent pressure loss.

C:-The Orifice meter has a higher coefficient of discharge than the Venturi meter.

D:-Both devices have the same coefficient of discharge and pressure loss.

Correct Answer:- Option-A

Question20:-Priming in a centrifugal pump is the process of

A:-Increasing the pump speed

B:-Lubricating the pump bearings

C:-Filling the pump casing and suction pipe with liquid before starting

D:-Removing air from the delivery pipe only

Correct Answer:- Option-C

Question21:-The collection efficiency equation for the electrostatic precipitator is where, η:Fractional efficiency
A_c : Total collecting plate area
V_{pm}:Particle drift velocity
Q : Volumetric gas flow rate

A:-$\eta=1-\exp(A_cV_{pm})/Q$

B:-$\eta=1+\exp(-A_cV_{pm})/Q$

C:-$\eta=1+\exp(A_cV_{pm})/Q$

D:-$\eta=1-\exp(-A_cV_{pm})/Q$

Correct Answer:- Option-D

Question22:-The unit of Kick's constant regarding the Kick's law of size reduction is

A:-KW.sec/kg

B:-KWh/kg

C:-KWh/sec.kg

D:-Kg/sec

Correct Answer:- Option-A

Question23:-The Power Number N_p is defined by the expression
Where, P is the power, ρ is the fluid density, N is the rotational speed, and D_i is

the impeller diameter.

A:- $\frac{P}{\rho N^3 D_i^5}$

B:- $\frac{P}{\rho N^2 D_i^3}$

C:- $\frac{P}{\rho^2 N^3 D_i^2}$

D:- $\frac{\rho N^2 D_i^5}{P}$

Correct Answer:- Option-A

Question24:-What happens if an agitator shaft is continuously operated at or near its critical speed ?

A:-The flow pattern transitions from axial to purely radial

B:-The impeller cavitates and reduces power draw

C:-The fluid being mixed begins to foam

D:-The shaft deflects excessively and may fail due to severe vibrations

Correct Answer:- Option-D

Question25:-In a single component condensed system, if degree of freedom is zero, maximum number of phases that can co-exist is

A:-0

B:-1

C:-2

D:-3

Correct Answer:- Option-C

Question26:-What happens to clusters or particles that have a radius smaller than the critical radius ?

A:-They grow into stable nuclei

B:-They remain in equilibrium with the parent phase

C:-They tend to dissolve back into the parent phase

D:-They immediately precipitate

Correct Answer:- Option-C

Question27:-In continuous constant pressure filtration operation how does the filtrate flow rate vary with time ?

A:-It increases as time progresses

B:-It varies inversely as the square root of time

C:-It remains constant

D:-It is directly proportional to the square root of time

Correct Answer:- Option-B

Question28:-During Hindered settling how terminal settling velocity of a particle does compares to its free settling velocity ?

A:-It is always higher

B:-It is always lower

C:-It remains exactly same

D:-It fluctuates

Correct Answer:- Option-B

Question29:-
The steady state temperature distribution in a 0.25 m thick plane wall is $T = 600 + 2500\ x - 12000\ x^2$, where T is in $^\circ C$ and x is in metre measured from one surface whose thermal conductivity is 25 W/m^0C. The surface temperatures and average temperature of the wall is

A:-T_{s1} : 600°C, T_{s2} : 475 $^\circ$C and $T_{wall,\ average}$: 537.5°C

B:-T_{s1} : 600°C, T_{s2} : 475 $^\circ$C and $T_{wall,\ average}$: 1075°C

C:-T_{s1} : 600°C, T_{s2} : 475 $^\circ$C and $T_{wall,\ average}$: 662.5°C

D:-T_{s1} : 600°C, T_{s2} : 475 $^\circ$C and $T_{wall,\ average}$: 268.75°C

Correct Answer:- Option-C

Question30:-A cold storage consists three layers made up of inner layer A (k = 0.15 W/m K), middle layer B(k = 0.045 W/m K) and outer layer C (k = 0.75 W/m K). The temperature of the outer surface of the wall is 30°C and the inner is -15°C.

If the thermal resistances of three layers (A, B and C) are 0.09 K/W, 2.41 K/W and 0.2 K/W . What is the temperature drop in the layer A ?

A:--1.5 K

B:--3 K

C:--5/3 K

D:--5K

Correct Answer:- Option-A

Question31:-The ratio of the momentum (δ) and thermal boundary layer (δT) thicknesses are well correlated by _____(i)_____ . The thermal boundary layer lies within the momentum boundary layer if Prandtl numberis _____(ii)_____

A:-(i) $\frac{\delta}{\delta_T}$ = $Pr^{1/3}$ and (ii) greater than 1

B:-(i) $\frac{\delta_T}{\delta}$ = $Pr^{1/3}$ and (ii) greater than 1

C:-(i) $\delta_T \delta$ = $Pr^{1/3}$ and (ii) greater than 1

D:-(i) $\frac{\delta}{\delta_T}$= $Pr^{1/3}$ and (ii) less than 1

Correct Answer:- Option-B

Question32:-Match the following :

i. Nusselt number	a. Ratio of Inertial force to viscous force
ii. Prandtl Number	b. Ratio of Wall temperature gradient to temperature gradient across the fluid in the pipe
iii. Stanton Number	c. Ratio of Momentum diffusivity to thermal diffusivity
iv. Reynolds Number	d. Ratio of rate of wall heat transfer by convection to rate of heat transfer by bulk flow

A:-i-b, ii-c, iii-d, iv-a

B:-i-d, ii-c, iii-b, iv-a

C:-i-c, ii-b, iii-d, iv-a

D:-i-c, ii-d, iii-b, iv-a

Correct Answer:- Option-A

Question33:-The Reynold's analogy, among heat, mass and momentum assumes that the turbulent diffusivities are ___(i)____ and the molecular diffusivities are _____(ii)_____ compared to the turbulent diffusivities.

A:-(i) equal and (ii) negligible

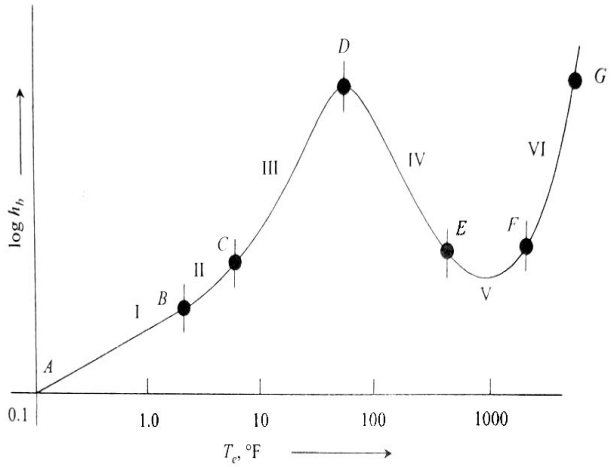
B:-(i) equal and (ii) equal

C:-(i) negligible and (ii) negligible

D:-(i) negligible and (ii) equal

Correct Answer:- Option-A

Question34:-



Select the correct match(es) :
i. Region II : Condensation of bubbles
ii. Region IV :Unstable film boiling
iii. Region V : Stable film boiling

A:-Only i and ii

B:-Only i and iii

C:-Only ii and iii

D:-i, ii, and iii

Correct Answer:- Option-D

Question35:-**Assertion (A)** : The rate of vapor condensation is significantly reduced in the presence of non-condensable gases.
Reason (R) : The accumulation of non-condensable gases at the liquid-vapor interface will be acting as a physical barrier.

A:-
Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A)

B:-Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A)

C:-Assertion (A) is true, but Reason (R) is false

D:-Assertion (A) is false, but Reason (R) is true

Correct Answer:- Option-A

Question36:-**Assertion (A)** : Gray bodies do not exist in practice and the concept of gray body is an idealized concept.
Reason (R) : The absorptivity of a surface actually varies with the wavelength of the incident radiation.

A:-Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A)

B:-Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A)

C:-Assertion (A) is true, but Reason (R) is false

D:-Assertion (A) is false, but Reason (R) is true

Correct Answer:- Option-A

Question37:-Water having heat capacity rate of 2700 W/K enters a counter current heat exchanger at
310 K and is heated by an oil stream having heat capacity rate of 5400 W/K. The over all heat transfer coefficient is 300 W/m^2K and the heat transfer area is 15 m^2. The NTU is

A:-0.5

B:-3/5

C:-5/3

D:-5

Correct Answer:- Option-C

Question38:-**Assertion (A)** : The long tube falling film type evaporator is used for concentrating orange juices.
Reason (R) : In long tube falling film type evaporator, the hold up time is very small and heat transfer coefficients are high.

A:-Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A)

B:-Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A)

C:-Assertion (A) is true, but Reason (R) is false

D:-Assertion (A) is false, but Reason (R) is true

Correct Answer:- Option-A

Question39:-According to penetration theory average mass transfer coefficient (k) is related to
diffusivity (D) as

A:-k α D

B:-k α $D^{1.5}$

C:-k α $D^{0.5}$

D:-k α D^{2}

Correct Answer:- Option-C

Question40:-Which of the following statements is not correct ?

A:-Minimum liquid rate to be used in an absorber corresponds to operating line tangential to equilibrium curve

B:-For absorbers involving co-current flow of gas and liquid the slope of operating line is positive

C:-Absorption factor is defined as the ratio of slope of operating line to that of equilibrium curve

D:-Operating line for an absorber is straight only when plotted in terms of mole-ratio units

Correct Answer:- Option-B

Question41:-Pick out the desirable properties for an absorbing solvent.

A:-High viscosity, low vapour pressure, high gas solubility and low freezing point

B:-Low viscosity, high vapour pressure, high gas solubility and high freezing point

C:-High viscosity, high vapour pressure, high gas solubility and low freezing point

D:-Low viscosity, low vapour pressure, high gas solubility and low freezing point

Correct Answer:- Option-D

Question42:-When hysteresis is observed, desorption equilibrium pressure is

A:-Lower than that obtained by adsorption

B:-Higher than that obtained by adsorption

C:-Equal to that obtained by adsorption

D:-Cannot be predicted

Correct Answer:- Option-A

Question43:-A mixture of benzene vapour in nitrogen gas is at a temperature of 60^{0}C. If the total pressure is 600 mm Hg and partial pressure of benzene is 100 mm Hg, molal absolute humidity of the mixture is

A:-0.14 mol benzene per mol nitrogen

B:-0.2 mol benzene per mol nitrogen

C:-0.16 mol benzene per mol nitrogen

D:-0.33 mol benzene per mol nitrogen

Correct Answer:- Option-B

Question44:-If moisture content of a solid on dry basis is 25% by weight, moisture content on wet basis is

A:-38%

B:-33%

C:-20%

D:-28%

Correct Answer:- Option-C

Question45:-A mixture of components A and B form an ideal solution. At a temperature T and pressure P, the vapour pressures of the components are P_A = 900 mm Hg and P_B = 750 mm Hg. The relative volatility under this condition is

A:-1.2

B:-0.83

C:-1.8

D:-1.5

Correct Answer:- Option-A

Question46:-From the following statements, pick out the statement which is not correct.

A:-When a water solution, in which the non-aqueous component is more volatile, is fractionated, open steam can be used

B:-Enriching section of the tower is not affected by the use of open steam

C:-For a given reflux ratio and distillate composition, use of open steam will result in smaller number of trays in the tower

D:-Reboiler can be replaced by use of open stream in distillation

Correct Answer:- Option-C

Question47:-In extraction,

A:-Separation is possible when selectivity is 1

B:-High interfacial tension between the extract and raffinate phases results in better coalescence of emulsions

C:-More solvent is required for separation when distribution coefficient is high

D:-All the above statements are correct

Correct Answer:- Option-B

Question48:-Match the following :

I. Leaching with solvent at its boiling temperature	P. Solids are settled to the same extent at all solute concentrations
II. Solvent for leaching of gold from its ore	Q. Decoction
III. Non-vertical tie lines, connecting composition of liquid and solid phases in leaching	R. Unequal distribution of solute between liquid and solid phases at equilibrium
IV. Constant underflow in leaching	S. Sodium cyanide solution

A:-I-P, II-S, III-R, IV-Q

B:-I-Q, II-S, III-P, IV-R

C:-I-R, II-S, III-Q, IV-P

D:-I-Q, II-S, III-R, IV-P

Correct Answer:- Option-D

Question49:-Which of the following does not affect the rate of homogeneous reaction ?

A:-Temperature

B:-Pressure

C:-Composition

D:-Specific gravity

Correct Answer:- Option-D

Question50:-Statement A : If the rate equation is not equal to stoichiometric equation, then it is called as elementary reaction.
Statement B : If the rate equation is equal to stoichiometric equation, then it is called as non-elementary reaction.

A:-Statement A is true and Statement B is false

B:-Statement A is false and Statement B is false

C:-Statement A is false and statement B is true

D:-Statement A is true and statement B is true

Correct Answer:- Option-B

Question51:-Statement A : Reaction with higher activation energy are very high temperature sensitive.
Statement B : Reaction with higher activation energy are temperature insensitive.

A:-Statement A is true and statement B is false

B:-Statement A is false and statement B is true

C:-Statement A is false and statement B is false

D:-None of the above

Correct Answer:- Option-A

Question52:-Statement A : The reaction half-life increases as the initial concentration increases when the order of the reaction is less than 1.
Statement B : The reaction half-life increases as the initial concentration increases

when the order of the reaction is greater than 1.
Statement C : The reaction half-life decreases as the initial concentration increases when the order of the reaction is zero.

A:-Statement A is true and statement B is false and statement C is false

B:-Statement A is true and statement B is true and statement C is false

C:-Statement A is true and statement B is true and statement C is true

D:-Statement A is false and statement B is true and statement C is true

Correct Answer:- Option-A

Question53:-The rate of the reaction is 0.2 moles/liter. Second, when the concentration of the reactant A is 1 moles/liter. What is the rate of the reaction when the concentration of reactant A is 10 moles/liter ?

A:-2 moles/liter.Second

B:-3 moles/liter.Second

C:-0.2 moles/liter.Second

D:-0.3 moles/liter.Second

Correct Answer:- Option-A

Question54:-For a constant volume flow reactor, increase in space time will _____ and _____.

A:-Increase volumetric flow rate and reduces residence time

B:-Increase volumetric flow rate and increase residence time

C:-Decrease volumetric flow rate and increases residence time

D:-Decreases volumetric flow rate and decreases residence time

Correct Answer:- Option-A

Question55:-If the number of mixed flow reactors connected in series increases then the reactor in series behaves as

A:-Mixed flow reactor

B:-Continuous stirred tank reactor

C:-Batch reactor

D:-Plug flow reactor

Correct Answer:- Option-D

Question56:-Statement A : Late mixing favors reaction when order of the reaction is greater than one.
Statement B : Early mixing favors reaction when order of reaction is greater than 1.

A:-Statement A is true and statement B is false

B:-Statement A is true and statement B is true

C:-Statement A is false and statement B is false

D:-Statement A is false and statement B is true

Correct Answer:- Option-A

Question57:-The dimensionless number which describes the flow contribution due molecular diffusion is

A:-Reynolds number

B:-Nusselt number

C:-Prandtl number

D:-Bodenstein number

Correct Answer:- Option-D

Question58:-The rate of zero order reaction is 10 mol./m^3s and reaction time is 5 second, then the rate constant is

A:-2 S^{-1}

B:-5 S^{-1}

C:-10 S^{-1}

D:-1 S^{-1}

Correct Answer:- Option-A

Question59:-The response of a first-order system to a step input reaches _____ percent of its ultimate value when the time elapsed is equal to one time constant.

A:-98

B:-86.5

C:-63.2

D:-95

Correct Answer:- Option-C

Question60:-In a closed-loop control system for a stirred-tank heater, consider the case when the set point is to remain fixed and the purpose of the control system is to maintain the controlled variable at the desired value in spite of changes in load. This is called

A:-Regulator problem

B:-Servo problem

C:-Tracking problem

D:-Controller problem

Correct Answer:- Option-A

Question61:-A pneumatic proportional controller is used to control temperature within the 40 to 80^{0}C range. The controller is adjusted so that the output pressure goes from 6 psi (valve fully open) to 16 psi (valve fully closed) as the measured temperature goes from 51 to 55 ^{0}C with the set point held constant. Find the proportional band.

A:-1%

B:-10%

C:-100%

D:-0.1%

Correct Answer:- Option-B

Question62:-Which among these statements is incorrect ?

A:-If output response is bounded for all bounded inputs, system is stable.

B:-System exhibiting unbounded response to a bounded input is unstable

C:-Step function and sinusoidal function are bounded inputs

D:-The function f(t)) = t is bounded

Correct Answer:- Option-D

Question63:-Which among these instruments cannot measure humidity ?

A:-Psychrometer

B:-Dew point measurement apparatus

C:-Pyrometer

D:-Hygrometer

Correct Answer:- Option-C

Question64:-Which among these statements is incorrect ?

A:-Pitot static tube measures volumetric flow rate

B:-Bourdon tube-type elastic element gauge measures pressure

C:-Anemometer measures the liquid level

D:-Infrared technique can be applied for measuring humidity

Correct Answer:- Option-C

Question65:-For a typical feedback control system, which mode of control is suited when offset is not tolerable and excessive oscillations are to be eliminated ?

A:-None

B:-Proportional

C:-Proportional-integral

D:-Proportional-integral-derivative

Correct Answer:- Option-D

Question66:-In control system design by frequency response, typical specifications for design are that the gain margin should be

A:-Less than 1.7

B:-Greater than 1.7

C:-Less than zero

D:-Equal to unity

Correct Answer:- Option-B

Question67:-The overall transfer function for two noninteracting first-order systems connected in series is simply the _____ of the individual transfer

functions.

A:-Sum

B:-Product

C:-Ratio

D:-Difference

Correct Answer:- Option-B

Question68:-Calcium and magnesium content of a liquid sample can be determined using

A:-Flame photometry

B:-UV spectroscopy

C:-Thin layer chromatography

D:-Reversed-phase chromatography

Correct Answer:- Option-A

Question69:-Which type of solar cell gives the highest efficiency ?

A:-Mono crystalline

B:-Polycrystalline Germanium

C:-Thin film

D:-Polycrystalline Silicon

Correct Answer:- Option-A

Question70:-Wound rotor induction generator are primarily used in wind turbine because they

A:-Reduce overall cost

B:-Make the turbine noiseless

C:-Increase the wind turbine size

D:-Allow variable speed operation

Correct Answer:- Option-D

Question71:-Energy Conservation Act was formed in the year

A:-1998

B:-1999

C:-2000

D:-2001

Correct Answer:- Option-D

Question72:-Tri sodium phosphate is added to the boiler feed water

A:-Cathodic inhibitor

B:-Remove impurities

C:-Remove oxygen

D:-Reduce scale formation

Correct Answer:- Option-A

Question73:-In practice, flow velocity adopted for the design of a grit chamber is

A:-3 to 5 m/sec

B:-0.25 to 3 m/sec

C:-1 to 2 m/sec

D:-0.5 to 1 m/sec

Correct Answer:- Option-B

Question74:-The exertion of BOD by microorganism is called

A:-Transpiration

B:-Eutrophication

C:-Deoxygenation

D:-Reoxygenation

Correct Answer:- Option-C

Question75:-Select the correct order of following surface water treatment processes chronologically.

A:-Screening, filtration, aeration, sedimentation, disinfection

B:-Screening, disinfection, aeration, sedimentation, filtration

C:-Aeration, sedimentation, filtration, screening, disinfection

D:-Screening, aeration, sedimentation, filtration, disinfection

Correct Answer:- Option-D

Question76:-For a given discharge the efficiency of sedimentation tank can be increased by

A:-Increasing the depth of the tank

B:-Increasing the surface area of the tank

C:-Decreasing the depth of the tank

D:-Decreasing the surface area of the tank

Correct Answer:- Option-B

Question77:-Which gas having large range of flammability limit in air ?

A:-Hydrogen

B:-Acetylene

C:-LPG

D:-Carbonmonoxide

Correct Answer:- Option-B

Question78:-Major Accident Hazard unit (MAH) is categorized based on the

A:-Flammability range

B:-TLV value

C:-Hazard rating

D:-Inventory of chemicals

Correct Answer:- Option-D

Question79:-Which type of fire extinguisher do you use to fight electrical fire if a CO_2 extinguisher is unavailable ?

A:-Wet chemical

B:-AFFF

C:-Drypowder

D:-Water

Correct Answer:- Option-C

Question80:-Which Rule/Act stipulates the onsite and offsite emergency plan in major accident hazardous units ?

A:-MSIHC Rule

B:-Water Act

C:-Factories Act

D:-Explosive Act

Correct Answer:- Option-A

Question81:-The concentration of oleum is expressed as wt. % dissolved _____ in 100 wt.% sulfuric acid.

A:-free H_2SO_3

B:-free SO_2

C:-free SO_3

D:-free H_2S

Correct Answer:- Option-C

Question82:-The heat produced in the combustion of sulfur is recovered in waste heat boilers as

A:-low-pressure steam

B:-high-pressure steam

C:-medium-pressure steam

D:-None of the above

Correct Answer:- Option-B

Question83:-The polymerization of ethene is an example of _____ polymerization.
i. chain growth.
ii. condensation.
iii. radical.
iv. coordination.

A:-Only i

B:-Both ii and iii

C:-Both iii and iv

D:-i, iii and iv

Correct Answer:- Option-D

Question84:-The production of Polyethene Terephthalate (PET) is by the reaction of ethene glycol with _____
i. Terephthalic acid.
ii. Acetic acid.
iii. Dimethyl terephthalate.
iv. Phenol formaldehyde.

A:-i and ii

B:-iii or iv

C:-ii and iv

D:-i or iii

Correct Answer:- Option-D

Question85:-Production of the polyester nylon-6 from caprolactam is an example of _____ polymerization.

A:-Chain growth

B:-Radical

C:-Condensation

D:-Coordination

Correct Answer:- Option-C

Question86:-Select the wrong statement from the following.

A:-Kraft method of pulp manufacture can process all types of fibrous raw materials.

B:-Digestion time for wood base materials is less than that for bagasse.

C:-Both temperature and pressure in the digestor is less in case of the sulphite method as compared to that in the sulphate method.

D:-None of these

Correct Answer:- Option-B

Question87:-Identify the physical processes in a complex oil refinery.

A:-Desalting, Distillation, Visbreaking

B:-Desalting, Dehydration, Solvent dewaxing

C:-Distillation, Flexicoking, hydrotreating

D:-Visbreaking, Hydrocracking, Alkylation

Correct Answer:- Option-B

Question88:-Fischer-Tropsch synthesis, which converts synthesis gas into

A:-long-chain alkenes

B:-long-chain alkynes

C:-long-chain alkanes

D:-long-chain aromatics

Correct Answer:- Option-C

Question89:-The most important side reaction in the urea process is the formation of

A:-biuret

B:-carbamate

C:-NH_3

D:-CO_2

Correct Answer:- Option-A

Question90:-Which of the following is a co-product during the manufacture of caustic soda by electrolysis of brine ?

A:-Na_2CO_3

B:-$NaHCO_3$

C:-Na_2SO_4

D:-H_2

Correct Answer:- Option-D

Question91:-An investment of Rs. 1,000 is carrying an interest of 10% compounded quarterly. The value of the investment at the end of the five years will be

A:-1,638

B:-6,727

C:-1,131

D:-1,276

Correct Answer:- Option-A

Question92:-A total investment in a project is Rs. 10 lakhs and the annual profit is 1.5 lakhs. If the project life is 10 years, then the simple rate of return on the investment is

A:-15%

B:-10%

C:-1.5%

D:-150%

Correct Answer:- Option-C

Question93:-A machine has an initial value of Rs. 5,000, a service life of 5 years and final salvage value of Rs. 1,000. The annual depreciation cost by the straight line method is

A:-Rs. 300

B:-Rs. 600

C:-Rs. 800

D:-Rs. 1,000

Correct Answer:- Option-C

Question94:-The total fixed cost of chemical equipment is Rs. 20 lakhs, the internal rate of return is 20% and the annual operating cost is Rs. 3 lakhs. The annualised cost of the plant is

A:-3 lakhs

B:-5 lakhs

C:-7 lakhs

D:-23 lakhs

Correct Answer:- Option-C

Question95:-Which of the following cost is related to non-manufacturing fixed capital investment ?

A:-Site preparation

B:-Land

C:-Taxes payable

D:-Insulation

Correct Answer:- Option-B

Question96:-Which of the following statements is true ?

A:-PERT is considered as a deterministic approach and CPM is a probabilistic technique.

B:-PERT is considered as a probabilistic techniques and CPM is considered as a deterministic approach.

C:-PERT and CPM are both probabilistic techniques.

D:-PERT and CPM are both considered as deterministic approaches.

Correct Answer:- Option-B

Question97:-In the Project Evaluation and Review Technique (PERT) method, the expected time (T_e) is
Where T_o is the optimistic time, T_p is the pessimistic time and T_m is the most likely time

A:-$(T_o + T_p + 4T_m)/6$

B:-$(T_o + T_p + 2T_m)/6$

C:-$(T_o + T_p + T_m)/6$

D:-$(T_o + T_p + 3T_m)/6$

Correct Answer:- Option-A

Question98:-The critical path in the network algorithm is

A:-Longest duration path

B:-Minimum time required to complete work

C:-Critical activities to meet a project deadline

D:-All the above

Correct Answer:- Option-D

Question99:-In project crashing, the suitable way is

A:-Add resources at the critical paths

B:-Shorten the project duration by reducing the time of one or more critical activities

C:-Add more duration to each activity

D:-Do a technical analysis of finished work for review

Correct Answer:- Option-B

Question100:-Under MSME, India, a small-scale entrepreneurs have an annual turnover in the range of

A:-Up to Rs. 5 crore

B:-Rs. 5 Crore-50 crore

C:-Rs. 50 Crore-250 Crore

D:-None of the above

Correct Answer:- Option-B