

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 20th May 2023 Shift1 SET1
Subject Name :	Chemical Engineering
Creation Date :	2023-05-20 13:03:29
Duration :	180
Total Marks :	200
Display Marks:	No
Share Answer Key With Delivery Engine :	Yes
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?	Yes
Change Font Color :	No
Change Background Color :	No
Change Theme :	No

Help Button :	No
Show Reports :	No
Show Progress Bar :	No

Chemical Engineering

Group Number :	1
Group Id :	15920724
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
Examiner permission :	Cant View
Show Progress Bar? :	No

Mathematics

Section Id :	15920790
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
Maximum Instruction Time :	0

Sub-Section Number : 1
Sub-Section Id : 159207111
Question Shuffling Allowed : Yes
Is Section Default? : null

Question Number : 1 Question Id : 1592074616 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Let $A = \begin{bmatrix} 3 & 1 \\ -1 & 2 \end{bmatrix}$. If $A^2 = \alpha A + \beta I$, where I is the 2×2 identity matrix, then $(\alpha, \beta) =$

Options :

1. ✘ (5, 7)

2. ✘ (-5, -7)

3. ✘ (-5, 7)

4. ✔ (5, -7)

Question Number : 2 Question Id : 1592074617 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

If $(a + b + c) = 5$, then

$$\det \begin{bmatrix} a-b-c & 2b & 2c \\ 2a & b-c-a & 2c \\ 2a & 2b & c-a-b \end{bmatrix} =$$

Options :

1. ✘ 5

2. ✘ 25

3. ✔ 125

4. ✘ 625

Question Number : 3 Question Id : 1592074618 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

$$\text{If } \begin{bmatrix} 4 & 3 \\ 9 & 7 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 18 \\ 41 \end{bmatrix}, \text{ then } 12x + 10y =$$

Options :

1. ✘ 58

2. ✔ 56

3. ✖ 54

4. ✖ 52

Question Number : 4 Question Id : 1592074619 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

If $\log_{16} x + \log_4 x + \log_2 x = 7$, then $x =$

Options :

1. ✔ 16

2. ✖ 32

3. ✖ 64

4. ✖ 128

Question Number : 5 Question Id : 1592074620 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

If $\frac{2x^2 - 6x + 5}{x^3 - 6x^2 + 11x - 6} = \frac{A}{x-1} + \frac{B}{x-2} + \frac{C}{x-3}$, then $10A + B + 2C =$

Options :

1. ✘ 5

2. ✘ 7

3. ✔ 9

4. ✘ 11

Question Number : 6 Question Id : 1592074621 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

If $\log_x (3x^2 + 10x) = 3$, then $x =$

Options :

1. ✘ 3

2. ✔ 5

3. ✘ 7

4. ✘ 9

Question Number : 7 Question Id : 1592074622 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The value of $\sin^2 45^\circ + \sin^2 135^\circ + \sin^2 225^\circ + \sin^2 315^\circ$ is

Options :

1. ✘ 1

2. ✔ 2

3. ✘ 0

4. ✘ 4

Question Number : 8 Question Id : 1592074623 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

In a $\triangle ABC$, if $a = 3$, $b = 4$ and $\sin A = \frac{3}{4}$, then the angle B =

Options :

1. ✘ 45°

2. ✘ 60°

3. ✓ 90°

4. ✗ 70°

Question Number : 9 Question Id : 1592074624 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

$$\sin^2 36^\circ - \sin^2 18^\circ =$$

Options :

1. ✗ $\frac{1}{2}$

2. ✓ $\frac{1}{4}$

3. ✗ $\frac{1}{8}$

4. ✗ 1

Question Number : 10 Question Id : 1592074625 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The period of the function $\cos\left(\frac{5}{3}\right)\sin\left(\frac{2x}{3}\right) + \sin\left(\frac{5}{3}\right)\cos\left(\frac{2x}{3}\right)$ is

Options :

1. ✘ π

2. ✘ 2π

3. ✔ 3π

4. ✘ $\frac{3\pi}{2}$

Question Number : 11 Question Id : 1592074626 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

If $\cosh x = \frac{5}{4}$, then $\coth 2x =$

Options :

1. ✔ $\frac{17}{15}$

2. ✘ $\frac{5}{3}$

3. ✘ $\frac{15}{17}$

4. ✘ $\frac{3}{5}$

Question Number : 12 Question Id : 1592074627 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

The modulus of the complex number $\frac{2+i}{3-i}$ is

Options :

1. ✘ $\frac{1}{\sqrt{3}}$

2. ✘ 1

3. ✘ $\sqrt{2}$

4. ✔ $\frac{1}{\sqrt{2}}$

Question Number : 13 Question Id : 1592074628 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

If the sides of a triangle are 13, 7 and 8, then the greatest angle of the triangle is

Options :

1. ✘ $\frac{\pi}{3}$

2. ✘ $\frac{\pi}{2}$

3. ✔ $\frac{2\pi}{3}$

4. ✘ $\frac{3\pi}{2}$

Question Number : 14 Question Id : 1592074629 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

If the angles of a triangle are in the ratio of 1: 4: 5 , then the ratio of the greatest side to the smallest side is

Options :

1. ✓ $4:\sqrt{5} - 1$

2. ✗ $5:4$

3. ✗ $\sqrt{5}-1:4$

4. ✗ $4:\sqrt{5}$

Question Number : 15 Question Id : 1592074630 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Number of tangents drawn at a point of the circle is

Options :

1. ✓ One

2. ✗ Two

3. ✗ Three

4. ✗ Many

Question Number : 16 Question Id : 1592074631 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

The minimum value of $f(x) = |x - 2| + |x + 2|$ is

Options :

1. ✘ 0

2. ✘ 2

3. ✔ 4

4. ✘ 8

Question Number : 17 Question Id : 1592074632 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

The eccentricity of ellipse $\frac{x^2}{16} + \frac{y^2}{4} = 1$ is

Options :

1. ✘ $2\sqrt{3}$

2. ✘ $\sqrt{2}$

3. ✔

$$\frac{\sqrt{3}}{2}$$

4. ✘ $\sqrt{3}$

Question Number : 18 Question Id : 1592074633 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

$$\lim_{x \rightarrow \infty} \left(1 + \frac{2}{x}\right)^x =$$

Options :

1. ✘ e

2. ✔ e^2

3. ✘ e^3

4. ✘ e^4

Question Number : 19 Question Id : 1592074634 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

$$\frac{d}{dx}(\sqrt{\sin \sqrt{x}}) =$$

Options :

1. ✘ $\frac{1 \sin \sqrt{x}}{4 \sqrt{x}}$

2. ✘ $\frac{1 \cos \sqrt{x}}{6 \sqrt{x}}$

3. ✔ $\frac{1 \cos \sqrt{x}}{4 \sqrt{x} \sqrt{\sin \sqrt{x}}}$

4. ✘ $\frac{1 \cos \sqrt{x}}{2 \sqrt{\sin \sqrt{x}}}$

Question Number : 20 Question Id : 1592074635 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

If $x = 2\cos t - \cos 2t$, $y = 2\sin t - \sin 2t$, then $\frac{dy}{dx}$ at $t = \frac{\pi}{6}$ is

Options :

1. ✘ 0

2. ✔ 1

3. ✘ $\sqrt{3}$

4. ✘ $\frac{1}{\sqrt{3}}$

Question Number : 21 Question Id : 1592074636 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

If $y = \cos(x + y)$, then $\frac{dy}{dx} =$

Options :

1. ✘ $\frac{1 - \sin(x + y)}{\cos x + \cos y}$

2. ✘ $\frac{1 + \sin(x + y)}{\cos x - \cos y}$

3. ✘ $\frac{\cos(x + y)}{1 + \sin(x + y)}$

4. ✔ $\frac{-\sin(x + y)}{1 + \sin(x + y)}$

Question Number : 22 Question Id : 1592074637 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The equation of tangent to the curve $xy = 16$ at P (4, 4) is

Options :

1. ✘ $x + y = 2$

2. ✘ $x + y = 4$

3. ✔ $x + y = 8$

4. ✘ $x + y = 16$

Question Number : 23 Question Id : 1592074638 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The maximum value of $f(x) = \left(\frac{1}{x}\right)^x$ is

Options :

1. ✔ $e^{1/e}$

2. ✘ $\left(\frac{1}{e}\right)^e$

3. ✘ $\left(\frac{1}{e}\right)^{\frac{1}{e}}$

4. ✘ e^e

Question Number : 24 Question Id : 1592074639 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

If $u(x, y, z) = \log(x^3 + y^3 + z^3 - 3xyz)$, then $\frac{\partial u}{\partial x} + \frac{\partial u}{\partial y} + \frac{\partial u}{\partial z} =$

Options :

1. ✘ $\frac{1}{x+y+z}$

2. ✘ $\frac{9}{x+y+z}$

3. ✘ $\frac{6}{x+y+z}$

4. ✔ $\frac{3}{x+y+z}$

Question Number : 25 Question Id : 1592074640 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

$$\text{If } u(x, y) = \log\left(\frac{x^4 + y^4}{x + y}\right), \text{ then } x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} =$$

Options :

1. ✘ 4

2. ✔ 3

3. ✘ 2

4. ✘ 1

Question Number : 26 Question Id : 1592074641 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

$$\int \frac{\sin(\tan^{-1} x)}{1 + x^2} dx =$$

Options :

1. ✔ $-\cos(\tan^{-1} x) + c$

2. ✘ $\cos(\tan^{-1} x) + c$

3. ✘ $\sin(\tan^{-1}x) + c$

4. ✘ $-\sin(\tan^{-1}x) + c$

Question Number : 27 Question Id : 1592074642 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

$$\int \frac{1}{e^{2x} + e^x} dx$$

Options :

1. ✘ $\log(e^x + 1) - e^{-x} + c$

2. ✘ $\log\left(\frac{e^x + 1}{e^x}\right) + c$

3. ✔ $\log(e^{-x} + 1) - e^{-x} + c$

4. ✘ $\log\left(\frac{e^{-x}}{e^x + 1}\right) + e^{-x} + c$

Question Number : 28 Question Id : 1592074643 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The value of the integral $\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \sin |x| dx$ is

Options :

1. ✘ 0

2. ✘ 1

3. ✘ -2

4. ✔ 2

Question Number : 29 Question Id : 1592074644 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The curves $y = x^2 - 4$ and $y = 1 - x^2$ together enclose an area of

Options :

1. ✘ $10\sqrt{10}$

2. ✘ $5\sqrt{10}$

3. ✔

$$\frac{10\sqrt{10}}{3}$$

4. ✘ $\frac{10\sqrt{10}}{9}$

Question Number : 30 Question Id : 1592074645 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The RMS value of the $f(x) = \sqrt{\log x}$ on $[1, e]$ is

Options :

1. ✘ $\sqrt{\frac{e}{e-1}}$

2. ✘ $\sqrt{\frac{e-1}{e}}$

3. ✔ $\frac{1}{\sqrt{e-1}}$

4. ✘ $\sqrt{e-1}$

Question Number : 31 Question Id : 1592074646 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The approximate value of the integral $\int_0^1 \frac{1}{1+x} dx$, using Trapezoidal rule with $h = 0.5$, is

Options :

0.69450

1. ✘

0.70834

2. ✔

0.67435

3. ✘

0.68500

4. ✘

Question Number : 32 Question Id : 1592074647 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The velocity of a body as a function of time is given as

$v(t) = 5e^{-2t} + 4$, where t is in seconds and v is in m/s. The acceleration when $t = 5$ in m/s^2 is

Options :

$-10e^{-10}$

1. ✔

2. ✘ $-20e^{-10}$

3. ✘ $-30e^{-10}$

4. ✘ $-40e^{-10}$

Question Number : 33 Question Id : 1592074648 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The order and degree of the differential equation

$$\frac{d^2y}{dx^2} + \left(\frac{dy}{dx}\right)^2 + x = 0 \text{ respectively are}$$

Options :

1. ✘ 3 and 3

2. ✘ 2 and 2

3. ✘ 2 and 3

4. ✔ 2 and 1

Question Number : 34 Question Id : 1592074649 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

The general solution of $ye^x dx + (y-1)dy = 0$ is

Options :

1. ✘ $e^x - \log y = c$

2. ✘ $e^x - y = c$

3. ✘ $e^x - y - \log x = c$

4. ✔ $e^x + y - \log y = c$

Question Number : 35 Question Id : 1592074650 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

If $\sin x \frac{dy}{dx} + y \cos x = x \sin x$, then $(y-1)\sin x =$

Options :

1. ✘ $c - x \sin x$

2. ✘ $c + x \sin x$

3. ✓ $c - x \cos x$

4. ✗ $c + x \cos x$

Question Number : 36 Question Id : 1592074651 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

The solution of the differential equation

$$(e^y + 1)\cos x \, dx + e^y \sin x \, dy = 0 \text{ is}$$

Options :

1. ✓ $(e^y + 1)\sin x = c$

2. ✗ $e^x \sin x = c$

3. ✗ $(e^x + 1)\cos x = c$

4. ✗ $(e^y - 1)\sin x = c$

Question Number : 37 Question Id : 1592074652 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The differential equation satisfied by $y = \frac{A}{x} + B$, (A,B are parameters) is

Options :

1. ✘ $x^2 y_1 = y$

2. ✘ $xy_1 + 2y_2 = 0$

3. ✔ $xy_2 + 2y_1 = 0$

4. ✘ $x^2 y_1 - 2y = 0$

Question Number : 38 Question Id : 1592074653 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The general solution of $\log\left(\frac{dy}{dx}\right) = 3x + 3y$ is

Options :

1. ✘ $e^{3x} + e^{3y} = c$

2. ✘ $e^{-3x} + e^{-3y} = c$

3. ✘ $e^{-3x} + e^{3y} = c$

4. ✔ $e^{3x} + e^{-3y} = c$

Question Number : 39 Question Id : 1592074654 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

If $y dx + y^2 dy = x dy, x \in \mathbb{R}, y > 0$ and $y(1) = 1$, then $y(-3) =$

Options :

1. ✔ 3

2. ✘ 2

3. ✘ 1

4. ✘ 5

Question Number : 40 Question Id : 1592074655 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

$$L\{\sin 2t - 2t \cos 2t\} =$$

Options :

1. ✘ $\frac{2}{(s^2 + 4)^2}$

2. ✘ $\frac{8}{(s^2 + 4)^2}$

3. ✔ $\frac{16}{(s^2 + 4)^2}$

4. ✘ $\frac{32}{((s^2 + 4))^2}$

Question Number : 41 Question Id : 1592074656 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

$$L\{\cosh 3t \cos 3t\} =$$

Options :

1. ✘ $\frac{1}{2} \left[\frac{s-6}{s^2 - 3s + 18} + \frac{s+6}{s^2 + 3s + 18} \right]$

2. ✔

$$\frac{1}{2} \left[\frac{s-3}{s^2-6s+18} + \frac{s+3}{s^2+6s+18} \right]$$

3. ✖

$$\frac{1}{2} \left[\frac{s-4}{s^2-4s+9} + \frac{s-3}{s^2-6s+9} \right]$$

4. ✖

$$\frac{1}{2} \left[\frac{s-6}{s^2+9} + \frac{s+6}{3s^2+9} \right]$$

Question Number : 42 Question Id : 1592074657 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

$$\mathcal{L} \left\{ \frac{1 - \cos 3t}{t} \right\} =$$

Options :

1. ✖

$$\frac{1}{2} \log \left(\frac{s^2+9}{s^2+3} \right)$$

2. ✖

$$\frac{1}{2} \log \left(\frac{s}{s+9} \right)$$

3. ✖

$$\frac{1}{2} \log \left(\frac{s}{s^2+9} \right)$$

4.

✓ $\frac{1}{2} \log \left(\frac{s^2 + 9}{s^2} \right)$

Question Number : 43 Question Id : 1592074658 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The Laplace transform of $f(t) = t \sin t$ is $F(s)$ where $F(s) =$

Options :

1. ✘ $\frac{s}{(1+s^2)^2}$

2. ✘ $\frac{2s}{(1+s^2)^2}$

3. ✘ $\frac{2s}{1+s^2}$

4. ✓ $\frac{s}{1+s^2}$

Question Number : 44 Question Id : 1592074659 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

$$\text{If } L^{-1}\left\{\frac{2s^2-1}{(s^2+1)(s^2+4)}\right\} = f(t), \text{ then } f\left(\frac{\pi}{2}\right) =$$

Options :

1. ✘ 1

2. ✔ -1

3. ✘ 2

4. ✘ -2

Question Number : 45 Question Id : 1592074660 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

$$\int_0^{\infty} \frac{e^{-3t} - e^{-6t}}{t} dt =$$

Options :

1. ✘ log 6

2. ✘ log 3

3. ✔ log 2

4. ✘ $\log 18$

Question Number : 46 Question Id : 1592074661 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The solution of the differential equation

$$y'' - 2y' + 2y = 0 \text{ satisfying } y(0) = y'(0) = 1 \text{ is}$$

Options :

1. ✘ $e^t + e^{-2t} \cos t$

2. ✘ $e^t + \cos t$

3. ✘ $e^t \sin t$

4. ✔ $e^t \cos t$

Question Number : 47 Question Id : 1592074662 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The value of the Fourier coefficient a_0 in the Fourier series
expansion of $f(x) = x \sin x$ in $(0, 2\pi)$ is

Options :

1. ✘ 2

2. ✔ -2

3. ✘ 1

4. ✘ -1

Question Number : 48 Question Id : 1592074663 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

If b_1, b_2 are Fourier coefficients in the Fourier series expansion of
 $f(x) = |\sin x|$ in $(-\pi, \pi)$, then $b_1 + b_2 =$

Options :

1. ✘ $\frac{2}{\pi}$

2. ✘ $-\frac{2}{\pi}$

3. ✔ 0

4. ✘ $\frac{4}{\pi}$

Question Number : 49 Question Id : 1592074664 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

At $x = 0$, the Fourier series of $f(x) = \begin{cases} \pi + x & \text{if } -\pi < x < 0 \\ 0 & \text{if } 0 \leq x < \pi \end{cases}$
converges to

Options :

1. ✘ π

2. ✘ 0

3. ✘ $-\pi$

4. ✔ $\frac{\pi}{2}$

Question Number : 50 Question Id : 1592074665 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

If $x = \frac{\pi}{2} + \sum_{n=1}^{\infty} a_n \cos nx$, $0 < x < \pi$, then the value of a_n is

Options :

$$\frac{2}{\pi n^2} [(-1)^n - 1]$$

1. ✓

$$\frac{2}{\pi n^2}$$

2. ✗

0

3. ✗

$$\frac{4}{\pi n^2}$$

4. ✗

Physics

Section Id :	15920791
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

Maximum Instruction Time : 0
Sub-Section Number : 1
Sub-Section Id : 159207112
Question Shuffling Allowed : Yes
Is Section Default? : null

Question Number : 51 Question Id : 1592074666 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

If F is force, x is distance and t is time, then the dimensions
of $\frac{b}{a}$ in the equation $F = \frac{b-x}{at}$ are same as that of

Options :

1. ✘ Velocity
2. ✘ Force
3. ✔ Momentum
4. ✘ Time

Question Number : 52 Question Id : 1592074667 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

The static friction is

Options :

1. ✘ Equal to the dynamic friction
2. ✔ Always greater than the dynamic friction
3. ✘ Always less than the dynamic friction
4. ✘ Sometimes less than and sometimes equal to dynamic friction

Question Number : 53 Question Id : 1592074668 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

A vector A points vertically upward and B points towards north, the vector product of $B \times A$ is

Options :

1. ✘ Along west
2. ✔ Along east
3. ✘ Vertically downward

4. ✘ No direction

Question Number : 54 Question Id : 1592074669 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

A Vector A has magnitude $9/2$ unit towards north, the direction
of vector $-6A$ and $8A$.

Options :

1. ✘ -27 units and 36 units towards south

2. ✘ -27 units and 36 units towards north

3. ✔ -27 units towards south and 36 units towards north

4. ✘ -27 units towards west and 36 units towards east

Question Number : 55 Question Id : 1592074670 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The Angular displacement of a particle is described as

$\theta = 2t + 3t^2$, the angular velocity (in rad/sec) at $t = 2$ sec is

Options :

1. ✘ 2

2. ✘ 6

3. ✘ 16

4. ✔ 14

Question Number : 56 Question Id : 1592074671 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The acceleration of a car moving on a straight road with a constant velocity of 40 m/sec is

Options :

1. ✘ 30 m/s²

2. ✘ 20 m/s²

3. ✔ 0 m/s²

4. ✘ 40 m/s^2

Question Number : 57 Question Id : 1592074672 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Two wires of same length and made with same material are stretched with the same force. If the radii of the wires are in the ratio 1:3, then the ratio of their elongations is

Options :

1. ✘ 1:3

2. ✔ 9:1

3. ✘ 3:1

4. ✘ 1:9

Question Number : 58 Question Id : 1592074673 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Along a stream line flow of fluid

Options :

The velocity of all fluid particles at a given instant is constant.

1. ✘

The velocity of a fluid particle remains constant.

2. ✘

The velocity of all fluid particles crossing a given position is constant.

3. ✔

The speed of a fluid particle remains constant.

4. ✘

Question Number : 59 Question Id : 1592074674 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Which of the following gives the relation between C_p and C_v

Options :

1. ✔ $C_p - C_v = R$

2. ✘ $C_p = C_v$

3. ✘ $C_p - C_v > R$

4. ✘ $C_p / C_v = R$

Question Number : 60 Question Id : 1592074675 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Compressed air coming out of punctured football becomes cooler because.

Options :

1. ✔ Adiabatic expansion

2. ✘ Isothermal expansion

3. ✘ Energy dissipation

4. ✘ See-beck effect

Question Number : 61 Question Id : 1592074676 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The work done (Joule) by a 1 mole of a perfect gas when it expands isothermally to double its volume. The initial temperature of the gas is 0°C and $R = 8.31 \times 10^7 \text{ erg} \cdot \text{mol}^{-1} \cdot \text{K}^{-1}$. ($\log_{10} 2 = 0.3010$)

Options :

1. ✘ 15.72 joule
2. ✘ 157.2 joule
3. ✔ 1572 joule
4. ✘ 1.572 joule

Question Number : 62 Question Id : 1592074677 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The energy possessed by an object, by virtue of its motion is termed as

Options :

1. ✘ Potential Energy
2. ✔ Kinetic Energy
3. ✘ Gravitational Energy
4. ✘ Nuclear Energy

Question Number : 63 Question Id : 1592074678 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

At what speed the observer must move towards a stationary source so that the apparent frequency will be double the original frequency of the source? The velocity of sound is V .

Options :

1. ✓ V

2. ✗ $\frac{V}{2}$

3. ✗ $2V$

4. ✗ $\frac{V}{4}$

Question Number : 64 Question Id : 1592074679 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The displacement equation of a particle executes SHM is given by $y = a \sin \omega t + b \cos \omega t$, the resultant amplitude is

Options :

1. ✓ $(a^2 + b^2)^{1/2}$

2. ✗ $(a + b)$

3. ✗ $(a + b)^{1/2}$

4. ✗ Zero

Question Number : 65 Question Id : 1592074680 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The periodic time (T) of simple pendulum is observed for different lengths (L). If a graph of $\log_{10}L$ against $\log_{10}T$ is plotted, the slope of the graph will be

Options :

1. ✗ $1/2$

2. ✗ $-1/2$

3. ✗ $(2)^{1/2}$

4. ✓ 2

Question Number : 66 Question Id : 1592074681 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The maximum velocity of a particle performing SHM is 0.12 m/sec, if its maximum acceleration is 0.48 m/sec^2 , then its time period (sec) is

Options :

1. ✗ 1.54

2. ✗ 1.59

3. ✓ 1.57

4. ✗ 1.75

Question Number : 67 Question Id : 1592074682 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The minimum energy required to take out an electron from an alkali metal is called

Options :

1. ✘ Kinetic Energy
2. ✘ Potential Energy
3. ✘ Gibbs Free Energy
4. ✔ Work Function

Question Number : 68 Question Id : 1592074683 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

N_1 and N_2 be the number of atoms in the ground and excited states. Then the condition for population inversion is

Options :

1. ✘ $N_1 = N_2$
2. ✘ $N_1 > N_2$
3. ✔ $N_2 > N_1$
4. ✘ $N_2 = 0$

Question Number : 69 Question Id : 1592074684 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Two magnets have magnetic moments in the ratio 2:1. Their pole strengths are in the ratio 1:2. Then the ratio of their magnetic lengths is

Options :

1. ✘ 1:4

2. ✘ 1:1

3. ✘ 2:3

4. ✔ 4:1

Question Number : 70 Question Id : 1592074685 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The susceptibility of para magnetic material is

Options :

1. ✔ Positive and small

2. ✘ Positive and large

3. ✘ Negative

4. ✘ Zero

Question Number : 71 Question Id : 1592074686 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

There are three equal resistors, how many different combinations of these resistors are possible.

Options :

1. ✔ Four

2. ✘ Two

3. ✘ Three

4. ✘ Five

Question Number : 72 Question Id : 1592074687 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Which one of the following is the perfect diamagnetic?

Options :

1. ✘ Any conductor
2. ✘ P-Type semiconductor
3. ✘ N-Type semiconductor
4. ✔ Superconductor

Question Number : 73 Question Id : 1592074688 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The current in the PN junction diode during the reverse bias is the result of

Options :

1. ✘ Majority carriers
2. ✔ Minority carriers
- 3.

✘ Both majority and minority carriers

4. ✘ Only electrons

Question Number : 74 Question Id : 1592074689 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Which of the following has maximum energy gap?

Options :

1. ✓ Insulators

2. ✘ Superconductors

3. ✘ Metals

4. ✘ Semiconductors

Question Number : 75 Question Id : 1592074690 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Which of the following is true for Fermi energy level for p-type
extrinsic semiconductor?

Options :

1. ✘ At middle of the band gap
2. ✔ Close to valence band
3. ✘ Close to conduction band
4. ✘ Fermi level does not exist

Chemistry

Section Id :	15920792
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
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	159207113
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 76 Question Id : 1592074691 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The values of Azimuthal and principal quantum numbers respectively for an electron that is present in 4d orbital

Options :

1. ✘ 1 and 4

2. ✘ 4 and 1

3. ✔ 2 and 4

4. ✘ 4 and 2

Question Number : 77 Question Id : 1592074692 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Which of the following molecule has ionic bonding?

Options :

1. ✘ CH_3Cl

2. ✘ CH_3OH

3. ✘ CO_2

4. ✔ MgO

Question Number : 78 Question Id : 1592074693 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

What is the Oxidation number of carbon in formaldehyde?

Options :

1. ✘ -4

2. ✘ +4

3. ✔ 0

4. ✘ +2

Question Number : 79 Question Id : 1592074694 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The Molarity of a solution containing 9 g of glucose (molar mass 180)

in 500 g of water is

Options :

1. ✘ 0.5

2. ✔ 0.1

3. ✘ 0.2

4. ✘ 1.0

Question Number : 80 Question Id : 1592074695 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Prussian blue colloid is

Options :

1. ✘ As_2S_3

2. ✘ $\text{Fe}(\text{OH})_3$

3. ✔ $\text{KFe}[\text{Fe}(\text{CN})_6]$

4. ✘ FeCl_3

Question Number : 81 Question Id : 1592074696 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Which of the following anions is the strongest base?

Options :

1. ✓ ClO^-

2. ✗ ClO_2^-

3. ✗ ClO_3^-

4. ✗ ClO_4^-

Question Number : 82 Question Id : 1592074697 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The pH of 10^{-9} molar solution of HCl is

Options :

1. ✗ 9

-9

2. ✗

3. ✗ Between 7 & 8

4. ✓ Between 6 & 7

Question Number : 83 Question Id : 1592074698 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Which one of the following is a Renewable energy source?

Options :

1. ✘ Petroleum

2. ✘ Coal

3. ✘ Natural gas

4. ✓ Wind mills

Question Number : 84 Question Id : 1592074699 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Which of the following gas is responsible for depletion of ozone layer
in the atmosphere?

Options :

1. ✘ CH_2Cl_2

2. ✔ CF_2Cl_2

3. ✘ CH_2F_2

4. ✘ CO_2

Question Number : 85 Question Id : 1592074700 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The exhausted permutit is regenerated by percolating through it a solution of

Options :

1. ✘ Calcium chloride

2. ✘ Zinc chloride

3. ✔ Sodium chloride

4. ✘ Magnesium chloride

Question Number : 86 Question Id : 1592074701 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

During reverse osmosis:

Options :

1. ✘ Dissolved salts are pushed out through semipermeable membrane
2. ✘ Only dissolved ionic salts are pushed out through the semipermeable membrane
3. ✔ Pure water is pushed out through semipermeable membrane
4. ✘ Both water and dissolved salts are pushed out through the semipermeable membrane

Question Number : 87 Question Id : 1592074702 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Which of the following is a weak electrolyte?

Options :

1. ✘ HCl
2. ✘ NaOH

3. ✓ CH_3COOH

4. ✗ H_2SO_4

Question Number : 88 Question Id : 1592074703 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

When 2 amperes of current is passed through CuSO_4 solution for
10 minutes, the amount of Cu deposited is (Atomic weight of Cu =
63.5 g)

Options :

1. ✗ 3.94 g

2. ✓ 0.394 g

3. ✗ 0.788 g

4. ✗ 7.88 g

Question Number : 89 Question Id : 1592074704 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Composition of Nichrome alloy is

Options :

1. ✘ Ni:68%, Cu:27%, Fe:5%

2. ✔ Ni:78%, Cr:20%, Fe:2%

3. ✘ Ni:40%, Cu:60%

4. ✘ Al:95%, Cu:2%, Ni:1%

Question Number : 90 Question Id : 1592074705 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

In the froth flotation method, pine oil

Options :

1. ✘ Increases the surface tension of the solution

2. ✘ Acts as a collector

3. ✘ Does not affect the surface tension of the solution

4. ✔ Decreases the surface tension of the solution

Question Number : 91 Question Id : 1592074706 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

During electro chemical corrosion in acidic environment

Options :

1. ✓ Hydrogen evolution takes place
2. ✗ Oxygen evolution takes place
3. ✗ Oxygen absorption occurs
4. ✗ Hydrogen absorption takes place

Question Number : 92 Question Id : 1592074707 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The process of coating of Iron with Zinc metal is known as

Options :

1. ✓ Galvanizing
2. ✗

Sherardizing

3. ✘ Zincing

4. ✘ Tinning

Question Number : 93 Question Id : 1592074708 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Bakelite is prepared by the condensation polymerization of

Options :

1. ✔ Phenol and formaldehyde

2. ✘ Urea and formaldehyde

3. ✘ Phenol and acetaldehyde

4. ✘ Urea and acetone

Question Number : 94 Question Id : 1592074709 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The trade name of the polymer coated on non-stick utensils is

Options :

1. ✘ Dacron

2. ✘ Orlon

3. ✔ Teflon

4. ✘ Nylon

Question Number : 95 Question Id : 1592074710 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Octane number of a petrol that consists 20:80 mixture of n-heptane and 2,2,4-trimethyl pentane is

Options :

1. ✘ 100

2. ✘ Zero

3. ✔ 80

4. ✘ 20

Question Number : 96 Question Id : 1592074711 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Producer gas is a mixture of

Options :

1. ✘ $\text{CO}_2 + \text{H}_2$

2. ✔ $\text{CO} + \text{N}_2$

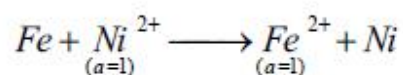
3. ✘ $\text{CO} + \text{CH}_4$

4. ✘ $\text{CH}_4 + \text{H}_2$

Question Number : 97 Question Id : 1592074712 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

For the following cell reaction



The EMF of the cell at 298 K is ($\overset{\circ}{E}_{\text{Fe}^{2+}/\text{Fe}} = -0.440 \text{ V}$; $\overset{\circ}{E}_{\text{Ni}^{2+}/\text{Ni}} = -0.250 \text{ V}$)

Options :

1. ✘ -0.190 V

2. ✓ + 0.190 V

3. ✗ + 0.690 V

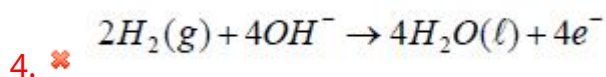
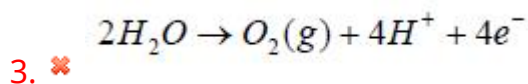
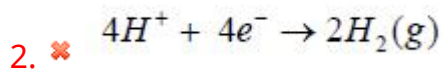
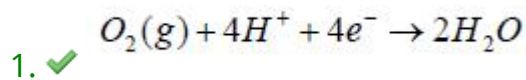
4. ✗ - 0.690 V

Question Number : 98 Question Id : 1592074713 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

In Hydrogen-Oxygen fuel cell, the reaction at the cathode is

Options :



Question Number : 99 Question Id : 1592074714 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Which of the following statements is true about SMOG?

Options :

1. ✘ SMOG is derived from the fog
2. ✘ SMOG is derived from smoke
3. ✘ SMOG is derived from water vapour
4. ✔ SMOG is derived from both fog and smoke

Question Number : 100 Question Id : 1592074715 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

What do BOD and COD stand for?

Options :

1. ✔ Biological Oxygen Demand and Chemical Oxygen Demand respectively
2. ✘ Chemical Oxygen Demand and Biological Oxygen Demand respectively
3. ✘ Botanical Oxygen Demand and Chemical Oxygen Demand respectively

4. ✖ Basic Oxygen Demand and Chemical Oxygen Demand respectively

Chemical Engineering

Section Id :	15920793
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
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	159207114
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 101 Question Id : 1592074716 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

The total number of whole atoms in FCC (Face Centered Cubic) structured unit cell are

Options :

1. ✖ Six

2. ✘ Five

3. ✔ Four

4. ✘ Three

Question Number : 102 Question Id : 1592074717 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The following mechanical property of material is also called as viscoplasticity

Options :

1. ✘ Fatigue

2. ✔ Creep

3. ✘ Toughness

4. ✘ Hardness

Question Number : 103 Question Id : 1592074718 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

An iron alloy that contains 88 % ferrite and 12 % cementite is

Options :

1. ✘ Austentite
2. ✔ Pearlite
3. ✘ Cast iron
4. ✘ Ledeburite

Question Number : 104 Question Id : 1592074719 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The temperature in degree centigrade of eutectic reaction in iron-carbon phase diagram is

Options :

1. ✘ 1560
2. ✘ 1250
3. ✘ 1850

4. ✓ 1150

Question Number : 105 Question Id : 1592074720 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Bessemer converter is used in the manufacture of

Options :

1. ✘ Wrought iron

2. ✘ Pig iron

3. ✓ Steel

4. ✘ Cast iron

Question Number : 106 Question Id : 1592074721 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Nitrile Rubber is a polymer of

Options :

1. ✘ Acrylonitrile and styrene

2. ✓ Butadiene and acrylonitrile
3. ✘ Butadiene and styrene
4. ✘ Isobutylene and isoprene

Question Number : 107 Question Id : 1592074722 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Which of the following yields blue colour in glass

Options :

1. ✘ Iron oxide
2. ✓ Cobalt oxide
3. ✘ Silver chloride
4. ✘ Pure selenium

Question Number : 108 Question Id : 1592074723 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Which one is not a cause of corrosion

Options :

1. ✘ Shot peening
2. ✘ Difference in grain sizes
3. ✔ Slag inclusion in wrought irons
4. ✘ Presence of ferrite phase in austenitic steels

Question Number : 109 Question Id : 1592074724 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The number of moles of solute dissolved in one liter of solution is called

Options :

1. ✔ Molarity
2. ✘ Normality
3. ✘ Mole %
4. ✘ Molality

Question Number : 110 Question Id : 1592074725 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The total volume of an ideal gas mixture is equal to the sum of the partial volumes of each gas would occupy if it existed alone at the temperature and pressure of the mixture is known as

Options :

1. ✘ Raoult's law

2. ✘ Henry's law

3. ✘ Dalton's law

4. ✔ Amagat's law

Question Number : 111 Question Id : 1592074726 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

A pressure of 1 torr is equal to

Options :

1. ✘ 1m H₂O

2. ✓ 1mm Hg

3. ✗ 1 N/m²

4. ✗ 1kgf/m²

Question Number : 112 Question Id : 1592074727 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Convert 20 kmole of phenol to weight in kg phenol

Options :

1. ✗ 250

2. ✗ 100

3. ✗ 3500

4. ✓ 1880

Question Number : 113 Question Id : 1592074728 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The air contains 79 mol% N_2 and 21 mol% O_2 , then its average molecular weight is

Options :

1. ✘ 28
2. ✘ 32
3. ✔ 28.84
4. ✘ 30

Question Number : 114 Question Id : 1592074729 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The heat capacity of a solid compound is estimated by

Options :

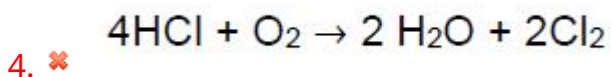
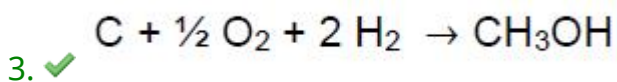
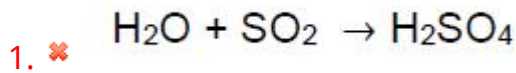
1. ✔ Kopp's rule
2. ✘ Kirchoff's rule
3. ✘ Kistyakowsky rule
4. ✘ Gibb's equation

Question Number : 115 Question Id : 1592074730 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Which of the following is a formation reaction

Options :



Question Number : 116 Question Id : 1592074731 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The vapor pressure data for many compounds have been correlated
by using

Options :

1. ✘ Clapeyron equation

2. ✔ Antoine equation

3. ✘ Gibb's equation

4. ✘ Kistyakowsky equation

Question Number : 117 Question Id : 1592074732 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

A stream to bled off to remove an accumulation of inerts or unwanted material that might otherwise buildup in recycle stream is called

Options :

1. ✘ Recycle

2. ✘ Bypass

3. ✔ Purge

4. ✘ Extract stream

Question Number : 118 Question Id : 1592074733 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

What is the percent of excess air, if 10 moles of air entered the process and only 5 moles of that are required

Options :

1. ✓ 100 %
2. ✗ 50 %
3. ✗ 75 %
4. ✗ 10%

Question Number : 119 Question Id : 1592074734 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The coking coal begins to soften at

Options :

1. ✗ 200°C
2. ✗ 250°C
3. ✓ 300°C
4. ✗ 350°C

Question Number : 120 Question Id : 1592074735 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The monometallic catalyst used in the catalytic reforming of naphtha is

Options :

1. ✓ Platinum
2. ✗ Nickel
3. ✗ Molybdenum
4. ✗ Cobalt

Question Number : 121 Question Id : 1592074736 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

In Methanol manufacturing from Synthesis gas, the possibility of inert gas accumulation during high recycle loads in the reactor is avoided

Options :

1. ✗ By using excess hydrogen over the minimum theoretical
2. ✓ By maintaining side stream-purge

3. ✘ By circulating high pressure water in jacket of reactor
4. ✘ By controlling the temperature in the reactor

Question Number : 122 Question Id : 1592074737 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Penicillin salt is extracted from the fermentation broth after filtration using

Options :

1. ✘ Butyl acetate
2. ✘ Methyl acetate
3. ✘ Ethyl acetate
4. ✔ Amyl acetate

Question Number : 123 Question Id : 1592074738 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Which is the following, known as poor man's silk

Options :

1. ✘ Nylon
2. ✘ Polyester
3. ✔ Viscose
4. ✘ Wool

Question Number : 124 Question Id : 1592074739 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The hydrogenation of edible oils

Options :

1. ✔ Increases their melting point
2. ✘ Decreases their melting point
3. ✘ Does not effect their melting point
4. ✘ Is an autocatalytic reaction

Question Number : 125 Question Id : 1592074740 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The main raw materials for the production of toilet soaps are

Options :

1. ✘ Tallow and 20% oleum
2. ✘ Vegetable oils and 98.7% H_2SO_4
3. ✔ Vegetable oils and caustic soda
4. ✘ Tallow and soda ash

Question Number : 126 Question Id : 1592074741 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The major chemical recovered from the black liquor in Kraft Pulp
Process is

Options :

1. ✘ Sodium sulphate
- 2.

✓ Sodium carbonate

3. ✘ Sodium hydroxide

4. ✘ Sodium bicarbonate

Question Number : 127 Question Id : 1592074742 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The raw materials used for production of soda ash by Solvay process are

Options :

1. ✘ Limestone & potassium chloride

2. ✘ Dolomite & sodium hydroxide

3. ✓ Limestone, brine and coal

4. ✘ Coal & caustic soda

Question Number : 128 Question Id : 1592074743 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Which of the following glass is used in optical instruments is

Options :

1. ✘ Jena glass
2. ✘ Crookes glass
3. ✔ Flint glass
4. ✘ Pyrex glass

Question Number : 129 Question Id : 1592074744 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The prilling tower is used in the manufacture of

Options :

1. ✘ Superphosphate
2. ✔ Urea
3. ✘ Triple superphosphate
4. ✘ Ammonia

Question Number : 130 Question Id : 1592074745 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

In cement manufacture, the clinker is obtained by heating

Options :

1. ✘ Gypsum
2. ✘ Dolomite
3. ✘ Sand, limestone & washing soda
4. ✔ Powdered limestone & clay

Question Number : 131 Question Id : 1592074746 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The chemical name of bleaching powder is

Options :

1. ✘ Calcium chlorate
2. ✘ Calcium perchlorate

3. ✓ Calcium chloro hypochlorite

4. ✘ Calcium hypochlorite

Question Number : 132 Question Id : 1592074747 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The chemical formula of "Triple superphosphate" is

Options :

1. ✘ $\text{Ca}_3\text{H}_4(\text{PO}_4)_2$

2. ✘ $\text{Ca}_3(\text{PO}_4)_2$

3. ✘ $\text{CaH}_2(\text{PO}_4)_2$

4. ✓ $\text{CaH}_4(\text{PO}_4)_2$

Question Number : 133 Question Id : 1592074748 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Permanent hardness of water is caused by

Options :

1. ✘ Carbonates of sodium and potassium
2. ✘ Bicarbonates of calcium and magnesium
3. ✔ Chlorides & sulphates of calcium and magnesium
4. ✘ Phosphates of sodium & potassium

Question Number : 134 Question Id : 1592074749 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The formation of Nitric acid by catalytic oxidation of ammonia is known as

Options :

1. ✘ Haber's process
2. ✔ Ostwald process
3. ✘ Solvay process
4. ✘ Bosch process

Question Number : 135 Question Id : 1592074750 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

An ideal fluid is the one which

Options :

1. ✘ Offers resistance to flow
2. ✘ Offers resistance to deformation
3. ✔ Has no viscosity
4. ✘ Has infinity viscosity

Question Number : 136 Question Id : 1592074751 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Rubber latex is an example for

Options :

1. ✘ Bingham Fluids
2. ✔ Pseudoplastic Fluids
3. ✘ Dilatent Fluids

4. ✘ Newtonian Fluids

Question Number : 137 Question Id : 1592074752 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The flow of incompressible fluids without the presence of shear is referred to as

Options :

1. ✓ Potential flow

2. ✘ Turbulent flow

3. ✘ Laminar flow

4. ✘ Fully developed flow

Question Number : 138 Question Id : 1592074753 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The Bernoulli equation states that in a steady irrotational flow of an incompressible fluid,

Options :

1. ✘ The total potential energy at any point is constant
2. ✘ The total kinetic energy at any point is constant
3. ✔ The total energy at any point is constant
4. ✘ The total pressure energy at any point is constant

Question Number : 139 Question Id : 1592074754 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The ratio of the wall shear stress to the product of the kinetic energy of fluid and the density is defined as

Options :

1. ✘ Piezometric head
2. ✘ Potential head
3. ✔ Fanning friction factor
4. ✘ Drag coefficient

Question Number : 140 Question Id : 1592074755 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

For laminar flow of Newtonian fluids flowing through a circular pipe,

Options :

1. ✘ The average velocity is equal to the maximum velocity
2. ✔ The average velocity is one half the maximum velocity
3. ✘ The average velocity is double the maximum velocity
4. ✘ The average velocity is square root the maximum velocity

Question Number : 141 Question Id : 1592074756 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

When the flow of a fluid through a circular pipe, the friction factor is

Options :

1. ✔ $f = \frac{16}{N_{Re}}$

2.

✘ $f = \frac{24}{N_{Re}}$

3. ✘ $f = 0.079N_{Re}^{-1/2}$

4. ✘ $f = 0.079N_{Re}^{-1/4}$

Question Number : 142 Question Id : 1592074757 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The cross-section of minimum effective flow area at which the fluid jet changes from a contraction to an expansion is known as

Options :

1. ✘ The skin friction

2. ✘ The wall friction

3. ✓ The vena contracta

4. ✘ The frictional head

Question Number : 143 Question Id : 1592074758 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

For non-spherical particles, the shape factor or sphericity ϕ_s is defined as below,

Options :

1. ✘
$$\frac{\text{Volume of a sphere having the same volume as that of the particle}}{\text{Volume of a particle}}$$

2. ✔
$$\frac{\text{Surface area of a sphere having the same volume as that of the particle}}{\text{Surface area of a particle}}$$

3. ✘
$$\frac{\text{Diameter of a sphere having the same volume as that of the particle}}{\text{Diameter of a particle}}$$

4. ✘
$$\frac{\text{Diameter of a sphere having the same surface area as that of the particle}}{\text{Diameter of a particle}}$$

Question Number : 144 Question Id : 1592074759 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Which of the following measures the local velocity in the fluid stream

Options :

1. ✘ Venturi meter
2. ✘ Orifice meter
3. ✘ Rota meter
4. ✔ Pitot Tube

Question Number : 145 Question Id : 1592074760 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

In which of the following pumps, the displacement of fluid is by rotating action

Options :

1. ✘ Centrifugal pump
2. ✔ Gear pump
3. ✘ Plunger pump
4. ✘ Piston pump

Question Number : 146 Question Id : 1592074761 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

The ratio of inertia force to viscous force is known as

Options :

1. ✘ Grashof Number
2. ✘ Nusselt Number
3. ✔ Reynolds Number
4. ✘ Fourier Number

Question Number : 147 Question Id : 1592074762 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

The SI units of thermal conductivity is

Options :

1. ✘ W/m^2K
2. ✔ $W/m K$

3. ✘ J/m^2K

4. ✘ $J/m K$

Question Number : 148 Question Id : 1592074763 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Prandtl number (N_{pr}) is defined as

(Where, C_p = heat capacity, μ = viscosity, k = thermal conductivity)

Options :

1. ✘ $C_p\mu/\rho$

2. ✔ $C_p\mu/k$

3. ✘ kC_p/ρ

4. ✘ kC_p/μ

Question Number : 149 Question Id : 1592074764 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The total emissivity of a perfect black body is

Options :

1. ✘ Infinity

2. ✔ One

3. ✘ Zero

4. ✘ Two

Question Number : 150 Question Id : 1592074765 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Which of the following dimensionless number is associated with free convection

Options :

1. ✘ Peclet number

2. ✔ Grashof number

3. ✘ Reynolds number

4. ✘ Prandtl number

Question Number : 151 Question Id : 1592074766 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

According to the Duhring's rule, the boiling point of a given solution is

Options :

1. ✘ A linear function of the concentration of the solute

A linear function of the boiling point of pure water at the

2. ✔ same pressure

3. ✘ A linear function of the pressure

An exponential function of the boiling point of pure water

4. ✘ at the same pressure

Question Number : 152 Question Id : 1592074767 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The critical radius (r) of insulation of a pipe can be calculated from

(Where k is the thermal conductivity of insulation and h is the heat transfer coefficient with the ambient.)

Options :

1. ✘ $r = 2k/h$

2. ✘ $r = k/2h$

3. ✔ $r = k/h$

4. ✘ $r = h/k$

Question Number : 153 Question Id : 1592074768 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Finned tube used in a heat exchanger

Options :

1. ✔ Increases the effective tube surface area

2. ✘ Decreases the pressure drop

3. ✘ Decreases the heat transfer coefficient

4. ✘ Decreases the heat transfer rate

Question Number : 154 Question Id : 1592074769 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The presence of small amounts of non-condensing gas in a condensing vapor

Options :

1. ✘ Increases the rate of condensation

2. ✔ Decreases the rate of condensation

3. ✘ Does not affect the rate of condensation

4. ✘ Increases the condensing film coefficient

Question Number : 155 Question Id : 1592074770 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The Fourier number is used in

Options :

1. ✘ Steady state heat conduction
2. ✔ Unsteady state heat conduction
3. ✘ Natural convection
4. ✘ Forced Convection

Question Number : 156 Question Id : 1592074771 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

The thermal conductivity is maximum for

Options :

1. ✔ Silver
2. ✘ Copper
3. ✘ Mild steel
4. ✘ Stainless steel

Question Number : 157 Question Id : 1592074772 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

The capacity of an evaporator is defined as

Options :

1. ✓ Number of kgs of solvent vaporized per hour
2. ✘ Number of kgs of solvent vaporized per kg of steam fed to the evaporator
3. ✘ Number of kgs of steam consumed per hour
4. ✘ Number of kgs of steam consumed per kg of solvent vaporized

Question Number : 158 Question Id : 1592074773 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

The dropwise condensation occurs on a

Options :

1. ✘ Smooth surface
2. ✓ Oily surface

3. ✘ Coated surface

4. ✘ Glazed surface

Question Number : 159 Question Id : 1592074774 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The work required for crushing a given material is proportional to the logarithm of the ratio between the initial and final diameters is a statement of

Options :

1. ✘ Rittinger's law

2. ✔ Kick's law

3. ✘ Bond's law

4. ✘ Fick's law

Question Number : 160 Question Id : 1592074775 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Crushing efficiency is the ratio of the

Options :

- Surface energy created by crushing to the energy
1. ✓ absorbed by the solid
 2. ✘ Energy absorbed by the solid to that fed to the machine
 3. ✘ Energy fed to the machine to the surface energy created by crushing
 4. ✘ Energy absorbed by the solid to the surface energy created by crushing

Question Number : 161 Question Id : 1592074776 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The angle formed by the tangents to the roll faces at a point of contact with a particle to be crushed is called as

Options :

1. ✘ Angle of repose
2. ✘ Angle of friction

3. ✓ Angle of nip

4. ✘ Angle of contact

Question Number : 162 Question Id : 1592074777 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

In a ball mill, centrifugal force will be exactly balanced by the weight of the ball when mill runs at

Options :

1. ✘ Minimum speed

2. ✘ Maximum speed

3. ✓ Critical speed

4. ✘ Optimum speed

Question Number : 163 Question Id : 1592074778 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The mass of material that can be fed per unit time to a unit area of the screen is called as

Options :

1. ✘ Effectiveness of the screen
2. ✔ Capacity of the screen
3. ✘ Ability of the screen
4. ✘ Productivity of the screen

Question Number : 164 Question Id : 1592074779 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Which of the following is a process of gravity concentration where solids are separated based upon the differences in the behaviour of particles through a moving fluid which in turn, depends upon densities/specific gravities.

Options :

1. ✘ Classification
2. ✘ Sedimentation
3. ✘ Centrifugation

4. ✓ Jigging

Question Number : 165 Question Id : 1592074780 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The filter aid is a granular or fibrous material and is used to

Options :

1. ✗ Increase the cake resistance
2. ✓ Increase the cake porosity
3. ✗ Increase the pressure drop across the cake
4. ✗ Increase the filter medium resistance

Question Number : 166 Question Id : 1592074781 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

In a batch thickener, the rate of sedimentation can be artificially increased by

Options :

1. ✓ The addition of coagulating agents
2. ✘ Cooling the suspension to room temperature
3. ✘ Promoting the free settling
4. ✘ controlling the flow rate

Question Number : 167 Question Id : 1592074782 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

A system in which there may be exchange of energy but not mass is known as

Options :

1. ✘ Open system
2. ✓ Closed system
3. ✘ Isolated system
4. ✘ Insulated system

Question Number : 168 Question Id : 1592074783 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Throttling process

Options :

1. ✘ Produces shaft work
2. ✔ Occurs at constant enthalpy
3. ✘ Decreases the temperature of an ideal gas
4. ✘ Increases the temperature of steam

Question Number : 169 Question Id : 1592074784 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The criteria for chemical reaction equilibria is

Options :

1. ✔ $\sum \mu_i \nu_i = 0$
2. ✘ $\sum \mu_i / \nu_i = 0$
3. ✘

$$\sum \vartheta_i / \mu_i = 0$$

4. ✘ $\sum \mu_i \vartheta_i = 1$

Question Number : 170 Question Id : 1592074785 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

First law of Thermodynamics is based on the

Options :

1. ✘ Law of conservation of Mass

2. ✔ Law of conservation of Energy

3. ✘ Law of conservation of Momentum

4. ✘ Thermal equilibrium of the system

Question Number : 171 Question Id : 1592074786 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The internal energy of an ideal gas depends on

Options :

1. ✘ Its pressure only
2. ✔ Its temperature only
3. ✘ Its Volume only
4. ✘ Size of its molecules only

Question Number : 172 Question Id : 1592074787 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Entropy of a substance has the units of

Options :

1. ✘ J
2. ✔ J/K
3. ✘ J/kg K
4. ✘ J/kg

Question Number : 173 Question Id : 1592074788 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Which of the following diagram is most useful in refrigeration

Options :

1. ✓ Pressure – Enthalpy

2. ✘ Temperature- Entropy

3. ✘ Enthalpy – Entropy

4. ✘ Pressure – Volume

Question Number : 174 Question Id : 1592074789 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

If the rate of chemical reaction becomes slower at a given temperature, then the

Options :

1. ✘ Initial concentration of the reactants remains constant.

2. ✘ Free energy of activation is lower

3. ✘ Entropy changes

4. ✔ Free energy of activation is higher

Question Number : 175 Question Id : 1592074790 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The temperature dependency of the reaction rate constant (k) of a bimolecular reaction by collision. Theory is given by

Options :

1. ✘ $k \propto e^{-E/RT}$

2. ✘ $k \propto T e^{-E/RT}$

3. ✔ $k \propto T^{0.5} e^{-E/RT}$

4. ✘ $k \propto T^{1.5} e^{-E/RT}$

Question Number : 176 Question Id : 1592074791 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

A reaction in which one of the products of the reaction acts as a catalyst is called

Options :

1. ✘ Catalytic reaction
2. ✘ Photochemical reaction
3. ✔ Autocatalytic reaction
4. ✘ Biochemical reaction

Question Number : 177 Question Id : 1592074792 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

For constant density systems, the performance equations are identical for

Options :

1. ✘ Batch and mixed flow reactor
2. ✔ Batch and plug flow reactor
3. ✘ Plug flow and mixed flow reactor
4. ✘

✘ Batch, plug flow & mixed flow reactor

Question Number : 178 Question Id : 1592074793 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The space velocity has units of

Options :

1. ✘ Time

2. ✔ (Time)⁻¹

3. ✘ Velocity

4. ✘ (Velocity)⁻¹

Question Number : 179 Question Id : 1592074794 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

In which of the following process involving an ideal gas, the change in internal energy and the change in enthalpy would be zero.

Options :

1. ✔ Constant temperature process

2. ✘ Constant pressure process

3. ✘ Adiabatic process

4. ✘ Polytropic process

Question Number : 180 Question Id : 1592074795 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The van der Waals equation of state is given by

Options :

1. ✘
$$P = \frac{RT}{(v-b)} - \frac{a}{T^{0.5}v(v+b)}$$

2. ✔
$$P = \frac{RT}{(v-b)} - \frac{a}{v^2}$$

3. ✘
$$P = \frac{RT}{(v-b)} - \frac{a'(T)}{v(v+b)}$$

4. ✘

$$P = \frac{RT}{(v-b)} - \frac{a\alpha}{v(v+b)+b(v-b)}$$

Question Number : 181 Question Id : 1592074796 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

When the reactants and products are at their standard states, the change in enthalpy accompanying the formation of 1 mol of a substance from the constituent elements is termed

Options :

1. ✘ The standard heat of reaction
2. ✔ The standard heat of formation
3. ✘ The standard heat of combustion
4. ✘ The standard heat of accumulation

Question Number : 182 Question Id : 1592074797 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The Carnot cycle consists of an alternate series of

Options :

1. ✓ Two reversible isothermal processes and two reversible adiabatic processes
2. ✘ Two reversible isobaric processes and two reversible adiabatic processes
3. ✘ Two reversible isothermal processes and two reversible isobaric processes
4. ✘ Two reversible isothermal processes and two polytropic processes

Question Number : 183 Question Id : 1592074798 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

For an ideal gas mixture, the fugacity of a component is equal to

Options :

1. ✘ Vapour pressure of that component
2. ✓ Partial pressure of the component

3. ✘ The total pressure of the mixture

4. ✘ The vapour pressure of the component at STP

Question Number : 184 Question Id : 1592074799 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

An exothermic reaction takes place in an adiabatic reactor. The product temperature _____ the reactor feed temperature.

Options :

1. ✘ Is always equal to

2. ✔ Is always greater than

3. ✘ Is always less than

4. ✘ May be greater or less than

Question Number : 185 Question Id : 1592074800 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

For an ideal gas mixture undergoing a reversible gaseous phase chemical reaction, the equilibrium constant

Options :

1. ✓ Is independent of pressure

2. ✗ Increases with pressure

3. ✗ Decreases with pressure

4. ✗ Increases/decreases with pressure depending on the stoichiometric coefficients of the reaction

Question Number : 186 Question Id : 1592074801 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Cracking of ethane to obtain ethylene and hydrogen is a

Options :

1. ✗ Liquid phase homogeneous reaction

2. ✓ Gas phase homogeneous reaction

3. ✗

Gas-solid heterogeneous reaction

Gas-liquid heterogeneous reaction

4. ✘

Question Number : 187 Question Id : 1592074802 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The activation energy at high temperatures is lower than at lower temperatures, which represents

Options :

1. ✓ Diffusion regime

2. ✘ Reaction regime

3. ✘ Kinetic regime

4. ✘ Intermediate regime

Question Number : 188 Question Id : 1592074803 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

A reaction is of zero order when the rate of reaction is

Options :

1. ✘ Directly proportional to the concentration of reactant
2. ✘ Inversely proportional to the concentration of reactant
3. ✔ Independent of the concentration of reactant
4. ✘ Independent of temperature and pressure

Question Number : 189 Question Id : 1592074804 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The most suitable reactor to carry out an auto-thermal reaction is a

Options :

1. ✔ Back mix reactor
2. ✘ Plug-flow reactor
3. ✘ Batch reactor

4. ✘ Semi-batch reactor

Question Number : 190 Question Id : 1592074805 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

For identical feed composition, flow rate, conversion and for all positive reaction orders the ratio of the volume of mixed reactor to the volume of plug flow reactor

Options :

1. ✘ Is independent of the order of reaction
2. ✔ Increases with increase in the order of reaction
3. ✘ Decreases with increase in the order of reaction
4. ✘ Increases with increase in the percentage of conversion

Question Number : 191 Question Id : 1592074806 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Thermocouple measures temperature based on

Options :

1. ✘ Nernst effect
2. ✘ Maxwell effect
3. ✔ Seebeck effect
4. ✘ Peltier effect

Question Number : 192 Question Id : 1592074807 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

Which of the following static characteristics of instruments is undesirable

Options :

1. ✘ Sensitivity
2. ✘ Accuracy
3. ✔ Drift
4. ✘ Reproducibility

Question Number : 193 Question Id : 1592074808 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

U-tube manometer is an example for

Options :

1. ✘ First order system
2. ✔ Underdamped second order system
3. ✘ Overdamped second order system
4. ✘ Critically damped second order system

Question Number : 194 Question Id : 1592074809 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Composition of CO₂ in flue gas is determined by

Options :

1. ✘ Mass spectrometer
2. ✔ Thermal conductivity cell
3. ✘ Polarimeter

Polarograph

4. ✘

Question Number : 195 Question Id : 1592074810 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Which of the following control action is used to remove offset completely

Options :

1. ✘ Proportional

2. ✔ Integral

3. ✘ Proportional & derivative

4. ✘ On-off

Question Number : 196 Question Id : 1592074811 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Which of the following is an example for unbounded input

Options :

1.

- ✘ Step input
- 2. ✘ Sinusoidal input
- 3. ✔ Ramp input
- 4. ✘ Pulse input

Question Number : 197 Question Id : 1592074812 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The amplitude ratio (AR) for frequency response of a transportation lag is always

Options :

- 1. ✘ Less than one
- 2. ✘ Greater than one
- 3. ✘ Equal to zero
- 4. ✔ Equal to one

Question Number : 198 Question Id : 1592074813 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

If two first order liquid level systems with transfer functions $G_1(s)$, $G_2(s)$ are connected in non-interacting system type of arrangement, the overall transfer function of non-interacting system will be

Options :

1. ✘ $G_1(s) + G_2(s)$

2. ✘ $G_1(s) / G_2(s)$

3. ✘ $G_1(s) - G_2(s)$

4. ✔ $G_1(s) G_2(s)$

Question Number : 199 Question Id : 1592074814 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Which of the following control strategy is useful when the disturbances are associated with load variables

Options :

1. ✘ Cascade control

2. ✓ Feed forward control

3. ✗ Ratio control

4. ✗ Smith Predictor

Question Number : 200 Question Id : 1592074815 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The Laplace transform of the function $f(t) = t$ is $f(s)$ equal to

Options :

1. ✗ $1/s$

2. ✓ $1/s^2$

3. ✗ $1/s^4$

4. ✗ $1/s^3$