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 3rd Aug 2021 Shift2
Subject Name :	Chemical Engineering
Creation Date :	2021-08-03 18:35:30
Duration :	180
Total Marks :	200
Display Marks:	No
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? :	Yes

Chemical Engineering

Group Number :	1
Group Id :	800894113
Group Maximum Duration :	0

Group Minimum Duration :	180
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	200
Is this Group for Examiner? :	No

Mathematics

Section Id :	800894438
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	50
Number of Questions to be attempted :	50
Section Marks :	50
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Sub-Section Number :	1
Sub-Section Id :	800894504
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 80089422456 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $\begin{pmatrix} x+y & z+y \\ z-y & x-2y \end{pmatrix} = \begin{pmatrix} 12 & 9 \\ -1 & -3 \end{pmatrix}$ then $\begin{pmatrix} x & y \\ z & 2z \end{pmatrix} =$

Options :

1. ✖ $\begin{pmatrix} 5 & 7 \\ 4 & 8 \end{pmatrix}$

2. ✔ $\begin{pmatrix} 7 & 5 \\ 4 & 8 \end{pmatrix}$

3. ✖ $\begin{pmatrix} 6 & 7 \\ 3 & 6 \end{pmatrix}$

4. ✖ $\begin{pmatrix} 3 & 6 \\ 6 & 7 \end{pmatrix}$

Question Number : 2 Question Id : 80089422457 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If $A = \begin{pmatrix} x & y & z \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{pmatrix}$ and $B = \begin{pmatrix} x & 2 & 3 \\ y & 5 & 6 \\ z & 8 & 9 \end{pmatrix}$ then

Options :

1. ✔ $\det(A - B) = \det A - \det B$

2. ✖ $\det A - \det B = 1$

3. ✖ $\det A + \det B = x + y + z$

4. ✖ $\det A = -\det B$

Question Number : 3 Question Id : 80089422458 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If $\begin{pmatrix} -a^2 & ab & ac \\ ab & -b^2 & bc \\ ac & bc & -c^2 \end{pmatrix} = Ka^2b^2c^2$ then $K =$

Options :

1. ✔ 4

2. ✖ 6

3. ✖ 8

4. ✖ 2

Question Number : 4 Question Id : 80089422459 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If the system of equations $x + 2y - 3z = 0, 3x - 2y + z = 0, kx - 14y + 15z = 0$ has nonzero solutions, then $k^2 - 2k - 3 =$

Options :

1. ✔ 12

2. ✖ 18

3. ✖ 5

4. ✖ 0

Question Number : 5 Question Id : 80089422460 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The partial fractions of $\frac{x^2+5x+10}{x+2} - \frac{2+6x+x^2}{x+3} =$

Options :

1. ✔ $\frac{4}{x+2} + \frac{7}{x+3}$

2. ✖ $\frac{4}{x+2} - \frac{7}{x+3}$

3. ✖ $\frac{7}{x+2} - \frac{4}{x+3}$

4. ✖ $\frac{4}{x+3} + \frac{7}{x+2}$

Question Number : 6 Question Id : 80089422461 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If $4^{\log_9 3} + 9^{\log_2 4} = 5^{\log_x 83}$, then

Options :

1. ✖ $x^3 + 4x^2 - 4x - 5 = 0$

2. ✖ $x^3 - 4x^2 - 4x + 5 = 0$

3. ✖ $x^3 - 4x^2 + 4x - 5 = 0$

4. ✔ $x^3 - 4x^2 - 4x - 5 = 0$

Question Number : 7 Question Id : 80089422462 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

$\log_e x + \log_e(1+x) = 0 \Rightarrow x =$

Options :

1. ✖ $\frac{-1-\sqrt{5}}{2}$

2. ✖ 1

3. ✔ $\frac{-1+\sqrt{5}}{2}$

4. ✖ -2

Question Number : 8 Question Id : 80089422463 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If $\alpha + \beta = \frac{\pi}{2}$ and $\beta + \gamma = \alpha$, then $tan\,\alpha =$

Options :

1. ✖ $2(tan\,\beta + tan\,\gamma)$

2. ✖ $tan\,\beta + tan\,\gamma$

3. ✖ $2\tan\beta+\tan\gamma$

4. ✔ $\tan\beta+2\tan\gamma$

Question Number : 9 Question Id : 80089422464 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In a triangle ABC , $a^2\cos 2B+b^2\cos 2A+2ab\cos(A-B)=$

Options :

1. ✖ a^2

2. ✖ b^2

3. ✔ c^2

4. ✖ $(a+b+c)^2$

Question Number : 10 Question Id : 80089422465 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

$f(x)=Sin^{-1}x+\cos^{-1}x+Tan^{-1}\frac{1}{x}+Tan^{-1}x$ then the area (in square units) bounded by y = f(x), y-axis and the line $2y=\pi(x+1)$ is

Options :

1. ✔ $\frac{\pi}{4}$

2. ✖ $\frac{\pi}{2}$

3. ✖ $\frac{\pi}{3}$

4. ✖ π

Question Number : 11 Question Id : 80089422466 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

$$\left(\frac{1+i}{\sqrt{2}}\right)^8+\left(\frac{1-i}{\sqrt{2}}\right)^8=$$

Options :

1. ✖ 16

2. ✖ 8

3. ✖ 4

4. ✔ 2

Question Number : 12 Question Id : 80089422467 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The maximum value of $|z|$ satisfying the equation $\frac{1}{12}(z+\bar{z})^2=1-\frac{1}{3}|z|^2$ is

Options :

1. ✖ $\sqrt{2}$

2. ✔ $\sqrt{3}$

3. ✖ 4

4. ✖ 6

Question Number : 13 Question Id : 80089422468 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If n is a positive integer, then $(-i)^{4n+3} =$

Options :

1. ✖ $2i$

2. ✖ $-i$

3. ✔ i

4. ✖ $4i$

Question Number : 14 Question Id : 80089422469 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The equation of the line passing through the point $(4, 0)$ and having intercepts in the ratio is $a: b$ is

Options :

1. ✖ $bx + ay = a$

2. ✔ $bx + ay = 4b$

3. ✖ $bx + ay = b$

4. ✖ $bx + ay = 4a$

Question Number : 15 Question Id : 80089422470 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If L_1, L_2 are the angular bisectors of the acute and obtuse angles between the lines $x-y+2=0$ and $7x+y+1=0$ then angle between L_1 and L_2 is

Options :

1. ✖ π

2. ✖ $\frac{\pi}{3}$

3. ✖ $\frac{\pi}{6}$

4. ✔ $\frac{\pi}{2}$

Question Number : 16 Question Id : 80089422471 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The equation of the line parallel to the line $x-2y+5=0$ and passing through the point P(3,5) is

Options :

1. ✖ $x-2y+15=0$

2. ✖ $x-2y+6=0$

3. ✖ $x-2y+8=0$

4. ✔ $x-2y+7=0$

Question Number : 17 Question Id : 80089422472 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The equation of the circle which touches the coordinate axes is

Options :

1. ✖ $x^2+y^2+2gx+2fy+c=0$

2. ✖ $x^2+y^2+2ax+2ay+a^2=0$

3. ✖ $x^2+y^2\pm 2gx\pm 2fy+c=0$

4. ✔ $x^2+y^2\pm 2ax\pm 2ay+a^2=0$

Question Number : 18 Question Id : 80089422473 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If $\alpha,\beta(\alpha>\beta)$ are roots of the quadratic equation $4x^2-4x-3=0$, then the equation of the circle with center $\left(\frac{\alpha}{\beta}+\frac{\beta}{\alpha},\frac{\alpha}{\beta}-\frac{\beta}{\alpha}\right)$ and radius $\alpha^2-\beta^2$ is

Options :

1. ✔ $9x^2 + 9y^2 + 60x + 48y + 128 = 0$

2. ✖ $9x^2 + 9y^2 + 60x - 48y - 128 = 0$

3. ✖ $9x^2 + 9y^2 - 60x - 48y + 128 = 0$

4. ✖ $9x^2 + 9y^2 - 60x + 48y - 128 = 0$

Question Number : 19 Question Id : 80089422474 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The equation of the tangent to the circle $x^2 + y^2 = 25$ at the point $P(3,4)$ is

Options :

1. ✖ $4x+3y-25=0$

2. ✖ $4x+3y+25=0$

3. ✔ $3x+4y-25=0$

4. ✖ $3x+4y-5=0$

Question Number : 20 Question Id : 80089422475 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

For $x^2 - 9 \neq 0$, if $y = \log\left(e^{x/2}\left(\frac{x-3}{x+3}\right)^{4/5}\right)$, then $\frac{dy}{dx}$ at $x = 1$ is equal to

Options :

1. ✖ $\frac{7}{10}$

2. ✖ $\frac{2}{5}$

3. ✔ $\frac{-1}{10}$

4. ✖ $\frac{-1}{5}$

Question Number : 21 Question Id : 80089422476 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

For $f(x) = |x^2 - 3x + 2|$, then sum of the values of $\frac{df}{dx}$ at x= 1.5 and at x = 2.5 is

Options :

1. ✔ 2

2. ✖ 6

3. ✖ 4

4. ✖ 8

Question Number : 22 Question Id : 80089422477 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

$\frac{d^2}{dx^2}\left(\frac{1}{5x+3}\right)=$

Options :

1. ✖ $\frac{25}{(5x+3)^3}$

2. ✔ $\frac{50}{(5x+3)^3}$

3. ✖ $\frac{125}{(5x+3)^3}$

4. ✖ $\frac{100}{(5x+3)^3}$

Question Number : 23 Question Id : 80089422478 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The curve represented by $x = t^5 - 5t^3 - 20t + 7, y = 4t^3 - 3t^2 - 18t + 3$ is increasing for all t in the interval

Options :

1. ✖ (-2,2)

2. ✔ $\left(-1, \frac{3}{2}\right)$

3. ✖ $\left(\frac{3}{2}, 2\right)$

4. ✖ (-1,2)

Question Number : 24 Question Id : 80089422479 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The equation of tangent to the curve $y^2 = 4x + 5$ at P(-1,1) is

Options :

1. ✖ $2x - y + 9 = 0$

2. ✖ $2x + y - 7 = 0$

3. ✔ $2x - y + 3 = 0$

4. ✖ $x + 2y + 9 = 0$

Question Number : 25 Question Id : 80089422480 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If at X = a, the maximum value of $(X^5)(16 - X)^{11}$ is K. Then $\frac{K}{a} =$

Options :

1. ✔ $11^{11}5^4$

2. ✖ $6^4 10^{11}$

3. ✖ $11^4 5^{11}$

4. ✖ $10^4 6^{11}$

Question Number : 26 Question Id : 80089422481 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If $u(x,y)=\text{Sin}^{-1}\left(\frac{x+y}{\sqrt{x}+\sqrt{y}}\right)$ then $x\frac{\partial u}{\partial x}+y\frac{\partial u}{\partial y}=$

Options :

1. ✖ $\frac{1}{8}\tan u$

2. ✔ $\frac{1}{2}\tan u$

3. ✖ $\frac{1}{4}\tan u$

4. ✖ $\frac{1}{3}\tan u$

Question Number : 27 Question Id : 80089422482 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If $\int \frac{2x^{18}+7x^{13}}{(x^7+x^5+1)^3}dx=\frac{x^p}{m(x^7+x^5+1)^n}+c$, then $2p-(m+n)^2=$

Options :

1. ✖ 0

2. ✖ 3

3. ✔ 12

4. ✖ 20

Question Number : 28 Question Id : 80089422483 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If $\int \frac{Sin\,2x}{Sin\,5x\,Sin\,3x}dx = A\,log\,Sin\,3\,x + Blog\,Sin\,5\,x + C$, then A + B=

Options :

1. ✖ 2/7

2. ✖ 1/3

3. ✖ -2/5

4. ✔ 2/15

Question Number : 29 Question Id : 80089422484 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

$$\int \frac{1}{9x^2 - 4}dx =$$

Options :

1. ✖

$\frac{1}{3}\log\left|\frac{3x-2}{3x+2}\right|$

2. ✖ $\frac{1}{12}\log\left|\frac{x-2}{x+2}\right|$

3. ✔ $\frac{1}{12}\log\left|\frac{3x-2}{3x+2}\right|$

4. ✖ $\frac{1}{2}\log\left|\frac{3x-2}{3x+2}\right|$

Question Number : 30 Question Id : 80089422485 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If $I_1 = \int_0^1 a^x dx$, $I_2 = \int_0^1 a^{x^2} dx$ and $I_3 = \int_0^1 a^{x^3} dx$ then

Options :

1. ✔ $I_1 > I_2 > I_3$ when a > 1

2. ✖ $I_1 < I_2 < I_3$, when a > 1

3. ✖ $I_1 > I_2 > I_3$, when 0 < a < 1

4. ✖ $I_1 < I_2 < I_3$ for any a > 0

Question Number : 31 Question Id : 80089422486 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The area (in square units) bounded by the curve $x^2 = 4y$, the x-axis and the line $x = 2$ is

Options :

1. ✖ $\frac{1}{3}$

2. ✔ $\frac{2}{3}$

3. ✖ $\frac{5}{3}$

4. ✖ $\frac{7}{3}$

Question Number : 32 Question Id : 80089422487 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$\lim_{n\to\infty}\left(\frac{1}{n}+\frac{1}{n+1}+\frac{1}{n+2}+\ldots\ldots\frac{1}{2n}\right) =$

Options :

1. ✖ 0

2. ✖ $\frac{1}{2}$

3. ✖ e^2

4. ✔ $log2$

Question Number : 33 Question Id : 80089422488 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Using Trapezoidal rule with $h=\frac{1}{2}$, the value of the integral $\int_0^1 \frac{1}{3+2x}dx=$

Options :

1. ✖ $\frac{11}{120}$

2. ✖ $\frac{21}{120}$

3. ✔ $\frac{31}{120}$

4. ✖ $\frac{41}{120}$

Question Number : 34 Question Id : 80089422489 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The differential equation representing the family of curves $y^2 = 2c(x+\sqrt{c})$ (c is a positive arbitrary Constant) is of

Options :

1. ✖ degree 1

2. ✖ order 2

3. ✔ degree 3

4. ✖ degree 2

Question Number : 35 Question Id : 80089422490 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The general solution of $\frac{dy}{dx} = \frac{x^2+4x-9}{x+2}$ is

Options :

1. ✔ $y = \frac{(x+2)^2}{2} - 13\,log|x+2| + c$

2. ✖ $y = (x+2)^2 - 5\,log|x+2| + c$

3. ✖ $y = \frac{x^2}{2} + 2x + 13\,log|x+2| + c$

4. ✖ $y = \frac{x^2}{2} + 2x - 5\,log|x+2| + c$

Question Number : 36 Question Id : 80089422491 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The general solution of the differential equation $x\frac{dy}{dx} = xe^{-\frac{y}{x}} + y$ is

Options :

1. ✖

$e^{\frac{x}{y}} = \log|cx|$

2. ✔ $e^{\frac{y}{x}} = \log|cx|$

3. ✖ $e^{\frac{x^2}{y}} = \log|cx|$

4. ✖ $e^{\frac{x}{y^2}} = \log|cx|$

Question Number : 37 Question Id : 80089422492 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

$\frac{dy}{dx} = \frac{f(x,y)}{g(x,y)}$ is a homogeneous differential equation. The substitution y = Vx (V is a function of x) reduces the given differential equation to $\frac{dV}{dx} = \frac{1}{x}G(V)$. Then G(V)=

Options :

1. ✔ $\frac{f(1,V)}{g(1,V)} - V$

2. ✖ $\frac{f(V)}{g(V)} - V$

3. ✖ $\frac{f(1,V)}{g(1,V)} + V$

4. ✖ $\frac{f(V)}{g(V)} + V$

Question Number : 38 Question Id : 80089422493 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The general solution of the differential equation $\frac{d^2y}{dx^2} + 2\frac{dy}{dx} + y = e^{-x}Sin\ x$ is

Options :

1. ✖ $y = e^{-x}(A + Bx) + \frac{e^{-x}Sin\ x}{5}$

2. ✔ $y = e^{-x}(A + Bx - sinx)$

3. ✖ $y = e^{-x}(A + Bx) + \frac{e^{-x}cos\ x}{5}$

4. ✖ $y = e^{-x}(A + Blogx) + \frac{e^{-x}Sin\ x}{5}$

Question Number : 39 Question Id : 80089422494 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The particular integral of the differential equation $\frac{d^2y}{dx^2} - 2\frac{dy}{dx} + y = xe^x \sin x$ is

Options :

1. ✔ $-e^x(x\sin x + 2\cos x)$

2. ✖ $-e^x(x\cos x + 2\sin x)$

3. ✖ $e^x(x\sin x - 2\cos x)$

4. ✖ $e^x(x\cos x - 2\sin x)$

Question Number : 40 Question Id : 80089422495 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If $L\{t^2e^{-2t}\} = f(s)$, then $f(4) =$

Options :

1. ✖ $\frac{1}{54}$

2. ✖ $\frac{1}{27}$

3. ✔ $\frac{1}{108}$

4. ✖ $\frac{1}{216}$

Question Number : 41 Question Id : 80089422496 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If $L[f(t)] = \frac{9s^2-12s+15}{(s-1)^3}$, then $L\left[f\left(\frac{t}{3}\right)\right] =$

Options :

1. ✔ $9\left[\frac{27s^2-36s+5}{(3s-1)^3}\right]$

2. ✖ $9\left[\frac{s^2-4s+15}{(s-3)^3}\right]$

3. ✖ $3\left[\frac{27s^2-12s+5}{(3s-1)^3}\right]$

4. ✖ $27\left[\frac{s^2-4s+15}{(s-3)^3}\right]$

Question Number : 42 Question Id : 80089422497 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

$$\int_0^{\infty} \frac{e^{-5t}-e^{-8t}}{t} dt =$$

Options :

1. ✖ $\log\left(\frac{4}{5}\right)$

2. ✖ $\log\left(\frac{2}{5}\right)$

3. ✔ $\log\left(\frac{8}{5}\right)$

4. ✖ $\log\left(\frac{7}{5}\right)$

Question Number : 43 Question Id : 80089422498 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If $F_a(s) = \mathrm{L}(\sin at)$ then, $\mathrm{L}\left(\frac{e^{-3t}\sin 2t}{t}\right) =$

Options :

1. ✖ $\int_s^\infty F_2(s)ds$

2. ✔ $\int_s^\infty F_2(s+3)ds$

3. ✖ $\int_s^\infty \frac{d}{ds}(F_2(s))ds$

4. ✖ $-\int_s^\infty \frac{d}{ds}(F_2(s-3))ds$

Question Number : 44 Question Id : 80089422499 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

$$L^{-1}\left\{\frac{6s}{s^2+2s-8}\right\}$$

Options :

1. ✖ $4e^{-4t}+2e^{-2t}$

2. ✖ $4e^{4t}+2e^{-2t}$

3. ✖ $4e^{4t}+2e^{2t}$

4. ✔ $4e^{-4t}+2e^{2t}$

Question Number : 45 Question Id : 80089422500 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If L(f(t)) =F(S), L(g(t)) = G(s), then $L^{-1}(F(s)\,G(s))$=

Options :

1. ✔ $\int_0^t f(p)g(t-p)\,dp$

2. ✖ $\int_0^t f(t)g(t)\,dt$

3. ✖ $\int_0^t f(t)g(t-p)\,dp$

4. ✖ $\int_0^t f(tp)g(t/p)\,dt$

Question Number : 46 Question Id : 80089422501 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $y = y(t)$ satisfies the differential equation $\frac{d^2y}{dt^2} - 2\frac{dy}{dt} + y = e^t$ together with the conditions $y(0) = 2, \frac{dy}{dt} = -1$ at $t = 0$, then $y(t) =$

Options :

1. ✖ $e^t\left(2 + 3t + \frac{1}{2}t^2\right)$

2. ✔ $e^t\left(2 - 3t + \frac{1}{2}t^2\right)$

3. ✖ $e^t\left(2 - 3t - \frac{1}{2}t^2\right)$

4. ✖ $e^t\left(2 + 3t - \frac{1}{2}t^2\right)$

Question Number : 47 Question Id : 80089422502 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

$$\int_0^{2\pi} \cos^2(5x)dx =$$

Options :

1. ✔ π

2. ✖ 2π

3. ✖ 4π

4. ✖ 5π

Question Number : 48 Question Id : 80089422503 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The Fourier series of $x-x^2$ in the interval $(-\pi, \pi)$ contains

Options :

1. ✖ only sine terms

2. ✖ onlycosine terms

3. ✔ both sine and cosine terms

4. ✖ negative integral powers of x, but not trigonometric functions

Question Number : 49 Question Id : 80089422504 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If $f(x) = x^3$ when $0 \le x \le 4, f(x+4) = f(x), \forall x$ and its Fourier series is $f(x) = \sum_{n=0}^{\infty}(a_n \cos\frac{n\pi x}{2} + b_n \sin\frac{n\pi x}{2})$, then $b_1 =$

Options :

1. ✖ $\frac{128}{\pi^2} + \frac{192}{\pi^4}$

2. ✖ $\frac{128}{\pi^2}$

3. ✖ $\frac{192}{\pi^2} + \frac{192}{\pi^4}$

4. ✔ $\frac{96}{\pi^3} - \frac{128}{\pi}$

Question Number : 50 Question Id : 80089422505 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If $f(x) = \begin{cases} 0, & -2 \le x < 0 \\ 1, & 0 \le x < 2 \end{cases}$, $f(x+4) = f(x)\ \forall x$ and $f(x) = \sum_{n=0}^{\infty}(a_n \cos\frac{n\pi x}{2} + b_n \sin\frac{n\pi x}{2})$, then $b_2 =$

Options :

1. ✖ $\frac{2}{\pi}$

2. ✖ $\frac{4}{\pi}$

3. ✖ $\frac{3}{\pi}$

4. ✔ 0

Physics

Section Id :	800894439
Section Number :	2
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	25
Number of Questions to be attempted :	25
Section Marks :	25
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Sub-Section Number :	1
Sub-Section Id :	800894505
Question Shuffling Allowed :	Yes

Question Number : 51 Question Id : 80089422506 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The Dimensional formula of potential energy is

Options :

1. ✖ MLT^{-2}

2. ✔ ML^2T^{-2}

3. ✖ ML^2T^{-1}

4. ✖ MLT^{-1}

Question Number : 52 Question Id : 80089422507 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In case of a superconductor one among the following statement is incorrect

Options :

1. ✖ The resistivity drops suddenly at transition temperature

2. ✔ It is paramagnetic below it's transition temperature

3. ✖ Specific heat discontinuity occurs at transition temperature

4. ✖ It will become diamagnetic below it's transition temperature

Question Number : 53 Question Id : 80089422508 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following statements is true regarding super conductors?

Options :

1. ✖ super conductors have high resistance at very low temperatures, and they are perfectly diamagnetic

2. ✖ super conductors have high resistance at very low temperatures, and they are perfectly ferro magnetic

3. ✖ super conductors have zero resistance at very low temperatures, and they are perfectly para magnetic

4. ✔ super conductors have zero resistance at very low temperatures, and they are perfectly dia magnetic

Question Number : 54 Question Id : 80089422509 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If the temperature remains constant the volume of the gas will

Options :

1. ✔ Increase with decrease in pressure

2. ✖ Decrease with decrease in pressure

3. ✖ Not change with change in pressure

4. ✖ Increase with increase in pressure

Question Number : 55 Question Id : 80089422510 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A gas at a pressure of 150 Nm^{-2} is compressed to half its original volume. If the expansion is isothermal, the final pressure will be

Options :

1. ✖

$100\ Nm^{-2}$

2. ✖ $150\ Nm^{-2}$

3. ✖ $200\ Nm^{-2}$

4. ✔ $300\ Nm^{-2}$

Question Number : 56 Question Id : 80089422511 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The first law of thermodynamics is the law of

Options :

1. ✖ Conservation of mass

2. ✖ Conservation of momentum

3. ✔ Conservation of energy

4. ✖ Conservation of temperature

Question Number : 57 Question Id : 80089422512 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Two equal vectors have a resultant equal to either. The angle between them will be

Options :

1. ✖ 30°

2. ✖ 90°

3. ✔ 120°

4. ✖ 180°

Question Number : 58 Question Id : 80089422513 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The vectors $\vec{A}$ *and* $\vec{B}$ are such that if $|\vec{A}+\vec{B}|=|\vec{A}-\vec{B}|$ then the angle between $\vec{A}$ *and* $\vec{B}$ will be

Options :

1. ✔ 90°

2. ✖ 0°

3. ✖ 180°

4. ✖ $\text{Cos}\theta$

Question Number : 59 Question Id : 80089422514 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The value of λ for which the two vectors:

$3\hat{\imath}-\hat{\jmath}+\hat{k}$ and $2\hat{\imath}+\lambda\hat{\jmath}+2\hat{k}$ are perpendicular is

Options :

1. ✖ -8

2. ✔ 8

3. ✖ 4

4. ✖ 2

Question Number : 60 Question Id : 80089422515 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In case of an oblique projection, which statement is true with regard to its velocity components?

Options :

1. ✖ Vertical and horizontal components change

2. ✖ Vertical and horizontal components do not change

3. ✔ Vertical component changes but horizontal component remains constant

4. ✖ Vertical component remains constant but horizontal component changes

Question Number : 61 Question Id : 80089422516 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

An insect can jump a maximum horizontal distance of 20 cm. If it spends negligible time on the ground, with what speed can it travel along the road.

Options :

1. ✖ 0.1 m/s

2. ✔ 1.0 m/s

3. ✖ 0.14 m/s

4. ✖ 1.4 m/s

Question Number : 62 Question Id : 80089422517 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A person holds a book weighing 1 kg between his hands and keeps it from falling by pressing his hands together. If the minimum force exerted by each hand horizontally is 49 N, what will be the coefficient of friction between the book and his hands

Options :

1. ✖ 1

2. ✖ 10

3. ✔ 0.1

4. ✖ 0.01

Question Number : 63 Question Id : 80089422518 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A ball rolled on ice with a velocity of 8 ms^{-1} comes to rest after travelling 40 m. If the value of g = 9.8 ms^{-2}, the coefficient of friction is

Options :

1. ✖ 0.328

2. ✔ 0.0816

3. ✖ 0.0416

4. ✖ 0.258

Question Number : 64 Question Id : 80089422519 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which one of the following is not the unit of energy?

Options :

1. ✔ Kilowatt

2. ✖ Kilowatt hour

3. ✖ Joule

4. ✖ Newton meter

Question Number : 65 Question Id : 80089422520 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The principle of conservation of energy states that

Options :

1. ✔ Sum of all types of energies is conserved

2. ✖ Total mechanical energy is conserved

3. ✖ Total kinetic energy is conserved

4. ✖ Total potential energy is conserved

Question Number : 66 Question Id : 80089422521 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

For a body moving with simple harmonic motion, the number of cycles per second, is known as its

Options :

1. ✖ Oscillation

2. ✖ Amplitude

3. ✖ Periodic time

4. ✔ Frequency

Question Number : 67 Question Id : 80089422522 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The acceleration of particle executing S.H.M. when it is at mean position is

Options :

1. ✖ Infinite

2. ✔ Zero

3. ✖ Maximum

4. ✖ Unity

Question Number : 68 Question Id : 80089422523 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If the length of a simple pendulum executing simple harmonic motion is increased by 69% then the percentage increases in the time period of the simple pendulum of increased length will be

Options :

1. ✔ 30 %

2. ✖ 330 %

3. ✖ 3.0 %

4. ✖ 33 %

Question Number : 69 Question Id : 80089422524 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The longitudinal waves can not

Options :

1. ✖ Have a unique wave velocity

2. ✔ Be polarized

3. ✖ Have a unique wavelength

4. ✖ Transmit energy

Question Number : 70 Question Id : 80089422525 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A cinema hall has a volume of 2800 m^3 and total surface absorption is 225 O.W.U. The reverberation time will be

Options :

1. ✖ 1.90 s

2. ✔ 1.99 s

3. ✖ 2.25 s

4. ✖ 2.40 s

Question Number : 71 Question Id : 80089422526 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Stress is

Options :

1. ✖ External force

2. ✔ Internal resistive force

3. ✖ Axial force

4. ✖ Radial force

Question Number : 72 Question Id : 80089422527 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following statements is false?

Options :

1. ✔ Viscosity is independent of the surface area of liquid layers in contact

2. ✖ Viscosity of a fluid changes with temperature

3. ✖ The dimensions of viscosity is same as that of the product of pressure and time

4. ✖ The viscous force is directed opposite to the direction of motion of liquid

Question Number : 73 Question Id : 80089422528 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A wire having uniform diameter (d) and length (l) has a resistance R. Another wire having same material but having diameter 2d and length 4l, then it's resistance will be

Options :

1. ✔ R

2. ✖ R/2

3. ✖ R/4

4. ✖ 2R

Question Number : 74 Question Id : 80089422529 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In a meter bridge experiment, the ratio of the left gap resistance to right gap resistance is 2:3. The balance point from left is

Options :

1. ✔ 40 cm

2. ✖ 45 cm

3. ✖ 60 cm

4. ✖ 65 cm

Question Number : 75 Question Id : 80089422530 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A magnet when placed at right angles to the earth's horizontal magnetic induction 2×10^{-5} Wb/m^2 experiences a couple of 2×10^{-5} Nm. Then, the magnetic moment of magnet is

Options :

1. ✔ $1\ Am^2$

2. ✖ $1.5\ Am^2$

3. ✖ $5\ Am^2$

4. ✖ $7.5\ Am^2$

Chemistry

Section Id :	800894440
Section Number :	3
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	25
Number of Questions to be attempted :	25
Section Marks :	25
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Sub-Section Number :	1
Sub-Section Id :	800894506
Question Shuffling Allowed :	Yes

Question Number : 76 Question Id : 80089422531 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

When an electron drops from 4s orbital to 2s orbital in an hydrogen atom, the frequency of radiation emitted belong to which region (Rydberg constant = $1.097 \times 10^7\ m^{-1}$)

Options :

1. ✖ Ultraviolet region

2. ✔ Visible region

3. ✖ Infrared region

4. ✖ Microwave region

Question Number : 77 Question Id : 80089422532 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is true about ionic compounds?

Options :

1. ✖ Ionic compounds conduct electricity when dissolved in water

2. ✖ Ionic compounds are not soluble in water.

3. ✖ Ionic compounds are crystalline solids.

4. ✔ Ionic compounds conduct electricity when dissolved in water & Ionic compounds are crystalline solids.

Question Number : 78 Question Id : 80089422533 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Oxidation state of Fe in Fe_3O_4 is

Options :

1. ✔ 8/3

2. ✖ 3/8

3. ✖ 3/2

4. ✖ – 3/8

Question Number : 79 Question Id : 80089422534 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a sample of salt water, NaCl would be considered as?

Options :

1. ✖ Solution

2. ✔ Solute

3. ✖ Solvent

4. ✖ Solvation

Question Number : 80 Question Id : 80089422535 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

30 mL of 0.1 m Mohr's salt solution is titrated in acid medium against 0.1M $K_2Cr_2O_7$ solution taken in the burette. The volume of $K_2Cr_2O_7$ solution required at the end point after the addition of suitable indicator is

Options :

1. ✖ 30 mL

2. ✔ 5 mL

3. ✖ 10 mL

4. ✖ 15 mL

Question Number : 81 Question Id : 80089422536 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What volume of 12.6 M HCl must be added to enough water to prepare 5.00 liters of 3.00M HCl?

Options :

1. ✖ 21.0 L

2. ✖ 0.840 L

3. ✔ 1.19 L

4. ✖ 7.56 L

Question Number : 82 Question Id : 80089422537 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Choose the correct statement from given options below for the equilibrium reaction

$HClO_4 + H_2O \leftrightarrow H_3O^+ + ClO_4^-$

Options :

1. ✖ $HClO_4$ is the conjugate acid of H_2O

2. ✖ H_3O^+ is the conjugate base of H_2O

3. ✖ H_2O is the conjugate acid of H_3O^+

4. ✔ ClO_4^- is the conjugate base of $HClO_4$

Question Number : 83 Question Id : 80089422538 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Three unknown solutions are given with pH value of 6, 8 & 9.5 respectively. Which solution will contain the maximum OH^- ion?

Options :

1. ✖ Solution sample-1

2. ✖ Solution sample-2

3. ✔ Solution sample-3

4. ✖ Data are insufficient

Question Number : 84 Question Id : 80089422539 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

An example of acidic buffer solution is a mixture of

Options :

1. ✖ NH_4OH, NH_4Cl

2. ✖ HCl, NaCl

3. ✖ CH_3COOH, NH_4OH

4. ✔ CH_3COOH, CH_3COONa

Question Number : 85 Question Id : 80089422540 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A mineral is called an ore if?

Options :

1. ✖ Metal present in mineral is precious

2. ✔ Metal can be extracted profitably from mineral

3. ✖ Metal cannot be extracted

4. ✖ metal has good malleability

Question Number : 86 Question Id : 80089422541 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Concentration of sulphide ore will be done by

Options :

1. ✔ Froath floatation

2. ✖ Roasting

3. ✖ Sedimentation

4. ✖ Smelting

Question Number : 87 Question Id : 80089422542 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

One of the following will be occurred at the anode, during the electrolysis of fused NaCl.

Options :

1. ✖ Na^- gets reduced

2. ✔ Cl^- gets oxidized

3. ✖ Na^- gets oxidized

4. ✖ Na^+ gets oxidized

Question Number : 88 Question Id : 80089422543 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Electrolysis of dilute aqueous NaCl solution was carried out by passing 10 milliampere current. The time required to liberate 0.01 mol of H_2 gas at the cathode is?

Options :

1. ✖ 9.65×10^4 s

2. ✖ 28.95×10^4 s

3. ✔ 19.3×10^4 s

4. ✖ 38.6×10^4 s

Question Number : 89 Question Id : 80089422544 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Standard reduction potential value of saturated calomel electrode is

Options :

1. ✖ + 0.268

2. ✖ + 0.6994

3. ✖ + 0.0242

4. ✔ + 0.2415

Question Number : 90 Question Id : 80089422545 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In the protection of Iron structure by sacrificial anode method , the metal used as anode

Options :

1. ✖ Silver

2. ✖ Zinc

3. ✔ Magnesium

4. ✖ Lead

Question Number : 91 Question Id : 80089422546 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In electrolytic conductors, the conductance is due to

Options :

1. ✖ Free movement of electrons

2. ✖ Restricted movement of electrons

3. ✖ Restricted movement of ions

4. ✔ Free movement of ions

Question Number : 92 Question Id : 80089422547 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Choose the incorrect statement from the following options.

Options :

1. ✖ In hard water, the detergent values of soap are decreased

2. ✔ In the presence of dissolved hardness producing salts, the boiling point of water is decreased

3. ✖ The water which does not form lather with soap is called hard water

4. ✖ The hard water consists of calcium and magnesium salts in dissolved state

Question Number : 93 Question Id : 80089422548 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In high pressure boilers, scale formation can be avoided by adding

Options :

1. ✖ Na_2CO_3

2. ✔ Sodium phosphate

3. ✖ NaOH

4. ✖ Sodium meta Aluminate

Question Number : 94 Question Id : 80089422549 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The basis of reverse osmosis is

Options :

1. ✖ Osmotic pressure is greater than the hydrostatic pressure

2. ✖ Osmotic pressure is equal to the hydrostatic pressure

3. ✔ Hydrostatic pressure is greater than the osmotic pressure

4. ✖ Osmotic pressure does not exist

Question Number : 95 Question Id : 80089422550 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A thermoplastic is formed by the phenomenon of

Options :

1. ✔ Chain polymerization

2. ✖ Condensation polymerization

3. ✖ Chlorination

4. ✖ Nitration

Question Number : 96 Question Id : 80089422551 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Natural rubber is a polymer of?

Options :

1. ✖ 1, 1-Dimethylbutadiene

2. ✔ 2-Methyl-1, 3-butadiene

3. ✖ 2-Chlorobuta-1,3-diene

4. ✖ 2-Chlorobut-2-ene

Question Number : 97 Question Id : 80089422552 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Identify the correct statement from the following

Options :

1. ✖ A good fuel should undergo spontaneous combustion

2. ✖ A good fuel should have high moisture content

3. ✔ A good fuel should have high calorific value

4. ✖ A good fuel should have high content of non-combustible matter

Question Number : 98 Question Id : 80089422553 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Laboratory gas is obtained by cracking

Options :

1. ✖ Coal

2. ✖ Diesel oil

3. ✖ Petrol

4. ✔ Kerosene oil

Question Number : 99 Question Id : 80089422554 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In sewage when the concentration of decomposable organic matter is large, then

Options :

1. ✔ BOD value is high

2. ✔ COD value is high

3. ✖ BOD value is low

4. ✖ COD value is low

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 : 100 Question Id : 80089422555 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

From the following options given below, what is the major non-renewable energy usage in India ?

Options :

1. ✔ Coal

2. ✖ Petroleum and other liquids

3. ✖ Natural gas

4. ✖ Nuclear

Chemical Engineering

Section Id :	800894441
Section Number :	4
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	100
Number of Questions to be attempted :	100
Section Marks :	100
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Sub-Section Number :	1
Sub-Section Id :	800894507
Question Shuffling Allowed :	Yes

Question Number : 101 Question Id : 80089422556 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Due to which property of the material, it can be rolled or hammered into plates and sheets?

Options :

1. ✖ Elasticity

2. ✔ Malleability

3. ✖ Rollability

4. ✖ Plasticity

Question Number : 102 Question Id : 80089422557 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A measure of toughness of a material is its _____

Options :

1. ✖ Area under stress-strain diagram

2. ✔ Yield strength

3. ✖ Percentage elongation

4. ✖ Ultimate strength

Question Number : 103 Question Id : 80089422558 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Galvanizing is the process of Zinc coating generally done on _____

Options :

1. ✖ Non-metals

2. ✔ Low carbon steels

3. ✖ Non-ferrous metals

4. ✖ Stainless steel

Question Number : 104 Question Id : 80089422559 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Reactor used in the production of polyvinyl chloride (PVC) is made of _____

Options :

1. ✔ Glass lined steel

2. ✖ Aluminium

3. ✖ Tantalum

4. ✖ Lead

Question Number : 105 Question Id : 80089422560 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

_____ iron is produced, when molten pig iron is allowed to cool gradually.

Options :

1. ✔ Grey cast

2. ✖ White cast

3. ✖ Red cast

4. ✖ Wrought

Question Number : 106 Question Id : 80089422561 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Amount of energy that a material can absorb before its fracture is a measure of its _____

Options :

1. ✔ Toughness

2. ✖ Malleability

3. ✖ Resilience

4. ✖ Ductility

Question Number : 107 Question Id : 80089422562 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A metallic alloy as compared to their pure metal is

Options :

1. ✖ Having high melting point

2. ✖ Having lower hardness

3. ✔ More resistance to corrosion

4. ✖ Less resistance to corrosion

Question Number : 108 Question Id : 80089422563 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Steel will respond to hardening by heat treatment processes, only when the minimum carbon content in it is

_____ percent

Options :

1. ✖ 0.02

2. ✔ 0.2

3. ✖ 0.35

4. ✖ 0.5

Question Number : 109 Question Id : 80089422564 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The amount of Zn (atomic weight = 65) required to form 224 c.c. of H_2 at N.T.P. on treatment with dilute H_2SO_4

will be _____ gm.

Options :

1. ✖ 0.065

2. ✔ 0.65

3. ✖ 6.5

4. ✖ 65

Question Number : 110 Question Id : 80089422565 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In a coal fired boiler, hourly consumption of coal is 1000 kg. The ash content in the coal is 3%. Calculate the quantity of ash formed per day. Boiler operates 24 hr/day.

Options :

1. ✖ 50 kg

2. ✖ 300 kg

3. ✖ 33 kg

4. ✔ 720 kg

Question Number : 111 Question Id : 80089422566 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Pure carbon is completely burnt in oxygen. The flue gas analysis is 70% CO_2, 20% CO, and 10% O_2. The percentage excess of oxygen used is _____

Options :

1. ✖ 20

2. ✖ 12.5

3. ✔ 0

4. ✖ 10

Question Number : 112 Question Id : 80089422567 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The molar composition of a gas is 10% H_2, 10% O_2, 30% CO_2 and balance H_2O. If 50% H_2O condenses, the final mole percent of H_2 in the gas on a dry basis will be

Options :

1. ✖ 10.0

2. ✖ 5.0

3. ✖ 18.18

4. ✔ 20.0

Question Number : 113 Question Id : 80089422568 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Pick out the wrong statement about the recycle stream in a process

Options :

1. ✖ Recycling in a process stream helps in utilizing the valuable reactants to the maximum with minimum loss of reactants

2. ✖

The ratio of the quantity of a reactant present in the reactor feed of a recycling operation to the quantity of the same reactant entering the process as fresh feed is called combined feed ratio

3. ✔ Recycling in a process does not help in getting higher extent of reaction

Recycling is exemplified by refluxing back a part of the distillate to the distillation column to maintain the

4. ✖ quantity of liquid within the column

Question Number : 114 Question Id : 80089422569 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Enthalpy of formation of NH_3 is - 46 kJ/kg mole. The enthalpy change for the gaseous reaction, $2NH_3 \rightarrow N_2 + 3H_2$,

is equal to _____ kJ/kg. mole.

Options :

1. ✖ 46

2. ✔ 92

3. ✖ -23

4. ✖ -92

Question Number : 115 Question Id : 80089422570 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Pure A in gas phase enters a reactor. 50% of this A is converted to B, through the reaction A → 3B.

Mole fraction of A in the exit stream is _____

Options :

1. ✖ $\frac{1}{2}$

2. ✖ $\frac{1}{3}$

3. ✔ $\frac{1}{4}$

4. ✖ $\frac{1}{7}$

Question Number : 116 Question Id : 80089422571 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Heat capacity of air can be approximately expressed as, $C_p = 26.693 + 7.365 \times 10^{-3} T$, where, C_p is in J/mole.K and T is in K. The heat given off by 1 mole of air when cooled at atmospheric pressure from 500°C to - 100°C is

Options :

1. ✖ 10.73 kJ

2. ✖ 16.15 kJ

3. ✔ 18.11 kJ

4. ✖ 18.33 kJ

Question Number : 117 Question Id : 80089422572 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The form of sulphur which is the most stable at ordinary temperature is _____

Options :

1. ✖ Monoclinic

2. ✖ Plastic

3. ✔ Rhombic

4. ✖ Flowers of Sulphur

Question Number : 118 Question Id : 80089422573 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Vacuum maintained in the vacuum distillation tower of the crude distillation plant is about _____ mm Hg (absolute)

Options :

1. ✖ 5 – 10

2. ✔ 30 – 80

3. ✖ 150 -250

4. ✖ 350 – 400

Question Number : 119 Question Id : 80089422574 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In the petrochemical industry, thermal cracking or steam cracking process is used to produce mainly

Options :

1. ✖ Ethane

2. ✔ Ethylene

3. ✖ Benzene

4. ✖ Styrene

Question Number : 120 Question Id : 80089422575 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Low temperature carbonization of coal takes place at _____ °C.

Options :

1. ✖ 300

2. ✖ 1100

3. ✔ 700

4. ✖ 900

Question Number : 121 Question Id : 80089422576 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is a high grade pulp?

Options :

1. ✖ Rag pulp

2. ✖ Mechanical pulp

3. ✔ Sulphate pulp

4. ✖ Sulphite pulp

Question Number : 122 Question Id : 80089422577 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Cellulose content of bamboo and ideal fibrous raw material for the manufacture of paper is _____ percent

Options :

1. ✖ 10

2. ✔ 50

3. ✖ 80

4. ✖ 95

Question Number : 123 Question Id : 80089422578 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Fats as compared to oils have _____

Options :

1. ✖ More unsaturated glycerides of fatty acid

2. ✔ Less unsaturated glycerides of fatty acids

3. ✖ Lower melting point

4. ✖ Higher reactivity to oxidation

Question Number : 124 Question Id : 80089422579 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Commercially ethylene is produced from naphtha by _____

Options :

1. ✖ Catalytic cracking

2. ✖ Catalytic dehydrogenation

3. ✖ Pyrolysis

4. ✔ Hydrocracking

Question Number : 125 Question Id : 80089422580 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Separation of fresh water from sea water can be done by the _____ operation.

Options :

1. ✔ Osmosis

2. ✖ Reverse Osmosis

3. ✖ Absorption

4. ✖ Adsorption

Question Number : 126 Question Id : 80089422581 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Dechlorination of treated water is necessary to _____

Options :

1. ✖ Remove residual turbidity

2. ✖ Reduce the bacterial load on filter

3. ✖ Control taste and odour

4. ✔ Remove chlorinous taste

Question Number : 127 Question Id : 80089422582 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Raw materials required for the manufacture of soda-ash using Solvay's process are _____

Options :

1. ✔ Salt, Lime stone, Coke

2. ✖ Ammonia, Lime stone, Coke

3. ✖ Salt, caustic soda, Coke

4. ✖ Ammonia, Lime stone, Salt

Question Number : 128 Question Id : 80089422583 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The liquefaction of gases in general is favored at

Options :

1. ✖ Low temperature and low pressure

2. ✔ Low temperature and high pressure

3. ✖ High temperature and high pressure

4. ✖ High temperature and low pressure

Question Number : 129 Question Id : 80089422584 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The Raw materials for the manufacture of nitric acid are _____

Options :

1. ✖ Hydrogen peroxide, air and water

2. ✖ Anhydrous ammonia and air

3. ✔ Anhydrous ammonia, air and water

4. ✖ Wet ammonia, air and water

Question Number : 130 Question Id : 80089422585 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In Haber's process, the Catalytic ammonia synthesis reaction is _____

Options :

1. ✖ Endothermic

2. ✔ Exothermic

3. ✖ Irreversible

4. ✖ Reversible

Question Number : 131 Question Id : 80089422586 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Portland cement mainly contains _____

Options :

1. ✔ CaO, SiO_2, Al_2O_3

2. ✖ MgO, SiO_2, K_2O

3. ✖ Al_2O_3, MgO, Fe_2O_3

4. ✖ CaO, MgO, K_2O

Question Number : 132 Question Id : 80089422587 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Urea is a better fertilizer than ammonium sulphate, because

Options :

1. ✖ It is cheaper

2. ✔ Nitrogen content is higher

3. ✖ It is not poisonous

4. ✖ It is easy to manufacture

Question Number : 133 Question Id : 80089422588 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In case of unsteady fluid flow, conditions & flow pattern change with the passage of time at a position in a flow situation. Which of the following is an example of unsteady flow?

Options :

1. ✖ Discharge of water by a centrifugal pump being run at a constant rpm

2. ✖ Water discharge from a vertical vessel in which constant level is maintained

3. ✖ Low velocity flow of a highly viscous liquid through a hydraulically smooth pipe

4. ✔ Water flow in the suction and discharge pipe of a reciprocating pump

Question Number : 134 Question Id : 80089422589 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Human blood shows the behavior of _____

Options :

1. ✖ Bingham plastics

2. ✔ Pseudo plastics

3. ✖ Newtonian fluids

4. ✖ Dilatant fluids

Question Number : 135 Question Id : 80089422590 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Pressure drop in packed bed for turbulent flow is given by the _____ equation

Options :

1. ✖ Kozeny-Carman

2. ✔ Blake-Plummer

3. ✖ Leva's

4. ✖ Hagen-Poiseuille's

Question Number : 136 Question Id : 80089422591 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Pressure drop for the Laminar fluid flow through a circular pipe is given by _____

Options :

1. ✖ $16/N_{Re}$

2. ✖ $fL/DV^2/2g_c$

3. ✖ $4fL/D\ \rho\ V^2/D^2$

4. ✔ $32\mu LV/D^2$

Question Number : 137 Question Id : 80089422592 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Function of air vessel provided in a reciprocating pump is to

Options :

1. ✔ Reduce discharge fluctuation

2. ✖ Reduce the danger of cavitation

3. ✖ Avoid the necessity of priming

4. ✖ Increase the pump efficiency

Question Number : 138 Question Id : 80089422593 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following is an example of reciprocating pump?

Options :

1. ✖ Gear pump

2. ✖ Screw pump

3. ✔ Diaphragm pump

4. ✖ Lobe pump

Question Number : 139 Question Id : 80089422594 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In continuous fluidization

Options :

1. ✔ Solids are completely entrained

2. ✖ The pressure drop is less than that for batch fluidization

3. ✖ There is no entrainment of solids

4. ✖ Velocity of the fluid is very small

Question Number : 140 Question Id : 80089422595 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Fluidization occurs when drag force by the upward moving fluid is equal to the

Options :

1. ✖ Pressure drop across the bed

2. ✖ Volume of the bed

3. ✔ Weight of the particle

4. ✖ Weight of the fluid

Question Number : 141 Question Id : 80089422596 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

"The rate of heat loss of a body is directly proportional to the over all temperature difference ", statement

corresponding to

Options :

1. ✔ Newton's law of cooling

2. ✖ Stefan's Boltzmann law

3. ✖ Fourier's law of heat conduction

4. ✖ Plank's law

Question Number : 142 Question Id : 80089422597 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is the most widely used heat insulating material for pipelines carrying steam?

Options :

1. ✖ Tar dolomite bricks followed by asbestos

2. ✖ Fireclay refractory followed by aluminium sheet

3. ✖ Cotton followed by aluminium foil

4. ✔ 85% magnesia cement and glass wool

Question Number : 143 Question Id : 80089422598 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Critical value of the _____ number governs the transition from laminar to turbulent flow in free convection heat transfer

Options :

1. ✖ Grashoff

2. ✖ Reynolds

3. ✖ Grashoff & Reynolds

4. ✔ Prandtl & Grashoff

Question Number : 144 Question Id : 80089422599 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Suggest a suitable equation for the calculation of heat transfer coefficient for laminar fluid flow inside the circular tube?

Options :

1. ✖ $Nu = 0.023\ (Re)^{-0.2}(Pr)^{-2/3}(\mu_b/\mu_w)^{-0.14}$

2. ✖ $Nu = 0.023\ (Re)^{0.8}(Pr)^{0.4}$

3. ✔ $Nu = 1.86\ [Re\ Pr\ d/L]^{1/3}(\mu_b/\mu_w)^{-0.14}$

4. ✖ $Nu = 0.027\ (Re)^{0.8}(Pr)^{0.33}(\mu_b/\mu_w)^{0.14}$

Question Number : 145 Question Id : 80089422600 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Saturated steam at 1.8 bar pressure and 118 ^{0} C condenses on a 38 mm outside diameter vertical tube which is 1 m long. The tube wall is maintained at 110 ^{0} C, Heat transfer coefficient for condensing steam is 7073 W/m^{2}K & latent heat of condensation is 2239 KJ/kg. Then the rate of steam condensation will be _____

Options :

1. ✖ 5.017×10^{-3} kg/sec

2. ✔ 3.007×10^{-3} kg/sec

3. ✖ 2.017×10^{-3} kg/sec

4. ✖ 1.007×10^{-3} kg/sec

Question Number : 146 Question Id : 80089422601 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The film co-efficient between condensing vapor and metal wall increases with

Options :

1. ✔ Increasing temperature of the vapor

2. ✖ Decreasing temperature of the vapor

3. ✖ Increasing viscosity of the film of condensate

4. ✖ Increasing temperature drop

Question Number : 147 Question Id : 80089422602 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

View factor is important in heat transfer by

Options :

1. ✖ Steady state conduction

2. ✖ Free convection

3. ✖ Forced convection

4. ✔ Radiation

Question Number : 148 Question Id : 80089422603 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Two parallel gray planes are very large maintaining their surfaces T_1= 866.5 K and T_2= 588 K, have their emmissivities ε_1=0.8 and ε_2=0. Use $\sigma = 5.676 \times 10^{-8}$ W/m^2 k^4. Then what will be the net radiation exchange from 1 to 2.

Options :

1. ✔ 15912 W / m^2

2. ✖ 14010 W /m^2

3. ✖ 16010 W / m^2

4. ✖ 13085 W /m^2

Question Number : 149 Question Id : 80089422604 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In case of parallel flow heat exchanger, the lowest temperature theoretically attainable by the hot fluid is _____

the outlet temperature of the cold fluid

Options :

1. ✔ Equal to

2. ✖ More than

3. ✖ Less than

4. ✖ Either more or less than (depending upon the fluid)

Question Number : 150 Question Id : 80089422605 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Number of kgs of liquid evaporated per kg of steam in an evaporator is known as

Options :

1. ✖ Capacity of an evaporator

2. ✖ Rate of evaporation

3. ✖ Rate of steam consumption in the evaporator

4. ✔ Economy of an evaporator

Question Number : 151 Question Id : 80089422606 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

To get a fine talc powder from its granules, the equipment used is

Options :

1. ✖ Roller crusher

2. ✖ Jaw crusher

3. ✔ Ball mill

4. ✖ Gyratory crusher

Question Number : 152 Question Id : 80089422607 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

With increase in the capacity of screens, the screen effectiveness

Options :

1. ✖ Remains unchanged

2. ✖ Increases

3. ✔ Decreases

4. ✖ Decreases exponentially

Question Number : 153 Question Id : 80089422608 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For mixing materials like thick ointments, tooth paste and other stiff or viscous masses, the most commonly used equipment is

Options :

1. ✖ Propellers

2. ✖ Flat blade turbines

3. ✖ Silverson mixture

4. ✔ Kneading mixture

Question Number : 154 Question Id : 80089422609 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A fluid energy mill is used for _____

Options :

1. ✖ Cutting

2. ✖ Grinding

3. ✔ Ultra grinding

4. ✖ Crushing

Question Number : 155 Question Id : 80089422610 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A _____ employs a set of screen across a flow channel for the separation of dirt/rust from a flowing liquid stream

Options :

1. ✖ Thickener

2. ✖ Classifier

3. ✔ Strainer

4. ✖ Clarifier

Question Number : 156 Question Id : 80089422611 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which is the most suitable conveyor for transportation of sticky materials?

Options :

1. ✔ Screw conveyor

2. ✖ Apron conveyor

3. ✖ Belt conveyor

4. ✖ Pneumatic conveyor

Question Number : 157 Question Id : 80089422612 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is the most suitable filter for separation of abrasive solids suspended in a corrosive liquid?

Options :

1. ✖ Sand bed filter

2. ✖ Plate and frame filter press

3. ✔ Vacuum filter

4. ✖ Batch basket centrifuge

Question Number : 158 Question Id : 80089422613 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In filtration, the use of 'filter aid' helps in

Options :

1. ✖ Reducing the filtration pressure

2. ✖ Accelerating the rate of filtration

3. ✔ Deplugging the filter medium

4. ✖ Enhancing the cake porosity in case of a dense impermeable cake

Question Number : 159 Question Id : 80089422614 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

At a given temperature, the volume of a gas dissolved in a solvent _____ with increase in pressure

Options :

1. ✖ Increases

2. ✖ Decreases

3. ✔ Remains unchanged

4. ✖ May increase or decrease depending on gas

Question Number : 160 Question Id : 80089422615 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The process of heating water under atmospheric pressure is known as _____

Options :

1. ✖ Isochoric process

2. ✔ Isobaric process

3. ✖ Adiabatic process

4. ✖ Isothermal process

Question Number : 161 Question Id : 80089422616 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Steps involved in the Carnot cycle are

Options :

1. ✔ Two isothermal and two isentropic

2. ✖ Two isobaric and two isothermals

3. ✖ Two isochoric and two isobaric

4. ✖ Two isothermals and two isochoric

Question Number : 162 Question Id : 80089422617 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A refrigeration cycle is a reversed heat engine. Which of the following has the maximum value of the coefficient of performance (COP) for a given refrigeration effect?

Options :

1. ✖ Vapor compression cycle using expansion valve

2. ✔ Carnot refrigeration cycle

3. ✖ Air refrigeration cycle

4. ✖ Vapor compression cycle using expansion engine.

Question Number : 163 Question Id : 80089422618 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

One ton of refrigeration is defined as a rate of heat absorption of _____

Options :

1. ✖ 1200 Btu/hr

2. ✔ 12000 Btu/hr

3. ✖ 200 Btu/hr

4. ✖ 7.2×10^6 Btu/hr

Question Number : 164 Question Id : 80089422619 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The standard Gibbs free energy change of a reaction depends on the equilibrium _____

Options :

1. ✖ Pressure

2. ✔ Temperature

3. ✖ Composition

4. ✖ Conversion

Question Number : 165 Question Id : 80089422620 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For the reaction, $A + B \rightarrow C + D$. The overall order of the reaction is 2, then the

Options :

1. ✔ Reaction is elementary with a molecularity of 2

2. ✖ Reaction may not be elementary but molecularity is 2

3. ✖ Reaction is elementary but molecularity is 4

4. ✖ Reaction may not be elementary, but the molecularity is 4.

Question Number : 166 Question Id : 80089422621 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The first order gas phase reaction $A \rightarrow 2B$ is conducted isothermally in batch mode. The rate of change of conversion with time is given by

Options :

1. ✖ $dX_A/dt = K_1 (1-X_A)^2(1+2X_A)$

2. ✖ $dX_A/dt = K_1 (1-X_A)(1+0.5X_A)$

3. ✔ $dX_A/dt = K_1(1-X_A)$

4. ✖ $dX_A/dt = K_1 (1-X_A) / (1+X_A)$

Question Number : 167 Question Id : 80089422622 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For the rate expression $-dC_A/dt = K C_A^{0.7}. C_B^{0.3}$, the overall order of the reaction is _____

Options :

1. ✖ 0.7

2. ✖ 0.3

3. ✖ 0.4

4. ✔ 1.0

Question Number : 168 Question Id : 80089422623 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In a first order reaction, the time required to reduce the concentration of reactant from 1 mole/liter to 0.5 mole/liter will be _____ that required to reduce it from 10 moles/liter to 5 moles/liter in the same volume

Options :

1. ✖ More than

2. ✖ Less than

3. ✔ Same as

4. ✖ Data insufficient; can not be predicted

Question Number : 169 Question Id : 80089422624 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The mass transfer co-efficient for a solid sphere of radius '*a*' dissolving in a large volume of quiescent liquid, in which '*D*' is the diffusivity of solute, is _____

Options :

1. ✖ D/a

2. ✖ D/2a

3. ✖ Proportional to $\sqrt{D}$

4. ✔ Dependent on the Reynolds number

Question Number : 170 Question Id : 80089422625 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The equation, $N_A = (D_{AB} \cdot P_t / RTZ)(y_1 - y_2)$ is for

Options :

1. ✔ Steady state equimolar counter diffusion

2. ✖ Fick's first law of diffusion

3. ✖ Steady state diffusion for stagnant case

4. ✖ Liquid M.T.C. by penetration theory

Question Number : 171 Question Id : 80089422626 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The type of tray which gives greatest flexibility in distillation column is _____

Options :

1. ✖ Sieve tray

2. ✖ bubble cap tray

3. ✔ valve tray

4. ✖ linde tray

Question Number : 172 Question Id : 80089422627 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Flash distillation is

Options :

1. ✖ Same as differential distillation

2. ✔ Used for multi-component systems like crude refining

3. ✖ Same as simple distillation

4. ✖ Most useful for handling binary systems

Question Number : 173 Question Id : 80089422628 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Alcohol is dehydrated using _____ distillation

Options :

1. ✖ Extractive

2. ✔ Azeotrope

3. ✖ Steam

4. ✖ Molecular

Question Number : 174 Question Id : 80089422629 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Pick out the wrong statement from the following

Options :

1. ✖ Co-current absorbers are usually used, when the gas to be dissolved in the liquid is a pure substance

2. ✖ In case of gas absorption, HETP is equal to HTU, when both the operating line & the equilibrium lines are parallel

3. ✖ Hatta number is important in case of gas absorption with chemical reaction

4. ✔ In actual practice, absorption is an endothermic process, while stripping is an exothermic process

Question Number : 175 Question Id : 80089422630 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In an experimental test run, the rate of drying was found to be 0.5×10^{-3} kg/m^{2}s when the moisture content reduced from 0.4 to 0.1 on dry basis. A tray dryer is used to dry 100 kg (dry basis) of the same material under identified conditions the surface area of the material is 0.04 m^2/kg of dry solids. The time required (in seconds) to reduce the moisture content of the solids from 0.8 to 0.2 (dry Basis) is

Options :

1. ✖ 2000

2. ✖ 4000

3. ✔ 5000

4. ✖ 6000

Question Number : 176 Question Id : 80089422631 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For a ternary mixture, in which equilateral triangular co-ordinate is used in leaching and extraction, a _____

of the equilateral triangular co-ordinates

Options :

1. ✖ Binary mixture is represented by the apex

2. ✖ Binary mixture is represented by any point inside

3. ✖ Ternary mixture is represented by the sides

4. ✔ Pure component is represented by the apex

Question Number : 177 Question Id : 80089422632 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A solid is being dried in the linear drying rate regime from moisture content X_o to X_F. The drying rate is zero at

$X = 0$ and the critical moisture content is the same as the initial moisture X_o. The drying time for $M = (L_s/AR_c)$

is (where, L = total mass of dry solid, A = total surface area for drying, R_c = Constant maximum drying rate per unit

area X = moisture content (in mass of water/mass of dry solids)

Options :

1. ✖ $M(X_o - X_F)$

2. ✖

$M(X_o/X_F)$

3. ✖ $M \ln(X_o/X_F)$

4. ✔ $MX_o \ln(X_o/X_F)$

Question Number : 178 Question Id : 80089422633 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A non-linear system will have _____ steady state values

Options :

1. ✖ One

2. ✔ More than one

3. ✖ Two

4. ✖ Three

Question Number : 179 Question Id : 80089422634 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is an undesirable dynamic characteristic of instruments?

Options :

1. ✖ Sensitivity

2. ✔ Measuring lag

3. ✖ Drift

4. ✖ Reproducibility

Question Number : 180 Question Id : 80089422635 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The suitable instrument for measuring the temperature of a red hot furnace is _____

Options :

1. ✖ Vapor pressure thermometer

2. ✖ Mercury in glass thermometer

3. ✔ Optical pyrometer

4. ✖ Bimetallic stemmed thermometer

Question Number : 181 Question Id : 80089422636 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following filled system expansion thermometers has the lowest positive temperature measurement capability?

Options :

1. ✖ Mercury in glass thermometer

2. ✔ Alcohol in glass thermometer

3. ✖ Fused metal (Na or K) in steel thermometer

4. ✖ Nitrogen in steel thermometer

Question Number : 182 Question Id : 80089422637 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is not a pressure sensing element?

Options :

1. ✖ Bellows

2. ✖ Bourdon tube

3. ✖ Manometer

4. ✔ Orifice plate

Question Number : 183 Question Id : 80089422638 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Liquid column manometers are used for measuring the pressure _____ kgf/cm^2

Options :

1. ✖ > 2 (gage)

2. ✔ < 3 (gage)

3. ✖ < 10 (gage)

4. ✖ < atmospheric

Question Number : 184 Question Id : 80089422639 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In automatic process control, the most frequently used final control element is a pneumatic control valve.

It consists the following basic components

Options :

1. ✖ Pump, compressor, positioner

2. ✖ Pump, bonnet valve, packing

3. ✔ Compressor, Diaphragm, motor

4. ✖ Check valve, pump, compressor

Question Number : 185 Question Id : 80089422640 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following most commonly used controllers for controlling temperature

in the autoclaves, distillation columns?

Options :

1. ✖ P- Controller

2. ✖ P-I Controller

3. ✖ P-D Controller

4. ✔ PID Controller

Question Number : 186 Question Id : 80089422641 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The transfer function of a PI controller is

Options :

1. ✖ $\frac{P(s)}{\epsilon(s)} = K_c$

2. ✔ $\frac{P(s)}{\epsilon(s)} = K_c(1 + \frac{1}{\tau_{Is}})$

3. ✖ $\frac{P(s)}{\epsilon(s)} = K_c(1 + \tau_d s)$

4. ✖ $\frac{P(s)}{\epsilon(s)} = K_c(1 + \tau_d s + \frac{1}{\tau_{Is}})$

Question Number : 187 Question Id : 80089422642 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Presence of non-biodegradable substances, like alkyl benzene sulphonate (ABS) from the detergents in polluted water stream causes

Options :

1. ✖ Fire hazards

2. ✖ Explosion hazards

3. ✔ Persistent foam

4. ✖ Depletion of dissolved oxygen

Question Number : 188 Question Id : 80089422643 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The permissible color for domestic water supply is _____ ppm

Options :

1. ✖ 1

2. ✔ 20

3. ✖ 100

4. ✖ 1000

Question Number : 189 Question Id : 80089422644 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Presence of nitrogen in high concentration in contaminated air reduces partial pressure of oxygen in lungs, thereby causing asphyxia (suffocation) leading to death from oxygen deficiency. Concentration of N_2 in contaminated air at which it acts as a natural asphyxiate is $\geq$ _____ percent

Options :

1. ✔ 84

2. ✖ 88

3. ✖ 80

4. ✖ 92

Question Number : 190 Question Id : 80089422645 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Polluted water having low BOD are most economically treated in

Options :

1. ✖ Sedimentation tanks

2. ✔ Oxidation ponds

3. ✖ sludge digester

4. ✖ clarifier

Question Number : 191 Question Id : 80089422646 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Global warming can be controlled by

Options :

1. ✖ Increasing solid waste

2. ✖ Reducing water wastage

3. ✖ Burning human-generated waste

4. ✔ Reducing fossil fuel consumption

Question Number : 192 Question Id : 80089422647 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following fine dust removal equipments is the most efficient?

Options :

1. ✖ Bag filter

2. ✖ Scrubber

3. ✔ Electrostatic precipitator

4. ✖ Cyclone separator

Question Number : 193 Question Id : 80089422648 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

'Wobbe index' is a characteristic of _____

Options :

1. ✖ Solid fuels

2. ✔ Gaseous fuels

3. ✖ Liquid fuels

4. ✖ Fat coals

Question Number : 194 Question Id : 80089422649 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The main drawback of supplying more excess air in the combustion of fuel is the

Options :

1. ✖ Excessive power requirement of air blower

2. ✔ Enhanced sensible heat loss in the flue gas

3. ✖ Intermittent and uncontrolled combustion of the fuel

4. ✖ High exit flue gas temperature from the furnace

Question Number : 195 Question Id : 80089422650 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

L D converter gas (Produced in the steel plant) comprises mainly

Options :

1. ✔ CO and CO_2

2. ✖ CO_2 and H_2

3. ✖ CO_2 and O_2

4. ✖ CO and O_2

Question Number : 196 Question Id : 80089422651 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which property of refractories is most important for top section of blast furnace is

Options :

1. ✔ resistance to abrasion

2. ✖ resistance to slag penetration

3. ✖ stability of volume at high temperature

4. ✖ resistance to corrosion by slag

Question Number : 197 Question Id : 80089422652 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Tides are generated primarily by

Options :

1. ✔ Gravitational attraction between the earth and moon

2. ✖ Interaction of winds with the surface of oceans

3. ✖ Absorption of solar radiation in the atmosphere

4. ✖ Ratation of the earth about its axis and its motion around the sun

Question Number : 198 Question Id : 80089422653 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Wind energy transferred to the large sea surface is stored in waves as

Options :

1. ✖ Chemical energy

2. ✖ Thermal energy

3. ✖ Electrical energy

4. ✔ Mechanical Energy

Question Number : 199 Question Id : 80089422654 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following is a substrate for bio gas production?

Options :

1. ✔ Municipal solid waste

2. ✖ E-waste

3. ✖ Metallic waste

4. ✖ Gaseous effluents

Question Number : 200 Question Id : 80089422655 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The fuel used in nuclear reactor is _____

Options :

1. ✖ Graphite

2. ✖ Heavy water

3. ✖ Cadmium

4. ✔ Uranium