

Notations :

- Options shown in **green** color and with ✓ icon are correct.
- Options shown in **red** color and with ✖ icon are incorrect.

Question Paper Name:	Chemical Engg 14032020 S2
Subject Name:	Chemical Engineering
Creation Date:	2020-03-14 18:45:13
Duration:	150
Total Marks:	300
Display Marks:	Yes
Share Answer Key With Delivery Engine:	No
Actual Answer Key:	Yes
Calculator:	Scientific
Magnifying Glass Required?:	No
Ruler Required?:	No
Eraser Required?:	No
Scratch Pad Required?:	No
Rough Sketch/Notepad Required?:	No
Protractor Required?:	No
Show Watermark on Console?:	Yes
Highlighter:	No
Auto Save on Console?:	No

Question Shuffling Allowed : Yes

Question Number : 1 Question Id : 2310981501 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which of the following is NOT a thermodynamic property?

Options :

1. ✖ Internal energy

2. ✖ Enthalpy

3. ✖ Entropy

Question Number : 2 Question Id : 2310981502 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The two phases α and β are in equilibrium when:

Options :

1. ✗ $U_{\alpha} = U_{\beta}$ (Equality of specific internal energy)

2. ✗ $H_{\alpha} = H_{\beta}$ (Equality of specific enthalpy)

3. ✗ $S_{\alpha} = S_{\beta}$ (Equality of specific entropy)

4. ✓ $G_{\alpha} = G_{\beta}$ (Equality of specific Gibbs free Energy)

Question Number : 3 Question Id : 2310981503 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

40 gm of caustic soda is dissolved in water to prepare 2 litre of solution. The molarity of the solution is:

Options :

1. ✗ 1

2. ✗ 2

3. ✓ 0.5

4. ✗ 0.25

Question Number : 4 Question Id : 2310981504 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

If the isothermal expansion of an ideal gas takes place, then:

Options :

1. ✖ Internal energy of the gas increases
2. ✖ enthalpy of the gas decreases
3. ✔ Enthalpy of the gas remains constant
4. ✖ Enthalpy of the gas is reduced to zero

Question Number : 5 Question Id : 2310981505 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which law of thermodynamics states: "The energy of an isolated system remains constant."

Options :

1. ✖ Zeroth law of thermodynamics
2. ✔ First law of thermodynamics
3. ✖ Second law of thermodynamics
4. ✖ Third law of thermodynamics

Question Number : 6 Question Id : 2310981506 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which of the following is true with regard to an isothermal process?

Options :

1. ✔ The temperature of the system doesn't change
2. ✖ The pressure of the system doesn't change

3. ✖ The temperature and pressure of the system do not change

4. ✖ The temperature and pressure of the system change

Question Number : 7 Question Id : 2310981507 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The internal energy of an ideal gas is function of:

Options :

1. ✔ temperature only

2. ✖ pressure only

3. ✖ temperature and pressure only

4. ✖ pressure, but not of volume

Question Number : 8 Question Id : 2310981508 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which of the following is the unit of fugacity?

Options :

1. ✔ atm

2. ✖ Joule

3. ✖ Unit less

4. ✖ Watt

Question Number : 9 Question Id : 2310981509 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

www.prepp.in A new temperature scale, denoted by $^{\circ}\text{P}$, has been developed, where the freezing point of water is 200°P and the boiling point is 400°P . On this scale, 500°P corresponds, in degree Celsius, to:

Options :

1. ✗ 100°C

2. ✗ 125°C

3. ✓ 150°C

4. ✗ 300°C

Question Number : 10 Question Id : 2310981510 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

In which condition is the equation of state $PV=nRT$ best obeyed by real gases?

Options :

1. ✓ At low pressure and high temperature

2. ✗ At low pressure and low temperature

3. ✗ At high pressure and high temperature

4. ✗ At high pressure and low temperature

Question Number : 11 Question Id : 2310981511 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The chemical potential of species i in the mixture is given by:

Options :

1. ✗ $\mu_i = \left[\frac{\partial(nG)}{\partial n_i} \right]_{P,T,n_i}$

www.prepp.in

$$\mu_i = \left[\frac{\partial(nG)}{\partial n_i} \right]_{P,T,n_j}$$

2. ✓

$$\mu_i = \left[\frac{\partial(nG)}{\partial n_i} \right]_{P,T}$$

3. ✗

$$\mu_i = \left[\frac{\partial(nG)}{\partial n_i} \right]_{T,n_j}$$

4. ✗

Question Number : 12 Question Id : 2310981512 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The Clapeyron equation addresses the:

Options :

1. ✓ rate of change of vapour pressure with temperature of the system

2. ✗ effect of the presence of inert on the conversion

3. ✗ calculation of gibbs energy change of the system

4. ✗ dependence of temperature on the heat of phase transition

Question Number : 13 Question Id : 2310981513 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Choose the correct statement from the following.

Options :

1. ✓ A catalyst changes the activation energy of a reaction

2. ✗ A catalyst changes the enthalpy of a reaction

4. ✖ A catalyst changes the equilibrium constant of a reaction

Question Number : 14 Question Id : 2310981514 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

A liquid mixture of component α and component β is in equilibrium with its vapour at 100 kPa and 373 K. The vapour pressure values of component α and component β at 373 K are 150 and 60 kPa respectively. Assuming that the system obeys Raoult's law, the mole fraction of component α in the liquid is:

Options :

1. ✖ 0.34

2. ✔ 0.44

3. ✖ 0.55

4. ✖ 0.25

Question Number : 15 Question Id : 2310981515 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

If ΔH° is negative, then the equilibrium constant:

Options :

1. ✔ decreases as the temperature increases

2. ✖ increases as the temperature increases

3. ✖ doesn't depend on the temperature

4. ✖ increases first and then decreases

Correct Marks : 2 Wrong Marks : 0.66

A non-ideal binary mixture consists of two components P and Q . The mixture exhibits a minimum boiling azeotrope. The activity coefficients γ_P and γ_Q must satisfy:

Options :

1. ✓ $\gamma_P > 1, \gamma_Q > 1$

2. ✗ $\gamma_P < 1, \gamma_Q > 1$

3. ✗ $\gamma_P = 1, \gamma_Q = 1$

4. ✗ $\gamma_P < 1, \gamma_Q < 1$

Question Number : 17 Question Id : 2310981517 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which one of the following is NOT a correct statement?

Options :

1. ✗ All spontaneous processes are irreversible

2. ✗ In a reversible adiabatic process, the entropy change is zero

3. ✗ Entropy is a state function

4. ✓ $C_P = C_V$ is valid for a compressible fluid

Question Number : 18 Question Id : 2310981518 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which one of the following is NOT a correct statement?

Options :

1. ✓ The ratio of the fugacity to pressure is called activity coefficient.

3. ✖ Fugacity has the same dimension as that of pressure.

4. ✖ The shape of T-S diagram for Carnot cycle is a rectangle.

Question Number : 19 Question Id : 2310981519 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which of the following is NOT an expression of Maxwell's equations?

Options :

1. ✖ $\left(\frac{\partial T}{\partial V}\right)_S = -\left(\frac{\partial P}{\partial S}\right)_V$

2. ✖ $\left(\frac{\partial T}{\partial P}\right)_S = \left(\frac{\partial V}{\partial S}\right)_P$

3. ✖ $\left(\frac{\partial P}{\partial T}\right)_V = \left(\frac{\partial S}{\partial V}\right)_T$

4. ✔ $\left(\frac{\partial V}{\partial T}\right)_P = -\left(\frac{\partial H}{\partial P}\right)_T$

Question Number : 20 Question Id : 2310981520 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

What does a manometer measure?

Options :

1. ✖ Height difference

2. ✖ Momentum difference

Question Number : 21 Question Id : 2310981521 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The height of a fluidised bed at incipient fluidisation is 0.075 m and the corresponding voidage is 0.4. If the voidage of the bed increases to 0.5, then the height of the bed would be:

Options :

1. ✗ 0

2. ✗ 0.1

3. ✓ 0.090

4. ✗ 0.012

Question Number : 22 Question Id : 2310981522 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

In the Tyler Standard Screen Scale Series, when the mesh number increases from 10 to 20, then clear opening in two successive screens:

Options :

1. ✓ decreases

2. ✗ increases

3. ✗ remains unchanged

4. ✗ first increases and then decreases

Correct Marks : 2 Wrong Marks : 0.66

The value of coefficient of compressibility (also called bulk modulus of compressibility) of incompressible fluid is:

Options :

1. ✖ 0

2. ✖ 1

3. ✖ 10

4. ✔ Infinity

Question Number : 24 Question Id : 2310981524 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The absolute pressure in a vessel is measured to be 41 kPa. If the atmospheric pressure is 101 kPa, the vacuum pressure in the vessel is:

Options :

1. ✖ 41 kPa

2. ✖ 101 kPa

3. ✔ 60 kPa

4. ✖ 0 kPa

Question Number : 25 Question Id : 2310981525 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Water is filled in a vessel whose height is 10 m. The pressure difference between the top and the bottom of the vessel is (water density= 1000 kg/m³):

Options :

1. ✖ 98100 kPa

3. ✔ 98.10 kPa

4. ✖ 981 kPa

Question Number : 26 Question Id : 2310981526 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Choose the correct option from the following.

Options :

1. ✖ A fluid energy mill is used for cutting of solid materials.
2. ✖ The size reduction is one of the most energy-efficient of all the unit operations.
3. ✔ The operating speed of ball mill must be less than its critical speed.
4. ✖ The unit of work index used in Bond's law is kW/ton.

Question Number : 27 Question Id : 2310981527 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

In the laminar boundary layer flow over a flat plate, the ratio (δ/x) is proportional to (where δ is the boundary layer thickness and x is the distance from the leading edge in the direction of flow) the:

Options :

1. ✖ Reynolds number
2. ✖ square root of the Reynolds number
3. ✖ reciprocal of the square of the Reynolds number

Question Number : 28 Question Id : 2310981528 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Screening is a method of separating particles according to their:

Options :

1. ✗ surface area

2. ✓ size

3. ✗ volume

4. ✗ mass

Question Number : 29 Question Id : 2310981529 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

In a ball mill, most of the size reduction of the particles is done by:

Options :

1. ✗ compression

2. ✓ impact

3. ✗ attrition

4. ✗ cutting

Question Number : 30 Question Id : 2310981530 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which parameter of the following doesn't appear in Bernoulli's equation?

Options :

1. ✖ Pressure

2. ✖ Velocity

3. ✖ Density

4. ✔ Time

Question Number : 31 Question Id : 2310981531 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which of the following is NOT true for the Navier-Stokes equation?

Options :

1. ✖ It is a non-linear equation

2. ✔ It is a steady equation

3. ✖ It is a second-order equation

4. ✖ It is a partial differential equation

Question Number : 32 Question Id : 2310981532 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Match the pumps in group I with the corresponding fluids in Group II.

Group I	Group II
P. Centrifugal pump	I. Slurry
Q. Gear pump	II. High Viscosity liquid
	III. Low viscosity liquid

Options :

1. ✖ P-II, Q-I

2. ✖ P-II, Q-I

3. ✖ P-I, Q-III

4. ✔ P-III, Q-II

Question Number : 33 Question Id : 2310981533 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

A Bingham fluid of viscosity $\mu = 8 \text{ Pa}\cdot\text{s}$ and yield stress $\tau_0 = 5 \text{ kPa}$ is sheared between flat parallel plates separated by a distance $0.5 \times 10^{-3} \text{ m}$. The top plate is moving with a velocity of 1 m/s . The shear stress on the plate is:

Options :

1. ✖ 8 kPa

2. ✖ 10 kPa

3. ✔ 21 kPa

4. ✖ 25 kPa

Question Number : 34 Question Id : 2310981534 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which of the following is true with regard to the particle that is settling in water at its terminal settling velocity?

Options :

1. ✖ buoyant force = weight + drag force

2. ✔ weight = buoyant force + drag force

3. ✖ drag force = buoyant force + weight

Question Number : 35 Question Id : 2310981535 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Choose the correct option from the following.

Options :

1. ✖ The pitot tube is used to measure liquid level in a tank.

2. ✔

The hydraulic efficiency of a centrifugal pump monotonically decreases with increasing flow rate.

3. ✖ The operation of a rotameter is based on pressure drop across a nozzle.

4. ✖

In Hagen-Poiseuille flow through a cylindrical tube, the radial profile of shear stress is parabolic.

Question Number : 36 Question Id : 2310981536 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Choose the correct option from the following.

Options :

1. ✖

For crushing of solids, the Rittinger's law states the work required for crushing is proportional to the size reduction ratio.

2. ✔ The size reduction of coarse hard solids using a crusher is accomplished by compression.

3. ✖

In Tyler series, the ratio of the aperture size of a screen to that of the next smaller screen is 2.

4. ✖

The critical speed of a ball mill depends on the radius of the mill (shell) and the radius of the particles.

Question Number : 37 Question Id : 2310981537 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

In a venture meter, Δp_1 and Δp_2 are the pressure drops corresponding to volumetric flow rates Q_1 and Q_2 . If $Q_2/Q_1=4$, then $\Delta p_2/\Delta p_1=$

Options :

1. ✖ 2

2. ✖ 4

3. ✔ 16

4. ✖ 1.414

Question Number : 38 Question Id : 2310981538 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The relation between the stress τ and the strain rate $\left(\frac{du_x}{dy}\right)$ for the rapid flow granular material is given by $\tau = C \left(\frac{du_x}{dy}\right)^3$, where C is a constant. If M , L and T are the mass, length and time dimension respectively, what is the dimension of the constant C ?

Options :

1. ✖ $[ML^{-1}T^{-1}]$

2. ✖ $[ML^{-1}T^{-2}]$

3. ✖ $[ML^{-1}]$

4. ✔ $[ML^{-1}T]$

Question Number : 39 Question Id : 2310981539 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

A Newtonian fluid is flowing inside a pipe. The flow is fully developed. If the maximum flow velocity inside the pipe is 40 m/s, then the average velocity of the fluid is:

1. ✓ 20 m/s

2. ✗ 40 m/s

3. ✗ 60 m/s

4. ✗ 80 m/s

Question Number : 40 Question Id : 2310981540 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The velocity boundary layer and the thermal boundary layer merge when:

Options :

1. ✗ Schmidt number is 1

2. ✓ Prandtl number is 1

3. ✗ Schamidt number tends to infinity

4. ✗ Prandtl number tends to infinity

Question Number : 41 Question Id : 2310981541 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

In heat exchangers, the equivalent diameter is equal to:

Options :

1. ✗ hydraulic radius

2. ✗ 2 x hydraulic radius

3. ✖ 1 x hydraulic radius

4. ✔ 4 x hydraulic radius

Question Number : 42 Question Id : 2310981542 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Radiation is emitted by:

Options :

1. ✖ solids

2. ✖ solids and liquids

3. ✖ liquids and gases

4. ✔ solids, liquids and gases

Question Number : 43 Question Id : 2310981543 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The unsteady state heat conduction means:

Options :

1. ✖ temperature distribution does not change with respect to location

2. ✖ temperature distribution changes with respect to location

3. ✖ temperature distribution does not change with respect to time

4. ✔ temperature distribution changes with respect to time

Question Number : 44 Question Id : 2310981544 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Heat flux is defined as the time rate of heat transfer per unit of:

Options :

1. ✖ mass

2. ✖ volume

3. ✔ area

4. ✖ length

Question Number : 45 Question Id : 2310981545 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Consider there are two black bodies with surface area A_1 (area= 0.5m^2) and A_2 (area= 2 m^2). They exchange heat only by radiation. 50% of the energy emitted by A_1 is received by A_2 . The fraction of energy emitted by A_2 that is received by A_1 is:

Options :

1. ✖ 1

2. ✖ 0.5

3. ✔ 0.125

4. ✖ 0

Question Number : 46 Question Id : 2310981546 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

In free convection, the Nusselt number is a function of:

Options :

1. ✖ Re and Pr

3. ✔ Gr and Pr

4. ✖ St and Sc

Question Number : 47 Question Id : 2310981547 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Water enters a pipe at 20 °C at a rate of 1 kg/s and is heated to 40 °C. The rate of the heat transfer to the water is:

Options :

1. ✖ 21 kW

2. ✔ 84 kW

3. ✖ 42 kW

4. ✖ Indeterminate

Question Number : 48 Question Id : 2310981548 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Heat is lost through a wall ($k = 0.50$ W/m.K), which is 5 m long, 2 m wide, and 20 cm thick. The heat loss rate is 500 W.

If the inner surface of the wall is at 20 °C, the temperature at the midplane of the wall is:

Options :

1. ✖ 20 °C

2. ✖ 19 °C

3. ✔ 10 °C

Question Number : 49 Question Id : 2310981549 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0.66

The heat conduction equation in a medium is given in its simple form as $\frac{1}{r^2} \frac{\partial}{\partial r} \left(r^2 \frac{\partial t}{\partial r} \right) = \frac{1}{\alpha} \frac{\partial t}{\partial \tau}$
Select the **wrong** statement from the following in this respect.

Options :

1. ✓ The medium is of cylindrical shape.
2. ✗ The thermal conductivity of the medium is constant.
3. ✗ The heat transfer through the medium is unsteady.
4. ✗ There is no heat generation within the medium.

Question Number : 50 Question Id : 2310981550 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0.66

Heat is lost at a rate of 300 W per m² area of a 15-cm-thick wall with a thermal conductivity of $k=1.5$ W/mK. The temperature drop across the wall is:

Options :

1. ✓ 30 °C
2. ✗ 300 °C
3. ✗ 0 °C
4. ✗ 20 °C

Correct Marks : 2 Wrong Marks : 0.66

It is generally accepted that the lumped system analysis is applicable if which of the following options in case of the Biot number (Bi) is true?

Options :

1. ✓ $Bi \leq 0.1$

2. ✗ $Bi = 1$

3. ✗ $Bi \geq 1$

4. ✗ $10 \geq Bi \geq 5$

Question Number : 52 Question Id : 2310981552 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

A fully developed flow implies that the _____ does not change in the fluid flow direction.

Options :

1. ✗ temperature distribution

2. ✓ momentum distribution

3. ✗ entropy distribution

4. ✗ pressure distribution

Question Number : 53 Question Id : 2310981553 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The _____ are the driving force for natural convection.

Options :

1. ✗ frictional forces

Question Number : 54 Question Id : 2310981554 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which of the following statements is correct?

Options :

1. ✖ The critical thickness of insulation for spheres is given by k/h .
2. ✖ The critical thickness of insulation for cylinder is given by $2k/h$.
3. ✔ The heat flux in dropwise condensation is more than in the filmwise condensation.
4. ✖ The heat flux in the filmwise condensation is more than that in the dropwise condensation.

Question Number : 55 Question Id : 2310981555 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

In thermal radiation, for a blackbody in equilibrium (where α is absorptivity, ϵ is emissivity, ρ is reflectivity), which of the following options is correct?

Options :

1. ✖ $\alpha \neq 1$; $\epsilon \neq 1$; $\rho \neq 0$
2. ✖ $\alpha \neq 1$; $\epsilon = 1$; $\rho \neq 0$
3. ✖ $\alpha = 1$; $\epsilon \neq 1$; $\rho \neq 0$

Question Number : 56 Question Id : 2310981556 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The Dittus-Boelter equation for heat transfer in turbulent flow in a pipe gives $Nu \propto Re^{0.8}$, where Nu is Nusselt Number and Re is the Reynolds number for the flow. Considering that this relation is valid, the heat transfer coefficient varies with pipe diameter D as:

Options :

1. ✗ $D^{0.8}$

2. ✗ $D^{-0.8}$

3. ✗ $D^{1.8}$

4. ✓ $D^{-0.2}$

Question Number : 57 Question Id : 2310981557 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which of the following statements is correct?

Options :

1. ✗ Baffles are used in heat exchangers to increase the tube side heat transfer coefficient

2. ✗ Baffles are used in heat exchangers to increase vibration in heat exchangers

3. ✓

Triangular pitch arrangement in comparison to Square pitch arrangement helps to accommodate more number of tubes in given shell diameter

4. ✗

Square pitch arrangement helps to accommodate more number of tubes in a given shell diameter

Correct Marks : 2 Wrong Marks : 0.66

The heat flux across an insulating material wall with thermal conductivity $k=0.08$ W/mK and thickness 0.32 m is 10 W/m². The temperature of the inside wall is -5 °C. The temperature of the outside wall will be:

Options :

1. ✖ 45 °C

2. ✔ 35 °C

3. ✖ 25 °C

4. ✖ 30 °C

Question Number : 59 Question Id : 2310981559 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

A wall is made of two layers of different materials. k_1 and k_2 are the thermal conductivities of material 1 and material 2 respectively. If the thickness of both the layers is same, the equivalent thermal conductivity of the wall is:

Options :

1. ✖ $k_1 k_2$

2. ✖ $k_1 + k_2$

3. ✖ $(k_1 + k_2)/(k_1 k_2)$

4. ✔ $(2k_1 k_2)/(k_1 + k_2)$

Question Number : 60 Question Id : 2310981560 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Identify the wrong statement with respect to boiling heat transfer.

Options :

1. ✖ With increase in excess temperature, heat flux increases, then it decreases and again increases.
2. ✔ Boiling occurs at the temperature that is lower than the saturation temperature of the liquid.
3. ✖ The maximum heat transfer point lies between nucleate boiling to film boiling
4. ✖ The heat of evaporation affects burnout heat flux in the nucleate boiling.

Question Number : 61 Question Id : 2310981561 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

In the case of steady state equimolar counter diffusion of two gases P and Q, the ratio $\frac{N_P}{N_P+N_Q}$ is:

Options :

1. ✖ 0
2. ✖ 1
3. ✖ 1/2
4. ✔ ∞ (Infinity)

Question Number : 62 Question Id : 2310981562 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

For the absorption of a gas in a countercurrent packed bed column, the operating line:

Options :

1. ✔ lies above the equilibrium curve
2. ✖ lies below the equilibrium curve

3. ✖ can lie above or below the equilibrium curve

4. ✖ is always parallel to the equilibrium curve

Question Number : 63 Question Id : 2310981563 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The molecular diffusivity of a gas:

Options :

1. ✔ increases with temperature

2. ✖ decreases with temperature

3. ✖ is independent of temperature

4. ✖ Doesn't depend on pressure

Question Number : 64 Question Id : 2310981564 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The Peclet number is given by:

Options :

1. ✔ $Pe = Re \cdot Sc$

2. ✖ $Pe = Re / Sc$

3. ✖ $Pe = Nu / Sc$

4. ✖ $Pe = Sh / Sc$

Question Number : 65 Question Id : 2310981565 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which of the following solutes has the highest molecular diffusivity in water?

Options :

1. ✓ methanol
2. ✗ n-Propanol
3. ✗ isobutanol
4. ✗ n-Heptane

Question Number : 66 Question Id : 2310981566 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

For helping to absorb a less-soluble gas in a liquid:

Options :

1. ✗ gas-side mass transfer coefficient should be increased
2. ✓ liquid-side mass transfer coefficient should be increased
3. ✗ liquid-side mass transfer coefficient should be decreased
4. ✗ mass transfer coefficient must be kept constant

Question Number : 67 Question Id : 2310981567 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The use of Raschig rings in the place of crushed stones as packing in packed bed column (other things considering same):

Options :

1. ✗ increases pressure drop and increases surface area
2. ✗ increases pressure drop and decreases surface area

3. ✓ increases pressure drop and increases surface area

4. ✗ decreases pressure drop and decreases surface area

Question Number : 68 Question Id : 2310981568 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which of the following is NOT an assumption of 'film theory'?

Options :

1. ✓ Unsteady state mass transfer occurs in the liquid phase

2. ✗ Mass transfer occurs purely by molecular diffusion

3. ✗ Beyond the film, fluid is well mixed

4. ✗ Steady state mass transfer occurs through the film

Question Number : 69 Question Id : 2310981569 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which statement of the following is NOT true with regard to Knudsen diffusivity?

Options :

1. ✗ Knudsen diffusivity depends upon diameter of passage

2. ✗ Knudsen diffusivity is the function of temperature

3. ✓ Knudsen diffusivity is not the function of temperature

4. ✗ Knudsen diffusivity depends upon the molecular weight of the species

Question Number : 70 Question Id : 2310981570 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

www.prepp.in
A solute A is taking place into water. A student wants to measure the liquid-phase mass transfer coefficient for the operation. Applying the film theory, he calculated the thickness of the liquid film as $\delta=0.01$ mm. The diffusion coefficient of solute A in water is $4.4 \times 10^{-5} \text{ cm}^2/\text{s}$. The value of liquid-phase mass transfer coefficient if he applies the film theory is:

Options :

1. ✖ $4.4 \times 10^{-4} \text{ cm/s}$

2. ✖ $4.4 \times 10^{-7} \text{ cm/s}$

3. ✔ $4.4 \times 10^{-4} \text{ m/s}$

4. ✖ $4.4 \times 10^{-4} \text{ m}^2/\text{s}$

Question Number : 71 Question Id : 2310981571 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

In the distillation process, for the separation of a binary system, the most desirable value of relative volatility(α) is:

Options :

1. ✖ $\alpha \ll 1$

2. ✖ $\alpha=1$

3. ✔ $\alpha \gg 1$

4. ✖ $\alpha=0.1$

Question Number : 72 Question Id : 2310981572 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Select the correct statement from the following.

Options :

1. ✖ The Fenske equation determines the maximum number of ideal plates.

3. ✖ At the total reflux condition, reflux ratio is unity.

4. ✔

The overall efficiency of the distillation column is the ratio of number of ideal plates to actual plates.

Question Number : 73 Question Id : 2310981573 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The leaching time decreases as:

Options :

1. ✔ temperature increases

2. ✖ viscosity of the solvent increases

3. ✖ size of the solid increases

4. ✖ mixing inert material in the carrier substance increases

Question Number : 74 Question Id : 2310981574 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The Freundlich equation is related to the process of:

Options :

1. ✖ absorption

2. ✔ adsorption

3. ✖ extraction

Question Number : 75 Question Id : 2310981575 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which one of the following is NOT correct?

Options :

1. ✖ The Prandtl number of a fluid is the ratio of momentum diffusivity to thermal diffusivity.

2. ✖

The dimensionless number in mass transfer that is equivalent to Prandtl number in heat transfer is Schmidt number.

3. ✖ The Grashof number is defined as the ratio of buoyancy to viscous forces.

4. ✔

The concentration boundary layer and velocity boundary layer merge when Schmidt number is greater than Prandtl number.

Question Number : 76 Question Id : 2310981576 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which of the following is a true statement?

Options :

1. ✔ The Murphree efficiency can exceed 100%.

2. ✖ The minimum reflux ratio in a distillation column results in the minimum number of trays.

3. ✖ The total reflux condition in a distillation column results in the maximum number of plates.

4. ✖

The Fenske equation can be used in the condition of minimum reflux to calculate the number of trays.

Question Number : 77 Question Id : 2310981577 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

In the liquid-liquid operation, 100 kg of a solution containing 20 kg of solute C and 80 kg of solvent A is brought into contact with 100 kg of solvent B. Solvents A and B are completely immiscible in each other, but solute C is soluble in both the solvents. If the extraction process attains the equilibrium and the equilibrium relationship between two phases is $Y^* = 0.9X$ (where Y^* is kg of C/kg of B and X is kg of C/kg of A). Select the correct option from the following.

Options :

1. ✖ The entire amount (mass) of C is transferred to solvent B.
2. ✔ Less than 20 kg but more than 10 kg of solute C is transferred to solvent B.
3. ✖ Less than 10 kg of solute C is transferred to solvent B.
4. ✖ No amount of solute C is transferred to solvent B.

Question Number : 78 Question Id : 2310981578 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3 Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which of the following is NOT a correct statement?

Options :

1. ✖ Percentage saturation is always smaller than the relative saturation.
2. ✖ Wet bulb and dry bulb temperatures become identical at 100 percentage saturation curve.
3. ✖ The specific humidity and partial pressure of vapour remain constant during sensible cooling process.
4. ✔ The relative humidity decreases and wet bulb temperature increases during the sensible cooling process.

Question Number : 79 Question Id : 2310981579 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3 Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

What is the ratio of the mean residence time to space time when the density of reactants is constant?

Options :

1. ✓ 1

2. ✗ 0.5

3. ✗ 2

4. ✗ 0

Question Number : 80 Question Id : 2310981580 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which one of the following theories explains the mechanism of homogenous and heterogenous catalysis?

Options :

1. ✗ Le Chatelier's theory

2. ✗ Valence Bond Theory

3. ✓ Collision theory

4. ✗ Activated complex theory

Question Number : 81 Question Id : 2310981581 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

A catalyst increases the rate of reaction by:

Options :

1. ✓ decreasing the activation energy

2. ✗ increasing the activation energy

3. ✗ decreasing the Gibb's free energy

Question Number : 82 Question Id : 2310981582 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which one of the following is NOT a radioactive isotope?

Options :

1. ✖ Iodine-131

2. ✖ Cobalt-60

3. ✔ Carbon-12

4. ✖ Uranium-235

Question Number : 83 Question Id : 2310981583 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The chemical reactions with very low activation energy are:

Options :

1. ✔ unaffected by temperature changes

2. ✖ always reversible

3. ✖ always irreversible

4. ✖ easily affected by temperature changes

Question Number : 84 Question Id : 2310981584 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The state of chemical equilibrium according to the laws of chemical kinetics is:

Options :

1. ✖ static & unsteady
2. ✖ dynamic & unsteady
3. ✖ static & steady
4. ✔ dynamic & steady

Question Number : 85 Question Id : 2310981585 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The overall order of the reaction $A + B \rightarrow C + D$ is two. Then which one of the following statements is true?

Options :

1. ✖ The reaction is elementary, but molecularity is not two
2. ✖ Molecularity is two but reaction may not be elementary
3. ✖ Reaction is elementary but molecularity is three
4. ✔ The reaction is elementary with molecularity being two

Question Number : 86 Question Id : 2310981586 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The pore diffusion resistance in a catalyst is negligible when the Thiele modulus is:

Options :

1. ✔ less than 0.5
2. ✖ equal to zero
3. ✖ infinity

Question Number : 87 Question Id : 2310981587 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which one of the following reactors is preferred in laboratories and pharmaceutical industries?

Options :

1. ✖ Semi-batch reactor

2. ✔ Batch reactor

3. ✖ Plug flow reactor

4. ✖ CSTR

Question Number : 88 Question Id : 2310981588 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

For which of the following pairs of gases is the Dalton's Law of partial pressures not applicable?

Options :

1. ✔ Ammonia and Hydrogen chloride

2. ✖ Hydrogen and Helium

3. ✖ Helium and Neon

4. ✖ Methane and Ethane

Question Number : 89 Question Id : 2310981589 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

ABR is a reactor used widely for the production of Biogas. The full form of ABR is:

Options :

1. ✖ Aerobic Baffled Reactor

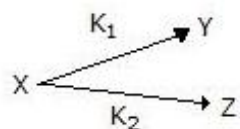
2. ✖ Aerobic Batch Reactor

3. ✔ Anaerobic Baffled Reactor

4. ✖ Anaerobic Batch Reactor

Question Number : 90 Question Id : 2310981590 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66



What is the point selectivity of the product Y in the reaction shown above?

Options :

1. ✖ K_2/K_1

2. ✖ $K_1 - K_2$

3. ✖ $K_2 - K_1$

4. ✔ K_1/K_2

Question Number : 91 Question Id : 2310981591 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The units of rate constant for a second-order reaction are:

Options :

1. ✔ $\text{L mol}^{-1} \text{s}^{-1}$

2. ✖ $\text{L}^{-1} \text{mol s}^{-1}$

3. ✖ $\text{mol}^{-1} \text{s}^{-1}$

4. ✖ $\text{mol}^{-1} \text{s}^{-1}$

Question Number : 92 Question Id : 2310981592 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The reactor commonly used for catalytic cracking processes is:

Options :

1. ✔ Fluidised bed reactor

2. ✖ CSTR

3. ✖ Plug-flow catalytic reactor

4. ✖ Fixed-bed reactor

Question Number : 93 Question Id : 2310981593 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

What do you mean by a space time of five hours for a flow reactor?

Options :

1. ✖ Five reactor volumes of feed can be processed every hour

2. ✖ It takes five hours to dump the entire volume of the reactor with feed

3. ✖ It takes three hours to dump the entire volume of the reactor with feed

4. ✔ The time required to process one reactor volume of feed is five hours

Question Number : 94 Question Id : 2310981594 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Options :

1. ✓ 0.65 microns
2. ✗ 1.65 microns
3. ✗ 2.65 microns
4. ✗ 3.65 microns

Question Number : 95 Question Id : 2310981595 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The bourdon tube in a vapour pressure thermometer indicates a rise in:

Options :

1. ✓ vapour pressure
2. ✗ density
3. ✗ viscosity
4. ✗ humidity

Question Number : 96 Question Id : 2310981596 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The static characteristics of instruments are attributes that change slowly with time. Which one of the following is an undesirable static characteristic of instruments?

Options :

1. ✗ Sensitivity
2. ✓ Dead Zone

3. ✖ Accuracy

4. ✖ Repeatability

Question Number : 97 Question Id : 2310981597 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which one of the following scales of temperature assigns zero degrees to freezing point and 80 degrees to boiling point of water?

Options :

1. ✔ Reumur Scale

2. ✖ Celcius Scale

3. ✖ Farenheit Scale

4. ✖ Rankine scale

Question Number : 98 Question Id : 2310981598 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The working principle of orifice meter is same as:

Options :

1. ✖ hot wire anemometer

2. ✖ magnetic flow meter

3. ✔ venturi meter

4. ✖ spherometer

Question Number : 99 Question Id : 2310981599 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

The response of the control system just after any abnormal conditions such as sudden change in load and short-circuiting is called:

Options :

1. ✖ servo response
2. ✔ transient response
3. ✖ regulatory response
4. ✖ frequency response

Question Number : 100 Question Id : 2310981600 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The compositional analysis of which one of the following is done using mass spectrograph?

Options :

1. ✖ Crystalline solid
2. ✖ Natural gas
3. ✖ Alloys
4. ✔ Isotopes

Question Number : 101 Question Id : 2310981601 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

What is the laplace transform of the function e^{at} ?

Options :

1. ✔ $1/s-a$

2. ✖ 1/a-s

3. ✖ 1/a

4. ✖ 1/s

Question Number : 102 Question Id : 2310981602 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The normal mercury thermometer can measure a maximum temperature of 300°C. How can we increase this maximum temperature measurement range up to 500°C?

Options :

1. ✖ By increasing the diameter of the tube

2. ✖ By using a steel tube in place of a glass tube

3. ✖ Accounting for the tube expansion

4. ✔ By filling nitrogen under pressure in the stem

Question Number : 103 Question Id : 2310981603 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The change in the output induced by a unit change in the input is called:

Options :

1. ✖ frequency gain

2. ✖ collision gain

3. ✖ yield gain

Question Number : 104 Question Id : 2310981604 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The pH meter consists of a _____ attached to a pH-responsive electrode and a reference electrode.

Options :

1. ✗ chromatograph

2. ✗ ammeter

3. ✓ voltmeter

4. ✗ calorimeter

Question Number : 105 Question Id : 2310981605 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The Iron- Constantan thermocouple is a:

Options :

1. ✗ Type K thermocouple

2. ✗ Type T thermocouple

3. ✓ Type J thermocouple

4. ✗ Type E thermocouple

Question Number : 106 Question Id : 2310981606 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The sling psychrometer contains _____ thermometer(s).

Options :

1. ✖ three

2. ✖ zero

3. ✖ one

4. ✔ two

Question Number : 107 Question Id : 2310981607 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which metals among the following are best-suited for resistance temperature detector (RTD) applications?

Options :

1. ✖ Lithium, Sodium, Potassium

2. ✖ Iron, Aluminium, Zinc

3. ✔ Platinum, Copper, Nickel

4. ✖ Scandium, Rhodium, Titanium

Question Number : 108 Question Id : 2310981608 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which one of the following expressions gives the resistance of a gas in a vessel?

Options :

1. ✖ nRT/V

2. ✖ nRT/P

3. ✔ V/nRT

Question Number : 109 Question Id : 2310981609 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which one of the following is a first-order system?

Options :

1. ✓ Mercury in glass thermometer kept in boiling water

2. ✗ Interacting system of two tanks in series

3. ✗ Non-interacting system of two tanks in series

4. ✗ Damped vibrator

Question Number : 110 Question Id : 2310981610 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The gain margin in a Bode plot will be equal to the:

Options :

1. ✗ gain in p controller

2. ✗ gain in p-i controller

3. ✓ reciprocal of amplitude ratio

4. ✗ amplitude ratio

Question Number : 111 Question Id : 2310981611 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which property of mercury is disadvantageous for measuring low differential pressures?

Options :

1. ✓ High density
2. ✗ Low vapour pressure
3. ✗ Non-sticky nature
4. ✗ Low coefficient of thermal expansion

Question Number : 112 Question Id : 2310981612 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which one of the following is true for a second-order underdamped system?

Options :

1. ✗ Overshoot increases for increasing damping co-efficient
2. ✗ Large damping co-efficient indicates smaller damping
3. ✗ Decay ratio = overshoot
4. ✓ Decay ratio = (overshoot)²

Question Number : 113 Question Id : 2310981613 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The transfer function of a control system is $F(s) = \frac{(S-1)(S+1)}{S(S-2)(S+4)}$. What will be the initial value of the corresponding time function?

Options :

1. ✗ 1/16
2. ✗ 8/7

3. ✓ 1

4. ✗ -1

Question Number : 114 Question Id : 2310981614 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The correct formula for calculating the amplitude ratio (AR) is:

Options :

1. ✗ $Ar = 10 \log (A_m/Ar)$ 2. ✗ $Ar = 40 \log (A_m/Ar)$ 3. ✗ $Ar = 20 \log (Ar/A_m)$ 4. ✓ $Ar = 20 \log (A_m/Ar)$

Question Number : 115 Question Id : 2310981615 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which one of the following is NOT an acronym to describe the four basic classifications of single-loop feedback system in which the output signal is fed back into the input?

Options :

1. ✗ VCVS

2. ✗ CCVS

3. ✓ VVVS

4. ✗ VCCS

Question Number : 116 Question Id : 2310981616 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Which one of the following is the correct relation between the amount of ordinary annuity and periodic payments?

Options :

1. ✓ $s = R \left(\frac{(1+i)^n - 1}{i} \right)$

2. ✗ $S = R (1 + i) n + 1 / i$

3. ✗ $S = R (1 + i) (n - 1)$

4. ✗ $S = R (10 + i) n - 1 / i$

Question Number : 117 Question Id : 2310981617 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The annuity in which periodic payments continue indefinitely is called:

Options :

1. ✗ fluidity

2. ✓ perpetuity

3. ✗ porosity

4. ✗ liquid interest

Question Number : 118 Question Id : 2310981618 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The effluent treatment cost in a chemical plant is considered as:

Options :

1. ✗ overhead cost

3. ✖ capital cost

4. ✔ utilities cost

Question Number : 119 Question Id : 2310981619 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which one of the following statements is true about shareholder and debenture holder of a company management?

Options :

1. ✔

A shareholder has more say in the affairs of a company management as compared to a debenture holder

2. ✖

A shareholder has less say in the affairs of a company management as compared to a debenture holder

3. ✖

A shareholder has equal say in the affairs of a company management as compared to a debenture holder

4. ✖

A shareholder has no say in the affairs of a company management, but a debenture holder does have a say

Question Number : 120 Question Id : 2310981620 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

What is the term used for free cash payments an investor receives in a given period for owning a given security (bonds, shares, etc.)?

Options :

1. ✖ Bond flow

2. ✔ Cash flow

3. ✖ Pay out

4. ✖ Period number

Question Number : 121 Question Id : 2310981621 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0.66

The straight line depreciation formula for an asset is:

Options :

1. ✖ Useful life of the asset – Cost of the asset / Salvage value
2. ✖ Salvage value -Cost of the asset / Useful life of the asset
3. ✔ Cost of the asset – Salvage value /Useful life of the asset
4. ✖ (Cost of the asset – Salvage value) Useful life of the asset

Question Number : 122 Question Id : 2310981622 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0.66

Which one of the following is true about the payback method for measurement of returns on investment?

Options :

1. ✔ It gives a correct picture of profitability
2. ✖ It does not measure the discounted rate of return
3. ✖ It underemphasises liquidity
4. ✖ It considers the cash inflows after the recovery of investments

Question Number : 123 Question Id : 2310981623 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0.66

Which one of the following is a correct statement?

Options :

1. ✖ A sinking fund attracts investors
2. ✖ A sinking fund and an emergency fund are the same

3. ✔

A savings account is set up for a particular purpose whereas a sinking fund is used for any purpose

4. ✖ An emergency fund is set up for a particular purpose

Question Number : 124 Question Id : 2310981624 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which one of the following is a wrong statement?

Options :

1. ✔ Working capital = current assets + current liability
2. ✖ Return on investment (ROI) is the ratio of profit before interest & tax and capital employed

3. ✖ Turnover = opening stock + production closing stock

4. ✖

Debt-equity ratio of a chemical company describes the lenders' contribution for each rupee of owner's contribution

Question Number : 125 Question Id : 2310981625 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which of the following is the primary purpose of a Gantt chart ?

Options :

1. ✖ Efficient dispatching of products

2. ✖ Inventory control
3. ✔ Preparing production schedule
4. ✖ Efficient utilisation of manpower and machines

Question Number : 126 Question Id : 2310981626 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The 'Six-tenth rule' is used for:

Options :

1. ✖ estimating cost of piping
2. ✖ estimating utilities' cost
3. ✔ estimating equipment cost by scaling
4. ✖ estimating equipment installation cost

Question Number : 127 Question Id : 2310981627 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

For a chemical process plant, the total capital investment comprises of:

Options :

1. ✖ fixed capital investment & indirect production cost
2. ✖ fixed capital investment & direct production cost
3. ✔ fixed capital investment & working capital
4. ✖ fixed capital investment & overhead cost

Question Number : 128 Question Id : 2310981628 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Pick the wrong equation among the following.

Options :

1. ✓ At breakeven point, NSR is more than the total production cost
2. ✗ Gross margin = Net income - Net expenditure
3. ✗ Net profit = Gross margin - Depreciation - Interest
4. ✗ Net sales realisation (NSR) = Gross sales - Selling expenses

Question Number : 129 Question Id : 2310981629 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

In the scope-of-market analysis, which one of the following factors is NOT included?

Options :

1. ✗ Product distribution
2. ✓ Economics
3. ✗ Opportunities
4. ✗ Competition from other manufactures

Question Number : 130 Question Id : 2310981630 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

What is the net present value of the annuity if an amount R is paid at the end of every year for 'n' years at an interest rate of 'i' ?

Options :

1. ✗ $R(1+i)^n$

3. ✓ $R \left[\frac{\{(1+i)^n - 1\}}{i(1+i)^n} \right]$

4. ✗ $R \left[\frac{\{(1+i)^n - 1\}}{i} \right]$

Question Number : 131 Question Id : 2310981631 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

To make the nominal and effective interest rates equal, how frequently should the interest be compounded?

Options :

1. ✓ Annually

2. ✗ Quarterly

3. ✗ Half yearly

4. ✗ Nominal and effective rates can never be made equal

Question Number : 132 Question Id : 2310981632 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The depreciation calculated by which one of the following methods is maximum?

Options :

1. ✗ Sinking fund method

2. ✗ 'Sum of the years' digits' method

3. ✓ Diminishing balance method

4. ✗ Straight line method

Question Number : 133 Question Id : 2310981633 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

What is the range of the percentage ratio of the working capital to the total capital investments for most chemical plants?

Options :

1. ✖ 50 to 60%

2. ✔ 10 to 20 %

3. ✖ 1 to 5 %

4. ✖ 25 to 50%

Question Number : 134 Question Id : 2310981634 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

When does the breakeven point occur in a manufacturing industry?

Options :

1. ✔ When the total annual product cost equals the total annual sales

2. ✖ When the total annual rate of production equals the assigned value

3. ✖ When the annual sales figures equal the fixed cost

4. ✖ When the annual profit equals the expected value

Question Number : 135 Question Id : 2310981635 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

What percentage of purchased equipment cost will be incurred for equipment installation in a chemical process plant?

Options :

1. ✔ 35 to 45 %

3. ✖ 60 to 70 %

4. ✖ 5 to 10 %

Question Number : 136 Question Id : 2310981636 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

What is the approximate thermal efficiency of the limestone calcination rotary kiln?

Options :

1. ✖ 10%

2. ✖ 75%

3. ✖ 60%

4. ✔ 40%

Question Number : 137 Question Id : 2310981637 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

What is the temperature in the calcination zone of a vertical shaft kiln used in the manufacture of CaO (Quick lime)?

Options :

1. ✖ 500°C

2. ✖ 2000°C

3. ✔ 1000°C

4. ✖ 250°C

Question Number : 138 Question Id : 2310981638 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

What is the percentage yield of sulphuric acid produced by the contact process?

Options :

1. ✖ 80%

2. ✔ 98%

3. ✖ 75%

4. ✖ 65%

Question Number : 139 Question Id : 2310981639 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

What is the amount of electrical charge required to deposit one gram equivalent of any substance?

Options :

1. ✔ One faraday

2. ✖ One micro faraday

3. ✖ One coulomb

4. ✖ One milli faraday

Question Number : 140 Question Id : 2310981640 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Gases tend to behave ideally at:

Options :

1. ✖ low temperature and low pressure

3. ✖ low temperature and high pressure

4. ✔ high temperature and low pressure

Question Number : 141 Question Id : 2310981641 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The producer gas can be produced by:

Options :

1. ✔ passing air through the red hot coke

2. ✖ thermal cracking of naphtha

3. ✖ passing steam through the red hot coke

4. ✖ passing ammonia gas through the red hot coke

Question Number : 142 Question Id : 2310981642 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which one of the following furnaces uses an ID fan for the removal of flue gases?

Options :

1. ✖ Beehive coke oven

2. ✖ Coke oven

3. ✔ High pressure boiler

Question Number : 143 Question Id : 2310981643 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The condensation polymerisation of phenol and formaldehyde produces:

Options :

1. ✔ Bakelite

2. ✖ PHBV

3. ✖ Teflon

4. ✖ nylon 6

Question Number : 144 Question Id : 2310981644 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

What happens to the fusion point of an acidic refractory material when a basic oxide is added?

Options :

1. ✔ It decreases

2. ✖ It increases

3. ✖ It remains unaffected

4. ✖ It may increase or decrease

Question Number : 145 Question Id : 2310981645 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which one of the following is used as a weed killer and a nitrogenous for onion fields?

Options :

1. ✖ Citric acid
2. ✔ Calcium cyanamide
3. ✖ Ammonium sulphate
4. ✖ Calcium phosphate

Question Number : 146 Question Id : 2310981646 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

A finely divided peat (a conditioner) is added to the fertilizer for:

Options :

1. ✖ avoiding counteract burning
2. ✖ avoiding bulk production
3. ✔ avoiding caking & hardening
4. ✖ avoiding increase in the solubility

Question Number : 147 Question Id : 2310981647 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which one of the following statements is true about a recuperator?

Options :

1. ✖ It is heavier than the regenerator meant for the same duty
2. ✖ It is not used for fuel gas preheating

3. ✖ It is an intermittent waste heat recovery equipment

4. ✔ It is a continuous waste heat recovery equipment

Question Number : 148 Question Id : 2310981648 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The tunnel kiln is generally used for:

Options :

1. ✔ drying of refractories

2. ✖ melting of glass

3. ✖ roasting of pyrites

4. ✖ reheating of slabs

Question Number : 149 Question Id : 2310981649 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which of the following polymer has the highest film elongation property?

Options :

1. ✖ Cellulose acetate

2. ✖ Teflon

3. ✔ Polythene

4. ✖ Water impermeable cellophane

Question Number : 150 Question Id : 2310981650 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The catalyst 'Ziegler-Natta' is used to produce which of the following polymers?

Options :

1. ✓ Propylene
2. ✗ Vinyl acetate
3. ✗ Vinyl chloride
4. ✗ Styrene