Telangana State Council Higher Education

Notations :

1.Options shown in green color and with ✔ icon are correct.

2.Options shown in red color and with ✖ icon are incorrect.

Question Paper Name:	Chemical Engineering 11th May 2019 Shift1
Subject Name:	Chemical Engineering
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Actual Answer Key:	Yes
Calculator:	None
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

Chemical Engineering

Group Number :	1
Group Id :	89465818
Group Maximum Duration :	0
Group Minimum Duration :	180
Revisit allowed for view? :	No
Revisit allowed for edit? :	No
Break time:	0
Group Marks:	200

Mathematics

Section Id :	89465867
Section Number :	1
Section type :	Online
Mandatory or Optional:	Mandatory
Number of Questions:	50
Number of Questions to be attempted:	50
Section Marks:	50
Display Number Panel:	Yes
Group All Questions:	No

Question Number : 1 Question Id : 8946583409 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Let $M = (a_{ij})$ be a 10×10 matrix such that $a_{ij} = \begin{cases} 1, & \text{if } i+j=11 \\ 0, & \text{otherwise} \end{cases}$. Then, the

determinant of M is _____.

Options :

1. ✖ 0

2. ✖ 1

3. ✔ -1

4. ✖ 11

Question Number : 2 Question Id : 8946583410 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Let A and B be two square matrices of order n. If $AB = A$, $BA = B$ then $A^2 + B^2 = $ ___.

Options :

1. ✖ AB

2. ✖ $A - B$

3. ✖ 0

4. ✔ $A + B$

Question Number : 3 Question Id : 8946583411 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Consider the system of linear equations $x + y + z = 3, x - y - z = 4, x - 5y + \alpha z = 6$. Then,

the value of α for which this system has an infinite number of solutions is _____.

Options :

1. ✔ -5

2. ✘ 5

3. ✘ 3

4. ✘ 1

Question Number : 4 Question Id : 8946583412 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

If $A(\alpha, \beta) = \begin{pmatrix} \cos\alpha & \sin\alpha & 0 \\ -\sin\alpha & \cos\alpha & 0 \\ 0 & 0 & e^{\beta} \end{pmatrix}$, then the inverse of the matrix $A(\alpha, \beta)$ is _____ .

Options :

1. ✘ $A(\alpha, \beta)$

2. ✘ $A(\alpha, -\beta)$

3. ✔ $A(-\alpha, -\beta)$

4. ✘ $A(-\alpha, \beta)$

Question Number : 5 Question Id : 8946583413 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The rational fraction $\dfrac{x^2+1}{(x^2+4)(x-2)}$ is equal to _____

Options :

1. ✘ $\dfrac{3x+6}{8(x^2+4)} + \dfrac{5}{4(x-2)}$

2. ✘ $\dfrac{3x+6}{4(x^2+4)} + \dfrac{5}{8(x-2)}$

3. ✔ $\dfrac{3x+6}{8(x^2+4)} + \dfrac{5}{8(x-2)}$

4. ✘ $\dfrac{3x+6}{(x^2+4)} + \dfrac{5}{(x-2)}$

Question Number : 6 Question Id : 8946583414 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $\log_2 3 = a$, $\log_3 5 = b$, $\log_7 2 = c$, then $\log_{140} 63 =$ _____.

Options :

1. ✘ $\dfrac{1-2ac}{2c+abc+1}$

2. ✘ $\dfrac{1-2ac}{2c-abc-1}$

3. ✘ $\dfrac{1+2ac}{2c-abc-1}$

4. ✔ $\dfrac{1+2ac}{2c+abc+1}$

Question Number : 7 Question Id : 8946583415 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$\cos\dfrac{2\pi}{7} + \cos\dfrac{4\pi}{7} + \cos\dfrac{6\pi}{7} =$ ____.

Options :

1. ✘ 1

2. ✘ $\dfrac{1}{2}$

3. ✔ $\dfrac{-1}{2}$

4. ✖ 0

Question Number : 8 Question Id : 8946583416 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If the angles A, B and C of a triangle are in an arithmetic progression and if a, b and c

denote the lengths of the sides opposite to A, B and C respectively, then the value of the

expression $\dfrac{a}{c} \sin 2C + \dfrac{c}{a} \sin 2A$ is __.

Options :

1. ✔ $\sqrt{3}$

2. ✖ $\dfrac{\sqrt{3}}{2}$

3. ✖ 1

4. ✖ $\dfrac{1}{2}$

Question Number : 9 Question Id : 8946583417 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $\sin x + \sin y = \dfrac{1}{4}$ and $\cos x + \cos y = \dfrac{1}{3}$, then $\cot(x + y) = $ _____.

Options :

1. ✔ $\dfrac{7}{24}$

2. ✖ $\dfrac{24}{7}$

3. ✖ $\dfrac{3}{4}$

4. ✖ 1

Question Number : 10 Question Id : 8946583418 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $\sin(x° + 28°) = \cos(3x° − 78°)$ and $0° < x° < 90°$, then, which of the following is the

value of $x°$?

Options :

1. ✗ $50°$

2. ✗ $30°$

3. ✗ $16°$

4. ✓ $8°$

Question Number : 11 Question Id : 8946583419 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $x = \tan\left(\text{Cosec}^{-1}\dfrac{65}{63}\right)$ and $y = \sec^2\left(Cot^{-1}\dfrac{1}{2}\right) + \cos ec^2\left(Tan^{-1}\dfrac{1}{3}\right)$, then $(x, y) =$ _____.

Options :

1. ✓ $\left(\dfrac{63}{16}, 15\right)$

2. ✗ $\left(\dfrac{16}{63}, 15\right)$

3. ✗ $\left(\dfrac{63}{16}, 5\right)$

4. ✗ $\left(\dfrac{16}{63}, 5\right)$

Question Number : 12 Question Id : 8946583420 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The equation $\text{Tan}^{-1}\left(\dfrac{x+1}{x-1}\right) + T\text{an}^{-1}\left(\dfrac{x-1}{x}\right) = T\text{an}^{-1}(-7)$ has _____.

Options :

1. ✔ unique solution $x = 2$

2. ✘ two solutions $x = 1, 2$

3. ✘ no solution

4. ✘ infinite number of solutions

Question Number : 13 Question Id : 8946583421 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

In a triangle ABC, let a, b and c denote the lengths of the sides opposite to

A, B and C respectively. If $\dfrac{1}{a+c} + \dfrac{1}{b+c} = \dfrac{3}{a+b+c}$, then the angle C is ____.

Options :

1. ✘ $30°$

2. ✘ $90°$

3. ✔ $60°$

4. ✘ $45°$

Question Number : 14 Question Id : 8946583422 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

If $\sin hx = 3$ then $x =$ _____.

Options :

1. ✔ $\log(3 + \sqrt{10})$

2. ✘ $\log(3 - \sqrt{10})$

3. ✖ $\log(6+\sqrt{10}$

4. ✖ 1

Question Number : 15 Question Id : 8946583423 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is NOT true for the complex numbers z_1 and z_2 ?

Options :

1. ✖ $\dfrac{z_1}{z_2} = \dfrac{z_1 \bar{z}_2}{|z_2|^2}$

2. ✖ $|z_1 + z_2| \le |z_1| + |z_2|$

3. ✔ $|z_1 + z_2| \le \left| |z_1| - |z_2| \right|$

4. ✖ $|z_1 + z_2|^2 + |z_1 - z_2|^2 = 2|z_1|^2 + 2|z_2|^2$

Question Number : 16 Question Id : 8946583424 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If a complex number $z = \dfrac{\sqrt{3}}{2} + i\dfrac{1}{2}$, then z^4 is _____.

Options :

1. ✖ $2\sqrt{2} + 2i$

2. ✔ $\dfrac{-1}{2} + i\dfrac{\sqrt{3}}{2}$

3. ✖ $\dfrac{\sqrt{3}}{2} - i\dfrac{1}{2}$

4. ✖ $\dfrac{\sqrt{3}}{8} - i\dfrac{1}{8}$

Question Number : 17 Question Id : 8946583425 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The equation of the straight line which makes intercepts r and s on the coordinate axes

such that $r+s=5$ and $rs=6$ is $ax+by+c=0$, then $a+b+c=$ ——— .

Options :

1. ✖ 11

2. ✖ 5

3. ✖ -7

4. ✔ -1

Question Number : 18 Question Id : 8946583426 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If a straight line $ax+by+\sqrt{5}=0$ touches the circle $x^2+y^2=5$, then which of the

following is TRUE?

Options :

1. ✖ $5(a^2+b^2)=1$

2. ✖ $a^2+b^2=\sqrt{5}$

3. ✔ $a^2+b^2=1$

4. ✖ $\sqrt{a^2+b^2}=5$

Question Number : 19 Question Id : 8946583427 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If a chord of length 12 cm is at a distance of $4\sqrt{10}$ cm from the centre of the circle, then

the radius of the circle is _____.

Options :

1. ✔ 14 cm

2. ✖ $\sqrt{304}$ cm

3. ✖ 4 cm

4. ✖ $\sqrt{124}$ cm

Question Number : 20 Question Id : 8946583428 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The 2019th derivative of the function $(x-1)e^{-x}$ is _____

Options :

1. ✖ $\dfrac{x-2019}{e^x}$

2. ✖ $\dfrac{2019-x}{e^x}$

3. ✖ $\dfrac{x-2020}{e^x}$

4. ✔ $\dfrac{2020-x}{e^x}$

Question Number : 21 Question Id : 8946583429 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $z = f(x+ct) + \varphi(x-ct)$, then $\dfrac{\partial^2 z}{\partial t^2} =$ _____.

Options :

1. ✔ $c^2 \dfrac{\partial^2 z}{\partial x^2}$

2. ✖ $-c^2 \dfrac{\partial^2 z}{\partial x^2}$

3. ✖ $\dfrac{1}{c^2} \dfrac{\partial^2 z}{\partial x^2}$

4. ✖ $-\dfrac{1}{c^2} \dfrac{\partial^2 z}{\partial x^2}$

Question Number : 22 Question Id : 8946583430 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $x = r\cos\theta$, $y = r\sin\theta$ and $U = \dfrac{f(\theta)}{r}$ then $x\dfrac{\partial U}{\partial x} + y\dfrac{\partial U}{\partial y} = $ _____.

Options :

1. ✖ 0

2. ✖ U

3. ✔ $-U$

4. ✖ $2U$

Question Number : 23 Question Id : 8946583431 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Let $f(x+y) = f(x)f(y)$, $\forall x, y$ and $f'(0) = 5$, $f(2019) = 15$. Then the value of $f'(2019)$ is _____.

Options :

1. ✖ 3

2. ✔ 75

3. ✖ $\dfrac{1}{3}$

4. ✖ $\dfrac{1}{75}$

Question Number : 24 Question Id : 8946583432 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The set of values of x for which the function $f(x) = 2x^3 - 9x^2 + 12x + 4$ is increasing is _____ .

Options :

1. ✖ $1 < x < 2$

2. ✖ all $x \in \mathbb{R}$

3. ✔ $\mathbb{R} - [1, 2]$

4. ✖ $x \geq 2$

Question Number : 25 Question Id : 8946583433 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$$\lim_{x \to \infty} x \left(\log\left(1 + \frac{x}{2}\right) - \log\left(\frac{x}{2}\right) \right) = \underline{\quad} .$$

Options :

1. ✖ e^2

2. ✖ ∞

3. ✖ 1

4. ✔ 2

Question Number : 26 Question Id : 8946583434 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $f(x, y, z) = x^3 + xz^2 + y^3 + xyz$, $x = e^t$, $y = \cos t$, $z = t^3$ then $\dfrac{df}{dt}$ at $t = 0$ is _____ .

Options :

1. ✖ 2

2. ✖ 4

3. ✖ e

4. ✔ 3

Question Number : 27 Question Id : 8946583435 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is the value of $5050 \times \dfrac{\int_0^1 (1-(1-x)^{50})^{100} x^{49} dx}{\int_0^1 (1-x^{50})^{101} x^{49} dx}$?

Options :

1. ✔ 5100

2. ✖ 1

3. ✖ 5050

4. ✖ $\dfrac{1}{2}$

Question Number : 28 Question Id : 8946583436 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$\int_0^1 \max\left\{ x, \dfrac{1}{2} - x \right\} dx = \underline{\qquad}$.

Options :

1. ✖ 0

2. ✖ $\dfrac{1}{2}$

3. ✔ $\dfrac{9}{16}$

4. ✖ $\dfrac{9}{8}$

Question Number : 29 Question Id : 8946583437 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$$\lim_{n \to \infty} \frac{1}{n^6} \sum_{k=1}^{n} k^5 = \underline{\hspace{2cm}}.$$

Options :

1. ✔ $\dfrac{1}{6}$

2. ✖ $\dfrac{1}{5}$

3. ✖ 1

4. ✖ 6

Question Number : 30 Question Id : 8946583438 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$$\int_{-1}^{1} \frac{x^{15}(1-x^2)^{12}}{(1+x^2)^8} dx = \underline{\hspace{2cm}}.$$

Options :

1. ✖ 0

2. ✔ $\dfrac{22}{7} - \pi$

3. ✖ $\dfrac{2}{105}$

4. ✖ $\dfrac{71}{15} - \dfrac{3\pi}{4}$

Question Number : 31 Question Id : 8946583439 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The area of the region bounded by the curves $y = 2 - x^2$ and $y = -x$ is _____.

Options :

1. ✖ 1

2. ✖ $\dfrac{8}{19}$

3. ✖ $\dfrac{35}{4}$

4. ✔ $\dfrac{27}{6}$

Question Number : 32 Question Id : 8946583440 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The volume of the solid obtained by revolving the region bounded by the curves $y = x^3$, $y = 8$ and $x = 0$ about the y-axis is _____

Options :

1. ✖ $\dfrac{96}{5}$

2. ✔ $\dfrac{96\pi}{5}$

3. ✖ $\dfrac{32\pi}{5}$

4. ✖ $\dfrac{32}{5}$

Question Number : 33 Question Id : 8946583441 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The value of $\int_0^\pi \theta \sin^2 \theta \cos^4 \theta \, d\theta$ is _____.

Options :

1. ✔ $\dfrac{\pi^2}{32}$

2. ✖ $\dfrac{\pi}{32}$

3. ✖ $\dfrac{\pi^2}{16}$

4. ✖ $\dfrac{\pi}{16}$

Question Number : 34 Question Id : 8946583442 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The average value of the function $f(x) = 4 - x^2$ over the interval $[-1, 3]$ is _____.

Options :

1. ✖ 5

2. ✖ $\dfrac{20}{3}$

3. ✔ $\dfrac{5}{3}$

4. ✖ 1

Question Number : 35 Question Id : 8946583443 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The differential equation $x\dfrac{dy}{dx} = y + x^2$, $x > 0$ satisfying $y(0) = 0$ has _____.

Options :

1. ✔ infinitely many solutions

2. ✖ no solution

3. ✖ a unique solution

4. ✖ exactly two solutions

Question Number : 36 Question Id : 8946583444 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The differential equation $(a\,xy^3 + y\cos x)dx + (x^2 y^2 + b\sin x)dy = 0$ is an exact

differential equation for _____.

Options :

1. ✖ $a = 1,\ b = \dfrac{3}{2}$

2. ✖ $a = \dfrac{3}{2},\ b = 1$

3. ✔ $a = \dfrac{2}{3},\ b = 1$

4. ✖ $a = 1,\ b = \dfrac{2}{3}$

Question Number : 37 Question Id : 8946583445 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

If $\sin x$ is a solution of the differential equation $\dfrac{d^4 y}{dx^4} + 2\dfrac{d^3 y}{dx^3} + 6\dfrac{d^2 y}{dx^2} + 2\dfrac{dy}{dx} + 5y = 0$,

then the general solution is _____.

Options :

1. ✔ $y = c_1 \sin x + c_2 \cos x + e^{-x}(c_3 \sin 2x + c_4 \cos 2x)$

2. ✖ $y = c_1 \sin x + c_2 \cos x + c_3 \sin 2x + c_4 \cos 2x$

3. ✖ $y = c_1 \sin x + c_2 \cos x + c_3 e^{-3x} + c_4 e^{-2x}$

4. ✖ $y = c_1 \sin x + c_2 \cos x + c_3 e^{3x} + c_4 e^{2x}$

Question Number : 38 Question Id : 8946583446 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

If $D \equiv \dfrac{d}{dx}$, then $\dfrac{1}{D^2 - 4D + 13}(6e^{2x} \sin 3x)$ is _____.

Options :

1. ✔ $-xe^{2x} \cos 3x$

2. ✘ $xe^{2x} \cos 3x$

3. ✘ $-xe^{2x} \sin 3x$

4. ✘ $xe^{2x} \sin 3x$

Question Number : 39 Question Id : 8946583447 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The general solution of $\left(\dfrac{e^{-2\sqrt{x}}}{\sqrt{x}} - \dfrac{y}{\sqrt{x}} \right) \dfrac{dx}{dy} = 1$ is _____.

Options :

1. ✘ $y = e^{2\sqrt{x}} (2\sqrt{x} + c)$

2. ✘ $y = 2\sqrt{x} \, e^{2\sqrt{x}} + c$

3. ✘ $y = 2\sqrt{x} \, e^{-2\sqrt{x}} + c$

4. ✔ $y = e^{-2\sqrt{x}} (2\sqrt{x} + c)$

Question Number : 40 Question Id : 8946583448 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Let y be the solution of the differential equation $\dfrac{dy}{dx} + y = x$, $x \in \mathbb{R}$ and $y(-1) = 0$.

Then, y(1) is equal to _____.

Options :

1. ✗ $\dfrac{2}{e} - \dfrac{2}{e^2}$

2. ✓ $2e^{-2}$

3. ✗ $2 - \dfrac{2}{e}$

4. ✗ $2 - 2e$

Question Number : 41 Question Id : 8946583449 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

If the substitution $x = X + h,\ y = Y + k$ transforms the differential equation

$(y - x + 1)dy - (y + x + 2)dx = 0$ into a homogeneous equation, then the

value of (h, k) is _____.

Options :

1. ✗ $\left(\dfrac{1}{2}, \dfrac{3}{2} \right)$

2. ✓ $\left(\dfrac{-1}{2}, \dfrac{-3}{2} \right)$

3. ✗ $\left(\dfrac{3}{2}, \dfrac{1}{2} \right)$

4. ✗ $\left(\dfrac{-3}{2}, \dfrac{-1}{2} \right)$

Question Number : 42 Question Id : 8946583450 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The general solution of $\dfrac{dy}{dx} - y = y^2(\sin x + \cos x)$ is _____.

Options :

1. ✖ $$y = \dfrac{1}{ce^x - \sin x}$$

2. ✖ $$y = ce^{-x} - e^x \sin x$$

3. ✖ $$y = ce^{-x} - \sin x$$

4. ✔ $$y = \dfrac{1}{ce^{-x} - \sin x}$$

Question Number : 43 Question Id : 8946583451 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The Laplace transform of the function $f(t) = \begin{cases} \sin t, & \text{for } 0 \le t \le \pi \\ 0, & \text{for } t > \pi \end{cases}$

is _____.

Options :

1. ✖ $\dfrac{1}{(1 + s^2)}$ for all $s > 0$

2. ✖ $\dfrac{1}{(1 + s^2)}$ for all $s < \pi$

3. ✔ $\dfrac{(1 + e^{-\pi s})}{(1 + s^2)}$ for all $s > 0$

4. ✖ $\dfrac{e^{-\pi s}}{(1 + s^2)}$ for all $s > 0$

Question Number : 44 Question Id : 8946583452 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The inverse Laplace transform of $\dfrac{5}{s} - \dfrac{3e^{-3s}}{s} - \dfrac{2e^{-7s}}{s}$ is _____.

Options :

1. ✖ $$f(\mathrm{x}) = \begin{cases} 5, & 0 < \mathrm{x} < 3 \\ 0, & 3 < \mathrm{x} < 7 \\ 2, & \mathrm{x} > 7 \end{cases}$$

2. ✖ $$f(x) = \begin{cases} 5, & 0 < \mathrm{x} < 7 \\ 2, & \mathrm{x} > 7 \end{cases}$$

3. ✔ $$f(\mathrm{x}) = \begin{cases} 5, & 0 < \mathrm{x} < 3 \\ 2, & 3 < \mathrm{x} < 7 \\ 0, & \mathrm{x} > 7 \end{cases}$$

4. ✖ $$f(x) = \begin{cases} 5, & 0 < \mathrm{x} < 7 \\ 0, & \mathrm{x} > 7 \end{cases}$$

Question Number : 45 Question Id : 8946583453 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The Laplace transform of a function $f(\mathrm{x})$ is $F(s) = \dfrac{1}{s^3 + 2s^2 + 2s}$ Then, $\lim\limits_{x \to 0} f(x) =$

_____.

Options :

1. ✔ 0

2. ✖ 3

3. ✖ ∞

4. ✖ $\dfrac{1}{2}$

Question Number : 46 Question Id : 8946583454 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The Laplace transform of the solution of the differential equation $\frac{dy}{dx} - 2y = e^{5x}$ with the initial condition $y(0) = 3$ is _____.

Options :

1. ✖ $\dfrac{1}{3(s-2)} + \dfrac{1}{3(s-5)}$

2. ✖ $\dfrac{8}{3(s-2)} + \dfrac{1}{s-5}$

3. ✔ $\dfrac{8}{3(s-2)} + \dfrac{1}{3(s-5)}$

4. ✖ $\dfrac{8}{s-2} + \dfrac{1}{3(s-5)}$

Question Number : 47 Question Id : 8946583455 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

If $L(y(x)) = Y(s)$ and $y(x) = x^3 + \int_0^x \sin(x-t) \, y(t) \, dt$ then $\frac{1}{6} Y(s) =$ _____.

Options :

1. ✔ $\left(\dfrac{1}{s^4} + \dfrac{1}{s^6} \right)$

2. ✖ $\left(\dfrac{1}{s^3} + \dfrac{1}{s^5} \right)$

3. ✖ $\left(\dfrac{1}{s^3} + \dfrac{1}{s^7} \right)$

4. ✖ $\left(\dfrac{1}{s} + \dfrac{1}{s^3} \right)$

Question Number : 48 Question Id : 8946583456 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

For $x > 0$, $\int_0^\infty \frac{\sin xt}{t} dt$ is _____.

Options :

1. ✗ 0

2. ✗ $\dfrac{\pi}{2x}$

3. ✗ $\dfrac{1}{x}$

4. ✓ $\dfrac{\pi}{2}$

Question Number : 49 Question Id : 8946583457 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

If $f(x) = \frac{1}{2}a_0 + \sum_{n=1}^\infty (a_n \cos nx + b_n \sin nx)$ is the Fourier series of the function

$f(x) = \begin{cases} 0, & -\pi \le x < 0 \\ \pi, & 0 \le x \le \pi \end{cases}$ then, which of the following is TURE?

Options :

1. ✗ $a_n = 0$, for all $n \ge 0$

2. ✗ $a_0 = \dfrac{\pi}{2}$ and $a_n = 0$, for all $n \ge 1$

3. ✗ $b_n \ne 0$, for all $n \ge 1$

4. ✓ $a_0 = \pi$ and $a_n = 0$, for all $n \ge 1$

Question Number : 50 Question Id : 8946583458 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

A function $f(x)$ is such that $f(x + 2\pi) = f(x)$ and $f(x) = x$, $-\pi \le x \le \pi$. The Fourier

series of $f(x)$ is _____.

Options :

1. ✔ $2\left(\sin x - \dfrac{1}{2}\sin 2x + \dfrac{1}{3}\sin 3x - \ldots\ldots\right)$

2. ✘ $2\left(\sin x + \dfrac{1}{2}\sin 2x + \dfrac{1}{3}\sin 3x + \ldots\ldots\right)$

3. ✘ $2\left(\cos x - \dfrac{1}{2}\cos 2x + \dfrac{1}{3}\cos 3x - \ldots\ldots\right)$

4. ✘ $2\left(\cos x + \dfrac{1}{2}\cos 2x + \dfrac{1}{3}\cos 3x + \ldots\ldots\right)$

Physics

Section Id :	89465868
Section Number :	2
Section type :	Online
Mandatory or Optional:	Mandatory
Number of Questions:	25
Number of Questions to be attempted:	25
Section Marks:	25
Display Number Panel:	Yes
Group All Questions:	No

Sub-Section Number:	1
Sub-Section Id:	89465878
Question Shuffling Allowed :	Yes

Question Number : 51 Question Id : 8946583459 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The dimensional formula for gravitational constant is_____.

Options :

1. ✔ $L^3T^{-2}M^{-1}$

2. ✘ $L^3T^2M^{-1}$

3. ✘ $L^2T^3M^{-2}$

4. ✘ $L^3T^1M^{-3}$

Question Number : 52 Question Id : 8946583460 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The dimensions of the quantities in one of the following pairs are same. Identify the pairs.

Options :

1. ✔ torque and work

2. ✖ angular momentum and work

3. ✖ energy and Young's modules

4. ✔ light year and wavelength

Note: For this question, ambiguity is found in question/answer. Candidate will get full marks for this question if any of the correct options are chosen.

Question Number : 53 Question Id : 8946583461 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is not correct?

Options :

1. ✖ $j \times i = -k$

2. ✖ $k \times j = -i$

3. ✖ $i \times k = -j$

4. ✔ $k \times i = -j$

Question Number : 54 Question Id : 8946583462 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $0.5\,i + 0.8\,j + c\,k$ is a unit vector then c is_____.

Options :

1. ✖ $\sqrt{0.89}$

2. ✖ 0.2

3. ✖ 0.3

4. ✔ $\sqrt{0.11}$

Question Number : 55 Question Id : 8946583463 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Which of the following is correct?

Options :

1. ✖ $A.B \neq B.A$

2. ✔ $A.(B+C) = A.B + C.A$

3. ✖ $A.B = A.B - A.C$

4. ✖ $A.B = -B.A$

Question Number : 56 Question Id : 8946583464 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The acceleration due to gravity on the surface of the earth is given by_____

Options :

1. ✖ G

2. ✔ GM/R^2

3. ✖ GM/R

4. ✖ GM

Question Number : 57 Question Id : 8946583465 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The value of g is maximum at_____.

Options :

1. ✖ equator

2. ✔ Pole

3. ✖ higher altitudes

4. ✖ at the centre of the earth

Question Number : 58 Question Id : 8946583466 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

When the speed of rotation of earth increases your weight_____

Options :

1. ✖ increases

2. ✔ decreases

3. ✖ remains constant

4. ✖ becomes zero

Question Number : 59 Question Id : 8946583467 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The value of G is zero at_____

Options :

1. ✔ nowhere

2. ✖ the centre of the earth

3. ✖ surface of the earth

4. ✖ pole

Question Number : 60 Question Id : 8946583468 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If the linear momentum is increased by 50%, the kinetic energy will be increased

by_____

Options :

1. ✖ 50%

2. ✖ 100%

3. ✔ 125%

4. ✖ 25%

Question Number : 61 Question Id : 8946583469 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A metallic block slides down a smooth inclined plane when released from the top, while

the other falls freely from the same point, then_____

Options :

1. ✔ both will reach the ground with the same velocity

2. ✖ both will reach the ground together

3. ✖ both will reach the ground travelling with same acceleration

4. ✖ the block sliding down the plane will strike earlier

Question Number : 62 Question Id : 8946583470 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A long spring is stretched by 2 cm and its potential energy is u. If the spring is stretched

by 10 cm, then the potential energy stored in it will be_____.

Options :

1. ✖ u/24

2. ✖ u/5

3. ✖ 5u

4. ✔ 25u

Question Number : 63 Question Id : 8946583471 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Two masses of 1 gm and 4 gm are moving with equal kinetic energies. The ratio of the

magnitudes of their linear momentum is _____

Options :

1. ✖ 4:1

2. ✖ $\sqrt{2}$:1

3. ✔ 1:2

4. ✖ 1:16

Question Number : 64 Question Id : 8946583472 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A body is dropped from rest at height 0.5 m. What will be its velocity when it just

strikes the ground?

Options :

1. ✖ 7 m/s

2. ✖ 9.8 m/s

3. ✖ 4.9 m/s

4. ✔ $\sqrt{9.8}$ m/s

Question Number : 65 Question Id : 8946583473 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A particle moves such that its acceleration a is given by $a = -bx$ where x is the

displacement from equilibrium and b is a constant. The period of Oscillation is_____ .

Note: For this question, discrepancy is found in question/answer. Full Marks is being awarded to all candidates.

Options :

1. $2\Pi b$

2. $2\Pi\sqrt{b}$

3. $2\Pi/b$

4. $2\sqrt{\Pi}/b$

Question Number : 66 Question Id : 8946583474 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

A particle is vibrating in simple harmonic motion with amplitude of 4 cm. At what displacement from the equilibrium position is its energy half potential and half kinetic?

Options :

1. ✖ 1 cm

2. ✖ $\sqrt{2}$ cm

3. ✖ 2 cm

4. ✔ $2\sqrt{2}$ cm

Question Number : 67 Question Id : 8946583475 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

When a star approaches the earth, the waves are shifted towards _____

Options :

1. ✖ green colour

2. ✖ yellow colour

3. ✔ blue end

4. ✖ red end

Question Number : 68 Question Id : 8946583476 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

If a tuning fork of frequency 90 is sounded and moved towards an observer with a velocity equal to one tenth the velocity of sound, then the note heard by the observer will have frequency_____.

Options :

1. ✓ 100

2. ✗ 90

3. ✗ 80

4. ✗ 900

Question Number : 69 Question Id : 8946583477 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

What is the most important factor which helps to recognise a person by his/her voice alone_____

Options :

1. ✓ quality

2. ✗ pitch

3. ✗ intensity

4. ✗ quality, pitch and intensity

Question Number : 70 Question Id : 8946583478 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The quality of tone_____

Options :

1. ✗ decreases with loudness

2. ✗ varies inversely as amplitude

3. ✗ varies directly as pitch

4. ✔ depends on the overtones present

The conduction of heat from hot body to cold body is an example of_____.

Options :

1. ✖ reversible process

2. ✔ irreversible process

3. ✖ isothermal process

4. ✖ isobaric process

From the isothermal drawn from Andrews experiment, it can be inferred that_____

Options :

1. ✖ CO_2 is a perfect gas

2. ✔ there is continuity of state

3. ✖ there is discontinuity of state

4. ✖ gases like CO_2 and H_2 cannot be liquefied

A diesel cycle works at_____

Options :

1. ✖ constant volume

2. ✔ constant pressure

3. ✖ constant temperature

4. ✖ both constant volume and constant temperature

Question Number : 74 Question Id : 8946583482 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The transition temperature of most low temperature superconducting elements is in the

range of _____

Options :

1. ✔ zero to 10 k

2. ✖ 10 k to 20 k

3. ✖ 20 k to 50 k

4. ✖ 50 k alone

Question Number : 75 Question Id : 8946583483 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Propagation of light through fiber core is due to_____

Options :

1. ✖ diffraction

2. ✖ interference

3. ✔ total internal reflection

4. ✖ reflection

	Chemistry
Section Id :	89465869
Section Number :	3
Section type :	Online
Mandatory or Optional:	Mandatory
Number of Questions:	25
Number of Questions to be attempted:	25

Question Number : 76 Question Id : 8946583484 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following energy orders is correct?

Options :

1. ✔ 6s<4f<5d<6p

2. ✘ 4f<5d<6s<6p

3. ✘ 4f<6s<6p<5d

4. ✘ 6s<6p<5d<4f

Question Number : 77 Question Id : 8946583485 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

An element A of atomic number 11 combines with an element B of atomic

number 17. The compound formed is _____.

Options :

1. ✘ Covalent AB

2. ✔ Ionic AB

3. ✘ Covalent AB_2

4. ✘ Ionic AB_2

Question Number : 78 Question Id : 8946583486 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The oxidation number of 'S' in S_8, S_2F_2, H_2S respectively are _____.

Options :

1. ✔ 0, +1 and -2

2. ✖ +2, +1 and-2

3. ✖ 0, +1 and +2

4. ✖ -2, +1 and -2

Question Number : 79 Question Id : 8946583487 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The elements A, B, C and D have the following electronic configurations:

A: $1S^2, 2S^2, 2P^1$

B: $1S^2, 2S^2, 2P^6, 3S^2, 3P^1$

C: $1S^2, 2S^2, 2P^6, 3S^2, 3P^3$

D: $1S^2, 2S^2, 2P^6, 3S^2, 3P^5$

The elements that belong to same group are _____ .

Options :

1. ✖ A and C

2. ✖ C and D

3. ✖ A and D

4. ✔ A and B

Question Number : 80 Question Id : 8946583488 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

4.9 gm of H_2SO_4 is present in 2 lit of its solution. The molarity of the solution is

_____ .

Options :

1. ✗ 0.1 M

2. ✓ 0.025 M

3. ✗ 0.25 M

4. ✗ 0.01 M

Question Number : 81 Question Id : 8946583489 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The molecular weight of H_3PO_4 is 98. The equivalent weight is _____ gram / equivalents.

Options :

1. ✗ 98

2. ✗ 49

3. ✓ 32.66

4. ✗ 24.5

Question Number : 82 Question Id : 8946583490 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is the Bronsted acid?

Options :

1. ✗ Cl^-

2. ✗ NH_2^-

3. ✗ CH_3COO^-

4. ✓ NH_4^+

Question Number : 83 Question Id : 8946583491 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The pH of 1 M KOH is ____.

Options :

1. ✖ 12

2. ✖ 11

3. ✔ 14

4. ✖ 13

Question Number : 84 Question Id : 8946583492 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Froth floatation process is used for the _____.

Options :

1. ✖ Oxide ores

2. ✔ Sulphide ores

3. ✖ Chloride ores

4. ✖ Oxide ores and Chloride ores

Question Number : 85 Question Id : 8946583493 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The composition of brass is _____.

Options :

1. ✔ Cu and Zn

2. ✖ Cu and Ni

3. ✖ Cu and Mn

4. ✖ Cu and Fe

Question Number : 86 Question Id : 8946583494 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following statements is correct?

Options :

1. ✖ Cathode is positive terminal in an electrolytic cell

2. ✖ Cathode is negative terminal in a galvanic cell

3. ✔ Reduction occurs at cathode in either of cells

4. ✖ Oxidation occurs at cathode in either of cells

Question Number : 87 Question Id : 8946583495 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In the electrolysis of $CuCl_2$ solution using copper electrode, if 2.5 gm of Cu is deposited at cathode, then at anode _____.

Options :

1. ✖ 890 mL of Cl_2 at STP is liberated

2. ✖ 445 mL of O_2 at STP is liberated

3. ✖ 2.5 gm of copper is deposited

4. ✔ a decrease of 2.5 gm of mass takes place

Question Number : 88 Question Id : 8946583496 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The unit of resistivity is _____.

Options :

1. ✖ Ω

2. ✔ $\Omega\,m$

3. ✖ Ω/m

4. ✖ $\Omega\,m^2$

Question Number : 89 Question Id : 8946583497 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following metals provide cathodic protection to iron?

Options :

1. ✖ Cu and Ni

2. ✔ Al and Zn

3. ✖ Al and Cu

4. ✖ Co and Ni

Question Number : 90 Question Id : 8946583498 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The chemical composition of rust is _____.

Options :

1. ✖ Fe_3O_4

2. ✖ Fe_3O_3

3. ✔ $Fe_2O_3 . nH_2O$

4. ✖ $Fe_3O_3 . xH_2O$

Question Number : 91 Question Id : 8946583499 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

1 ppm of hardness of water is equal to _____.

Options :

1. ✔ 1 part of $CaCO_3$ hardness in 10^6 parts of water

2. ✖ 1 part of $CaCO_3$ hardness in 10^8 parts of water

3. ✖ 1 part of $CaCO_3$ hardness in 10^7 parts of water

4. ✖ 1 part of $CaCO_3$ hardness in 10^5 parts of water

Question Number : 92 Question Id : 8946583500 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The temporary hardness of water is due to the presence of _____.

Options :

1. ✖ $MgCl_2$ and $CaCl_2$

2. ✖ $Ca(NO_3)_2$ and $Mg(NO_3)_2$

3. ✖ $CaSO_4$ and $MgSO_4$

4. ✔ $Ca(HCO_3)_2$ and $Mg(HCO_3)_2$

Question Number : 93 Question Id : 8946583501 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The basic buffer solution is a mixture of _____.

Options :

1. ✔ $NH_3 + NH_4Cl$

2. ✖ $HCl + NH_4Cl$

3. ✖ $NaCl + NH_4Cl$

4. ✖ $KOH + NH_4Cl$

Question Number : 94 Question Id : 8946583502 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Which of the following polymers has amide linkage?

Options :

1. ✖ Terylene

2. ✖ Bakelite

3. ✔ Nylon

4. ✖ PVC

Question Number : 95 Question Id : 8946583503 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The monomer of natural rubber is _____.

Options :

1. ✖ Butadiene

2. ✖ Chloroprene

3. ✖ 2-methyl 1,2 butadiene

4. ✔ 2-methyl 1,3 butadiene

Question Number : 96 Question Id : 8946583504 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is a thermo setting?

Options :

1. ✔ Bakelite

2. ✖ Polyethylene

3. ✖ Nylon-6

4. ✖ Natural rubber

Question Number : 97 Question Id : 8946583505 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The composition of water gas is _____.

Options :

1. ✔ CO and H_2 are combustible gases and CO_2 and N_2 are non-combustible gases

2. ✘ CO + CO_2 are combustible gases and H_2O and N_2 non-combustible gases

3. ✘ CO + N_2 are combustible gases and H_2O and H_2 are non-combustible gases

4. ✘ $N_2 + H_2$ are combustible gases and CO + H_2O are non-combustible gases

Question Number : 98 Question Id : 8946583506 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Earth is protected from UV radiation by _____.

Options :

1. ✘ Nitrogen layer

2. ✔ Ozone layer

3. ✘ Carbon dioxide layer

4. ✘ Oxygen layer

Question Number : 99 Question Id : 8946583507 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Which of following statements is not correct?

Options :

1. ✘ CO is the main air pollutant

2. ✘ All pollutants are not wastes

3. ✔ Water is polluted by dissolved Oxygen

4. ✘ Lichens are pollution indicators

Question Number : 100 Question Id : 8946583508 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Minamata disease is caused due to the presence of _____.

Options :

1. ✖ Cd

2. ✖ Pb

3. ✖ As

4. ✔ Hg

Chemical Engineering

Section Id :	89465870
Section Number :	4
Section type :	Online
Mandatory or Optional:	Mandatory
Number of Questions:	100
Number of Questions to be attempted:	100
Section Marks:	100
Display Number Panel:	Yes
Group All Questions:	No

Sub-Section Number:	1
Sub-Section Id:	89465880
Question Shuffling Allowed :	Yes

Question Number : 101 Question Id : 8946583509 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

On heating an elastomer under tensile load, it shrinks _____.

Options :

1. ✖ to maximise the enthalpy

2. ✔ to maximise the entropy

3. ✖ to avoid breaking

4. ✖ to minimize entropy

Question Number : 102 Question Id : 8946583510 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

On heating a rubber under tensile force, it _____.

Options :

1. ✔ shrinks

2. ✘ expands

3. ✘ expands rapidly

4. ✘ shows no change

Question Number : 103 Question Id : 8946583511 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Match the metal in Group-I with the appropriate extractive process in Group-II

Group-I	Group-II
P. Fe	i. Metallothermic Reduction
Q. Ni	ii. Carbothermic reduction
R. Al	iii. Matte Smelting
S. Cr	iv. Fused Salt Electrolysis

Options :

1. ✘ P-i, Q-ii, R-iv, S-iii

2. ✘ P-ii, Q-iv, R-i, S-iii

3. ✔ P-ii, Q-iii, R-iv, S-i

4. ✘ P-ii, Q-i, R-iv, S-iii

Question Number : 104 Question Id : 8946583512 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The passive film in stainless steel forms above the _____.

Options :

1. ✔ primary passive potential

2. ✖ breakdown potential

3. ✖ trans-passive potential

4. ✖ pitting potential

Question Number : 105 Question Id : 8946583513 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Which of the following statements is not correct?

Options :

1. ✖ corrosion of zinc increases due to the presence of $FeCl_3$ in the dilute

HCl solution than that in the absence of $FeCl_3$

2. ✖ the failure of silver bridge was caused by growth of a miniature crack

in the steel eye-bar over the years due to stress corrosion and corrosion fatigue

3. ✖ parts with smoother surface finish undergo lesser corrosion than those

with rough surfaces

4. ✔ stainless steel does not suffer with pitting corrosion

Question Number : 106 Question Id : 8946583514 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Which of the following statements cannot be true in the context of crevice corrosion?

Options :

1. ✖ oxygen concentration depletes in the crevice

2. ✖ acidity increases in the crevice region

3. ✔ crevice corrosion is more pronounced on flat and smooth surface

4. ✖ crevice corrosion can be avoided to some extent by regular cleaning

of dirt, dust, mud, etc., and by better design considerations

Question Number : 107 Question Id : 8946583515 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What is the mass of NaCl to be added to one litre water to make its normality as

1 N solution?

Options :

1. ✖ 40 grams

2. ✔ 58.5 grams

3. ✖ 35.5 grams

4. ✖ 23 grams

Question Number : 108 Question Id : 8946583516 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Wet soil of 100 kg has 60% by weight of water. If 50% of the water is evaporated,

what is the final weight % of water in wet soil?

Options :

1. ✖ 10

2. ✖ 21.4

3. ✔ 42.8

4. ✖ 50

Question Number : 109 Question Id : 8946583517 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

An ideal gas of volume 1 m^3 at 300 K is heated at a constant pressure to 400 K. What is the

final volume in m^3?

Options :

1. ✖ 0.5

2. ✖ 1

3. ✖ 0.75

4. ✔ 1.33

Question Number : 110 Question Id : 8946583518 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Wet sand has 0.5 kg water per kg of dry sand. What is the moisture content in weight

% on wet basis?

Options :

1. ✔ 33.3

2. ✖ 66.6

3. ✖ 50

4. ✖ 25

Question Number : 111 Question Id : 8946583519 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

A solution of 0.1 N NaCl has to be prepared from 200 ml of 1 NaCl by diluting with

distilled water. What is the volume of distilled water to be added in ml?

Options :

1. ✖ 100

2. ✖ 200

3. ✔ 1800

4. ✖ 800

Question Number : 112 Question Id : 8946583520 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

10 litres of cold water at 20 °C is to be mixed with 'x' litres of water at 60 °C to

have finally a 40 °C water. What is the value of x?

Options :

1. ✖ 5

2. ✔ 10

3. ✖ 20

4. ✖ 30

Question Number : 113 Question Id : 8946583521 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The approximate mole percentage of nitrogen in air is _____.

Options :

1. ✖ 20

2. ✖ 40

3. ✖ 60

4. ✔ 80

Question Number : 114 Question Id : 8946583522 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A reaction is considered exothermic if _____.

Options :

1. ✔ heat is produced

2. ✖ heat is consumed

3. ✖ heat is neither produced nor consumed

4. ✖ pressure is increased

Question Number : 115 Question Id : 8946583523 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What is the average molecular weight of a gas containing 50% CO_2 and 50% CO by volume?

Options :

1. ✖ 72

2. ✖ 28

3. ✖ 44

4. ✔ 36

Question Number : 116 Question Id : 8946583524 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

A gas containing 10 moles of CO is to be fully burnt by Oxygen using 60% excess Oxygen.

The reaction is $CO + 0.5\, O_2 \rightarrow CO_2$. What is the number of moles of oxygen required?

Options :

1. ✖ 2

2. ✖ 4

3. ✔ 8

4. ✖ 16

Question Number : 117 Question Id : 8946583525 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Which of the following is undesirable in the catalytic reforming naphtha?

Options :

1. ✖ Dehydrogenation of naphthenes

2. ✖ Isomerisation of naphthenes

3. ✖ Cyclisation of paraffins

4. ✔ Hydrocracking of paraffins

Question Number : 118 Question Id : 8946583526 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

In petroleum refining, the process used for conversion of hydrocarbons to aromatics is

_____.

Options :

1. ✖ Catalytic cracking

2. ✔ Catalytic reforming

3. ✖ Hydrotreating

4. ✖ Alkylation

Question Number : 119 Question Id : 8946583527 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Ethylene oxide is manufactured by _____.

Options :

1. ✔ Catalytic oxidation of ethylene

2. ✖ Catalytic oxidation-dehydrogenation of methanol

3. ✖ Catalytic dehydrogenation of propylene oxide

4. ✖ Catalytic dehydrogenation of formaldehyde

Question Number : 120 Question Id : 8946583528 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Match the items of Group A with the appropriate item in the Group B

Group A	Group B
(I) Cetane number	(a) High speed diesel oil
(II) Smoke point	(b) Kerosene
	(c) Gasoline
	(d) Aromatics

Options :

1. ✔ (I)-(a), (II)-(b)

2. ✖ (I)-(c), (II)-(a)

3. ✖ (I)-(b), (II)-(a)

4. ✖ (I)-(c), (II)-(d)

Question Number : 121 Question Id : 8946583529 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Match the items of Group A with the appropriate item in the Group B

Group A	Group B
(I) Nylon-66	(a) Elastomer
(II) Dacron	(b) Polyamide
(III) Rayon	(c) Polyester
(IV) Rubber	(d) Cellulose

Options :

1. ✖ (I)-(a), (II)-(b), (III)-(c), (IV)-(d)

2. ✔ (I)-(b), (II)-(c), (III)-(d), (IV)-(a)

3. ✖ (I)-(c), (II)-(b), (III)-(d), (IV)-(a)

4. ✖ (I)-(d), (II)-(c), (III)-(b), (IV)-(a)

Question Number : 122 Question Id : 8946583530 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Identify the group in which all the polymers mentioned can be used to make fibers

Options :

1. ✖ Butadiene copolymers, polyamides, urea aldehydes

2. ✖ Cellulose derivatives, polyisoprene, polyethylene

3. ✔ Cellulose derivates, polyamides, polyurethanes

4. ✖ Polypropylenes, polyvinylchloride, silicones

Question Number : 123 Question Id : 8946583531 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is desirable in gasoline but undesirable in kerosene?

Options :

1. ✔ Aromatics

2. ✖ Mercaptans

3. ✖ Naphthenic acid

4. ✖ Paraffins

Question Number : 124 Question Id : 8946583532 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Match the unit processes in Group-I with the industries in Group-II

Group-I	Group-II
(P) Saponification	(i) Petroleum refining
(Q) Calcination	(ii) Synthetic fibers
(R) Alkylation	(iii) Cement
	(iv) Soaps and detergents

Options :

1. ✖ P-(i), Q-(3), R-(4)

2. ✖ P-(2), Q-(3), R-(4)

3. ✖ P-(4), Q-(2), R-(1)

4. ✔ P-(4), Q-(3), R-(1)

Question Number : 125 Question Id : 8946583533 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The preferred material of construction of storage tanks for 98% sulphuric acid is _____.

Options :

1. ✖ Aluminium

2. ✖ Lead

3. ✔ Stainless steel 316

4. ✖ Mild steel

Question Number : 126 Question Id : 8946583534 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The favourable conditions for the maximum yield of ammonia by Haber process are _____.

Options :

1. ✖ high pressure and high temperature

2. ✔ high pressure and low temperature

3. ✖ low pressure and high temperature

4. ✖ low pressure and low temperature

Question Number : 127 Question Id : 8946583535 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Prilling tower is used in the manufacture of _____.

Options :

1. ✖ Cement

2. ✖ Potassium chloride

3. ✔ Urea

4. ✖ Triple superphosphate

Question Number : 128 Question Id : 8946583536 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Triple superphosphate is manufactured by reacting _____.

Options :

1. ✔ Phosphate rock with phosphoric acid

2. ✖ Phosphate rock with sulphuric acid

3. ✖ Phosphate rock with nitric acid

4. ✖ Ammonium phosphate with phosphoric acid

Question Number : 129 Question Id : 8946583537 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Each item of equipment mentioned in the Group A is identified with the manufacturing process for one of the products mentioned in the Group B. Match the equipment with the corresponding products.

Group A	Group B
(I) Fermenter	(a) Ammonium nitrate
(II) Membrane cell	(b) Ethanol from molasses
(III) Waste heat boiler	(c) Caustic soda
(IV) Rotary kiln	(d) Diammonium phosphate
(V) Prilling tower	(e) Sulphuric acid
	(f) Cement
	(g) Yellow phosphorous
	(h) Sodium metal

Options :

1. ✖ (I)-(b), (II)-(d), (III)-(f), (IV)-(g), (V)-(a)

2. ✖ (I)-(b), (II)-(g), (III)-(a), (IV)-(c), (V)-(d)

3. ✖ (I)-(b), (II)-(h), (III)-(e), (IV)-(a), (V)-(f)

4. ✓ (I)-(b), (II)-(c), (III)-(e), (IV)-(f), (V)-(a)

**Question Number : 130 Question Id : 8946583538 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical**
Correct Marks : 1 Wrong Marks : 0

Match the most appropriate pairs from the following

P. Carbon disulphide	i. Nyylon-6
Q. Caprolactam	ii. Nylon-66
R. Gypsum	iii. Phosphoric acid
	iv. Viscose rayon

Options :

1. ✗ P-iv, Q-ii, R-iii

2. ✗ P-ii, Q-I, R-iii

3. ✗ P-iii, Q-I, R-iv

4. ✓ P-iv, Q-I, R-iii

**Question Number : 131 Question Id : 8946583539 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical**
Correct Marks : 1 Wrong Marks : 0

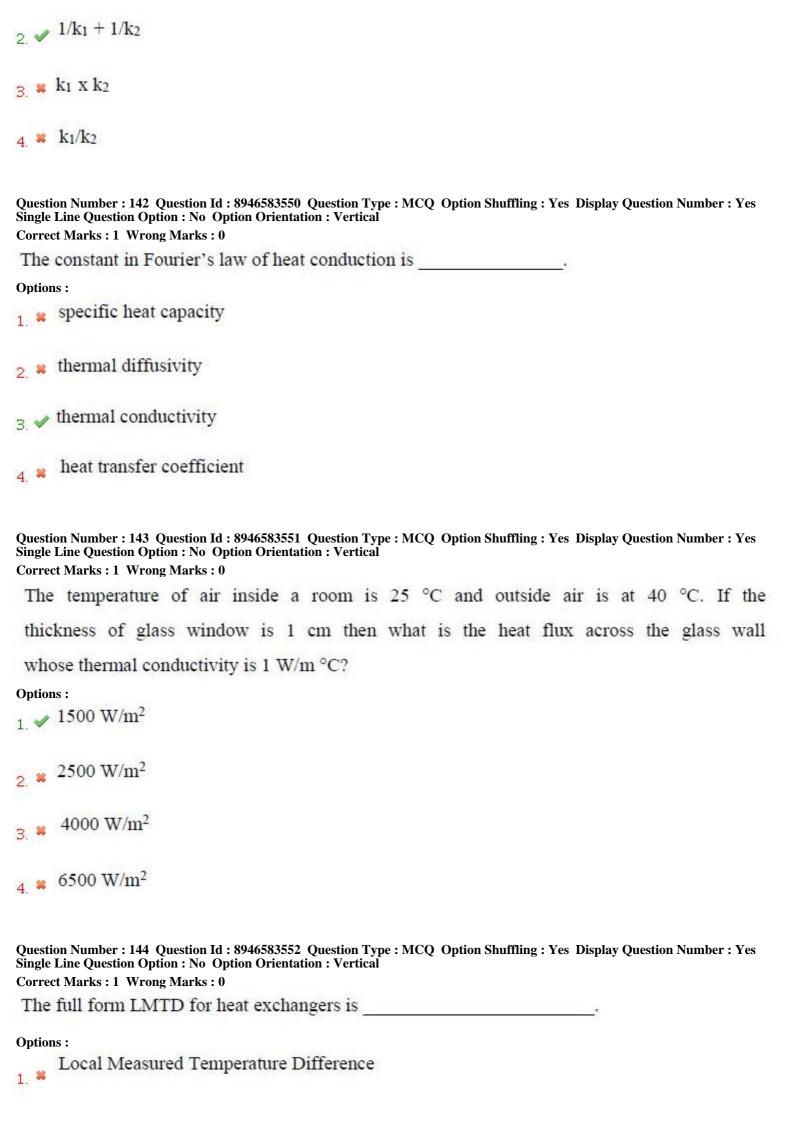Which of the following process sequences is used in the sugar industry?

Options :

1. ✗ Ca_2HPO_4/Lime treatment → Crystallization → Crushing

2. ✓ Ca_2HPO_4/Lime treatment →Multiple stage evaporation→ Crystallization

3. ✗ Crushing → Crystallization → Ca_2HPO_4/Lime treatment

4. ✗ Multiple stage evaporation → Crystallization → Ca_2HPO_4/Lime treatment

**Question Number : 132 Question Id : 8946583540 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical**
Correct Marks : 1 Wrong Marks : 0

Water gas shift reaction in industry is carried out in the presence of _____.

Options :

1. ✖ Ni

2. ✔ Fe

3. ✖ V_2O_5

4. ✖ AgO

Question Number : 133 Question Id : 8946583541 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The units of viscosity of a fluid are _____.

Options :

1. ✔ $N\ s/m^2$

2. ✖ $N^2\ s/m$

3. ✖ $N\ s^2/m$

4. ✖ $N\ s/m$

Question Number : 134 Question Id : 8946583542 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The nature of velocity profile in a circular pipe under laminar condition is _____.

Options :

1. ✖ triangular

2. ✖ flat

3. ✔ parabolic

4. ✖ hyperbolic

Question Number : 135 Question Id : 8946583543 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The inertial term due to flow in Bernoulli equation is _____.

Options :

1. ✖ $\rho V/2$

2. ✔ $\rho V^2/2$

3. ✖ $\rho V^4/2$

4. ✖ $\rho^2 V/2$

Question Number : 136 Question Id : 8946583544 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The terminal settling velocity of a particle in a fluid for Reynolds number less than

1 depends on density of fluid (ρ_f) and density of particle (ρ_p) as _____.

Options :

1. ✖ ρ_p

2. ✖ ρ_f

3. ✖ $(\rho_p - \rho_f)^2$

4. ✔ $\rho_p - \rho_f$

Question Number : 137 Question Id : 8946583545 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The flow rate dependent on viscosity (μ) of fluid in a circular pipe under laminar

condition is _____.

Options :

1. ✖ proportional to μ^2

2. ✖ proportional to μ

3. ✔ inversely proportional to μ

4. ✖ not dependent on μ

Question Number : 138 Question Id : 8946583546 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The ratio of maximum velocity/average velocity for flow between parallel plates is _____.

Options :

1. ✗ 1

2. ✓ 1.5

3. ✗ 2

4. ✗ 3

Question Number : 139 Question Id : 8946583547 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For pumps, NPSH stands for _____.

Options :

1. ✓ Net Positive Suction Head

2. ✗ Net Pump Suction Head

3. ✗ Net Positive Standing Head

4. ✗ Net Pump Standing Head

Question Number : 140 Question Id : 8946583548 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The pressure drop in a packed bed is given by _____.

Options :

1. ✗ Continuity Equation

2. ✗ Colebrook Equation

3. ✗ Bernoulli Equation

4. ✓ Ergun Equation

Question Number : 141 Question Id : 8946583549 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The heat flux across a double layered wall of equal thicknesses and with k_1 and k_2

as thermal conductivities is proportional to _____

Options :

1. ✗ $k_1 + k_2$

2. ✔ $1/k_1 + 1/k_2$

3. ✘ $k_1 \times k_2$

4. ✘ k_1/k_2

Question Number : 142 Question Id : 8946583550 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The constant in Fourier's law of heat conduction is _____.

Options :

1. ✘ specific heat capacity

2. ✘ thermal diffusivity

3. ✔ thermal conductivity

4. ✘ heat transfer coefficient

Question Number : 143 Question Id : 8946583551 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The temperature of air inside a room is 25 °C and outside air is at 40 °C. If the thickness of glass window is 1 cm then what is the heat flux across the glass wall whose thermal conductivity is 1 W/m °C?

Options :

1. ✔ 1500 W/m^2

2. ✘ 2500 W/m^2

3. ✘ 4000 W/m^2

4. ✘ 6500 W/m^2

Question Number : 144 Question Id : 8946583552 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The full form LMTD for heat exchangers is _____.

Options :

1. ✘ Local Measured Temperature Difference

2. ✖ Log Measure Temperature Difference

3. ✖ Local Mean Temperature Difference

4. ✔ Log Mean Temperature Difference

Question Number : 145 Question Id : 8946583553 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The amount of heat required to evaporate 2 kg of water with latent heat of vaporization

as 2260 J/gram at atmospheric pressure is _____.

Options :

1. ✖ 4520 Joules

2. ✖ 2260 Joules

3. ✔ 4520 kilo Joules

4. ✖ 2260 kilo Joules

Question Number : 146 Question Id : 8946583554 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The formula for Prandtl number is _____

Options :

1. ✖ $\mu\, k/C_p$

2. ✔ $C_p\, \mu\, /k$

3. ✖ $C_p\, k/\mu$

4. ✖ $C_p\, /\mu\, k$

Question Number : 147 Question Id : 8946583555 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The flow of fluid in Natural convection is due to _____

Options :

1. ✔ Buoyancy

2. ✖ External force

3. ✖ Centrifugal force

4. ✖ Centripetal force

Question Number : 148 Question Id : 8946583556 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The transfer of heat from sun to earth is due to _____

Options :

1. ✖ forced convection

2. ✖ conduction

3. ✔ radiation

4. ✖ natural convection

Question Number : 149 Question Id : 8946583557 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The addition of NaCl salt to water has the following effect on boiling point of the

solution at atmospheric pressure.

Options :

1. ✔ increases

2. ✖ decreases

3. ✖ no effect

4. ✖ makes it 0 °C

Question Number : 150 Question Id : 8946583558 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

A black body by definition has emissivity of _____.

Options :

1. ✖ 0

2. ✖ 0.25

3. ✖ 0.75

4. ✔ 1

Question Number : 151 Question Id : 8946583559 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The sphericity of a particle based on volume V_p, diameter d_p and surface are S_p is calculated as per following formula

Options :

1. ✖ $6\,V_p/S_p$

2. ✖ $6\,(d_p\,S_p)/V_p$

3. ✔ $6\,V_p/(d_p\,S_p)$

4. ✖ $6/d_p$

Question Number : 152 Question Id : 8946583560 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

For crushing of solids, Kick's law states that the work required is proportional to _____.

Options :

1. ✖ square root of surface-to-volume ratio of product

2. ✖ new surface created

3. ✔ constant for the same reduction ratio

4. ✖ square root of equivalent diameter of product

Question Number : 153 Question Id : 8946583561 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

A Jet Mill uses the following force for operation

Options :

1. ✖ metal balls

2. ✔ compressed air or water

3. ✖ hammers

4. ✖ jaws

Question Number : 154 Question Id : 8946583562 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Froth floatation uses the principle of separating _____.

Options :

1. ✖ low and high dielectric material

2. ✖ large and small sized material

3. ✖ magnetic and non-magnetic material

4. ✔ hydrophobic and hydrophilic material

Question Number : 155 Question Id : 8946583563 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A ball mill is used for _____.

Options :

1. ✔ grinding

2. ✖ cutting

3. ✖ tearing

4. ✖ crushing

Question Number : 156 Question Id : 8946583564 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The ratio of area of opening in two successive screens in a Tyler standard screens is _____.

Options :

1. ✖ 1

2. ✔ 2

3. ✖ 3

4. ✖ 4

Question Number : 157 Question Id : 8946583565 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

In cake filtration, the resistance to flow changes with increase in filter cake thickness as

follows

Options :

1. ✖ remains zero

2. ✖ remains constant

3. ✔ increases

4. ✖ decreases

Question Number : 158 Question Id : 8946583566 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

In a Rotary Vacuum Drum Filter, the drum is immersed to the following extent in

the slurry to be filtered

Options :

1. ✖ not at all

2. ✖ deep inside

3. ✖ fully

4. ✔ partly

Question Number : 159 Question Id : 8946583567 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

An ideal gas at temperature T_1 and pressure P_1 is compressed isothermally to

pressure P_2 ($>P_1$) in a closed system. Which of the following is true for internal

energy (U) and Gibbs free energy (G) of the gas at the two states?

Options :

1. ✖ $U_1=U_2$, $G_1>G_2$

2. ✔ $U_1 = U_2$, $G_1 < G_2$

3. ✘ $U_1 > U_2$, $G_1 = G_2$

4. ✘ $U_1 < U_2$, $G_1 = G_2$

Question Number : 160 Question Id : 8946583568 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

For one mole of an ideal gas expanding isothermally to twice its volume, the work

obtained is equal to _____.

Options :

1. ✔ $RT\ln 2$

2. ✘ $RT\ln(1/2)$

3. ✘ $2RT$

4. ✘ $4RT$

Question Number : 161 Question Id : 8946583569 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The latent heat of vaporization of water is 2257 kJ/kg at 100 °C. The critical

temperature of water is 647.1 Kelvin. The latent heat of vaporization of water at 300 °C

is approximately equal to _____.

Options :

1. ✘ 2257 kJ/kg

2. ✔ 1373 kJ/kg

3. ✘ 0 kJ/kg

4. ✘ 1494 kJ/kg

Question Number : 162 Question Id : 8946583570 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The kinetic energy of gas molecules is zero at _____.

Options :

1. ✖ $0 \, ^{O}C$

2. ✖ $273 \, ^{O}C$

3. ✖ $100 \, ^{O}C$

4. ✔ $-273 \, ^{O}C$

Question Number : 163 Question Id : 8946583571 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The sequence in which three CSTR's of volumes 5, 10 and 15 m³ will be connected in series to obtain the maximum production in a second order irreversible reaction is _____.

Options :

1. ✖ 15, 10, 5

2. ✔ 5, 10, 15

3. ✖ 10, 5, 15

4. ✖ 10, 15, 5

Question Number : 164 Question Id : 8946583572 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

For a mixed flow reactor operating at steady state, the rate of reaction is given by _____.

Options :

1. ✖ $\dfrac{F_{A0}}{V} - \dfrac{dC_A}{dt}$

2. ✖ $\dfrac{F_{A0}}{V} + \dfrac{dC_A}{dt}$

3. ✔ $\dfrac{F_{A0}X_A}{V}$

4. ✖ $\dfrac{-dC_A}{dt}$

Question Number : 165 Question Id : 8946583573 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

For the gases reaction 2A→B where the feed consists of 50 mol% A and 50 mole% inerts, the expansion factor is _____.

Options :

1. ✖ 1

2. ✖ -0.5

3. ✔ -0.25

4. ✖ 0

Question Number : 166 Question Id : 8946583574 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The dimension of rate constant for reaction 3A→B are (1/g mole)/min. Therefore, the reaction order is ___.

Options :

1. ✖ 0

2. ✖ 1

3. ✔ 2

4. ✖ 3

Question Number : 167 Question Id : 8946583575 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The units of diffusion constant in mass transfer are _____.

Options :

1. ✖ m^2/s^2

2. ✖ m/s

3. ✔ m^2/s

4. ✖ m/s^2

Question Number : 168 Question Id : 8946583576 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The value of relative volatility of A in a vapour-liquid system can be obtained as _____.

Options :

1. ✅ $P_A{}^{sat}/P_B{}^{sat}$

2. ✖ $P_B{}^{sat}/P_A{}^{sat}$

3. ✖ $P_A{}^{sat}/P_{total}$

4. ✖ $P_B{}^{sat}/P_{total}$

Question Number : 169 Question Id : 8946583577 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The nature of q-line for saturated liquid feed mixture in McCabe-Thiele method is _____.

Options :

1. ✖ horizontal

2. ✅ vertical

3. ✖ slope = -1

4. ✖ slope = 1

Question Number : 170 Question Id : 8946583578 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a flash distillation of a mixture of 10 moles of A & B feed has 50 mole% of A.

The Vapor is 2 moles and it has 90 mole% A. The mole% of A in Liquid is _____.

Options :

1. ✖ 10

2. ✖ 20

3. ✖ 30

4. ✅ 40

Question Number : 171 Question Id : 8946583579 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The dimensionless number in mass transfer that is similar to Prandtl number in

heat transfer is _____.

Options :

1. ✖ Reynolds number

2. ✖ Stanton number

3. ✔ Schmidt number

4. ✖ Sherwood number

Question Number : 172 Question Id : 8946583580 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a binary system of A & B, the mole fraction of A is 0.8 in Vapour and 0.2 in Liquid.

The value of relative volatility of A is _____.

Options :

1. ✖ 2

2. ✖ 4

3. ✖ 8

4. ✔ 16

Question Number : 173 Question Id : 8946583581 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The value of moisture content of a wet solid below which it cannot be dried by

using atmospheric air is called as _____.

Options :

1. ✔ equilibrium moisture content

2. ✖ critical moisture content

3. ✖ saturated moisture content

4. ✖ unbound moisture content

Question Number : 174 Question Id : 8946583582 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is not obtained from Crystallization?

Options :

1. ✖ NaOH flakes

2. ✖ NaCl salt

3. ✔ Polymer

4. ✖ Sugar

Question Number : 175   Question Id : 8946583583   Question Type : MCQ   Option Shuffling : Yes   Display Question Number : Yes   Single Line Question Option : No   Option Orientation : Vertical

Correct Marks : 1   Wrong Marks : 0

The number of actual trays required (N_a) and theoretical trays estimated (N_t) are related through tray efficiency η as _____.

Options :

1. ✖ $N_a = N_t/\eta^2$

2. ✔ $N_a = N_t/\eta$

3. ✖ $N_a = N_t \, \eta$

4. ✖ $N_a = N_t \, \eta^2$

Question Number : 176   Question Id : 8946583584   Question Type : MCQ   Option Shuffling : Yes   Display Question Number : Yes   Single Line Question Option : No   Option Orientation : Vertical

Correct Marks : 1   Wrong Marks : 0

According to Raoult's law the partial pressure (p_A) of a component A in vapour in terms of its mole fraction x_A and its saturation vapour pressure p_A^{sat} is given by __.

Options :

1. ✖ $p_A = x_A^4 \, P_A^{sat}$

2. ✖ $p_A = x_A^3 \, P_A^{sat}$

3. ✖ $p_A = x_A^2 \, P_A^{sat}$

4. ✔ $p_A = x_A \, P_A^{sat}$

Question Number : 177   Question Id : 8946583585   Question Type : MCQ   Option Shuffling : Yes   Display Question Number : Yes   Single Line Question Option : No   Option Orientation : Vertical

Correct Marks : 1   Wrong Marks : 0

McCabe-Thiele method makes the following assumption regarding the two components in a Binary distillation

Options :

1. ✔ equal latent heat of vaporization

2. ✖ equal saturation vapour pressure

3. ✖ equal molecular weight

4. ✖ mole ratio of one

Question Number : 178 Question Id : 8946583586 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The analytical expression used to estimate the minimum number of trays for a distillation column is _____.

Options :

1. ✖ McCabe-Thiele equation

2. ✖ Ponchon-Savarit equation

3. ✔ Fenske Equation

4. ✖ Murphree equation

Question Number : 179 Question Id : 8946583587 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

An inclined manometer is _____ sensitive than a U tube manometer

Options :

1. ✔ More

2. ✖ Less

3. ✖ Equal

4. ✖ unpredictable

Question Number : 180 Question Id : 8946583588 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Match the following Group-I with Group-II

Group-I	Group-II
(I) Mercury-in-glass thermometer	(a) Affinity of different constituents to an adsorbent
(II) Gas chromatograph	(b) Cubical expansion of liquids
(III) Optical pyrometer	(c) Faraday's law
(IV) Magneto-Hydrodynamic flow meter	(d) Wien's law

Options :

1. ✘ (I)-(a), (II)-(b), (III)-(c), (IV)-(d)

2. ✘ (I)-(d), (II)-(c), (III)-(b), (IV)-(a)

3. ✘ (I)-(b), (II)-(c), (III)-(d), (IV)-(a)

4. ✔ (I)-(b), (II)-(a), (III)-(d), (IV)-(c)

Question Number : 181 Question Id : 8946583589 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

On-off control is a particular case of _____.

Options :

1. ✘ proportional-integral-derivative control

2. ✘ proportional-derivative control

3. ✘ proportional-integral control

4. ✔ proportional control

Question Number : 182 Question Id : 8946583590 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Which of the following is employed as a reference electrode in pH measurement?

Options :

1. ✖ Glass electrode

2. ✖ Hydrogen electrode

3. ✖ Antimony electrode

4. ✔ Hg-calomel electrode

Question Number : 183 Question Id : 8946583591 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Typical example of a physical system with underdamped characteristics is a _____.

Options :

1. ✔ U-Tube manometer

2. ✖ Spring loaded diaphragm valve

3. ✖ CSTR with first-order reaction

4. ✖ Thermocouple kept immersed in a liquid-filled thermowell

Question Number : 184 Question Id : 8946583592 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Match the type of controller given in Group-II that is most suitable for each

application given in Group-I.

Group-I	Group-II
P. Distillation column bottoms level to be controlled with bottoms flow	(I) P controller
Q. Distillation column pressure to be controlled by manipulating vapour flow from the top plate	(II) P-I controller
R. Flow control of a liquid from a pump by positioning the valve in the line	(III) P-I-D Controller
S. Control of temperature of a CSTR with coolant flow in the jacket	

Options :

1. ✔ P-(I), Q-(I), R-(II), S-(III)

2. ✖ P-(II), Q-(II), R-(III), S-(III)

3. ✖ P-(II), Q-(II), R-(I), S-(I)

4. ✖ P-(II), Q-(III), R-(II), S-(III)

Question Number : 185 Question Id : 8946583593 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The roots of the characteristic equation of an underdamped second order system are _____.

Options :

1. ✖ real, negative and equal

2. ✖ real, negative and unequal

3. ✖ real, positive and unequal

4. ✔ complex conjugates

Question Number : 186 Question Id : 8946583594 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

A second order system is free of any damping for damping factor of _____.

Options :

1. ✖ unity

2. ✖ infinity

3. ✖ less than unity

4. ✔ zero

Question Number : 187 Question Id : 8946583595 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Which of the following gases is the most dangerous to lungs?

Options :

1. ✖ O_2

2. ✖ N_2

3. ✖ CO_2

4. ✔ CO

Question Number : 188 Question Id : 8946583596 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Which of the following is used in automobiles to oxidize CO to CO2 completely?

Options :

1. ✖ Cyclotron

2. ✖ Synchrotron

3. ✔ Catalytic converter

4. ✖ Electrostatic precipitator

Question Number : 189 Question Id : 8946583597 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

What is the full form of COD in relation to wastewater analysis?

Options :

1. ✖ Chemical Oxygen Diffusion

2. ✔ Chemical Oxygen Demand

3. ✖ Carbon Oxygen Demand

4. ✖ Carbon Oxygen Diffusion

Question Number : 190 Question Id : 8946583598 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Water Act was enacted in India for first time in _____.

Options :

1. ✔ 1974

2. ✖ 1984

3. ✖ 1994

4. ✗ 2004

Question Number : 191 Question Id : 8946583599 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The gas coming from combustion of coal is called as _____.

Options :

1. ✔ flue gas

2. ✗ synthesis gas

3. ✗ laughing gas

4. ✗ ideal gas

Question Number : 192 Question Id : 8946583600 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Electrostatic precipitator uses the following to trap particulate matter from polluted air

Options :

1. ✗ gravity

2. ✗ flow field

3. ✗ magnetic field

4. ✔ electric field

Question Number : 193 Question Id : 8946583601 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following does not increase carbon dioxide in air?

Options :

1. ✗ Burning coal

2. ✔ Photosynthesis

3. ✗ Diesel engine

4. ✗ Petrol engine

Question Number : 194 Question Id : 8946583602 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Coke ovens are built of _____ .

Options :

1. ✔ Silica bricks

2. ✖ Fire clay bricks

3. ✖ Magnesite bricks

4. ✖ Aluminium

Question Number : 195 Question Id : 8946583603 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Besides calorific value, bomb calorimeter is also used to determine _____ .

Options :

1. ✔ Sulphur

2. ✖ Nitrogen

3. ✖ Hydrogen in coal

4. ✖ Oxygen

Question Number : 196 Question Id : 8946583604 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

A suitably designed coal-fired furnace, if properly maintained and operated can give

overall thermal efficiency of the order of _____ .

Options :

1. ✖ 15-20%

2. ✔ 25-30%

3. ✖ 35-40%

4. ✖ 50-55%

Question Number : 197 Question Id : 8946583605 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The air requirement will be highest for combustion of 1 nm^3 of _____.

Options :

1. ✖ blast furnace gas

2. ✖ water gas

3. ✖ producer gas

4. ✔ coke oven gas

Question Number : 198 Question Id : 8946583606 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A coal containing higher amount of volatile matter will have _____.

Options :

1. ✖ low ash fusion point

2. ✔ high calorific value

3. ✖ high caking index

4. ✖ very low ash content

Question Number : 199 Question Id : 8946583607 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Natural gasoline is _____.

Options :

1. ✖ a refinery product

2. ✖ obtained freely in the nature

3. ✖ a by product of coal carbonisation

4. ✔ obtained by stripping natural gas

Question Number : 200 Question Id : 8946583608 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Coal washing is done to _____ .

Options :

1. ✔ decrease the mineral matter

2. ✖ decrease the moisture content

3. ✖ decrease the ash content

4. ✖ increase caking properties