Andhra Pradesh State Council of 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 22nd July 2022 Shift 1
Duration :	180
Total Marks :	200
Display Marks:	No
Share Answer Key With Delivery Engine :	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
Is this Group for Examiner? :	No
Examiner permission :	Cant View
Show Progress Bar? :	No

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Mathematics

Section Id :	72254488
Section Number :	1
Mandatory or Optional :	Mandatory
Number of Questions :	50
Section Marks :	50
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0

Question Number : 1 Question Id : 7225444402 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $\begin{vmatrix} 2 & x & 3 \\ 4 & 1 & 6 \\ -1 & 2 & 7 \end{vmatrix}=0$ then the value of x is

Options :

1. ✘ 6

2. ✘ 5/3

3. ✔ 1/2

4. ✘ -6

Question Number : 2 Question Id : 7225444403 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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If $2A + 3B - 4I = \begin{pmatrix} 3 & 15 \\ 20 & 28 \end{pmatrix}$ and $A + B + I = \begin{pmatrix} 4 & 6 \\ 8 & 14 \end{pmatrix}$ then $A =$

Options :

1. ✖ $\begin{pmatrix} 3 & 5 \\ 0 & 8 \end{pmatrix}$

2. ✖ $\begin{pmatrix} 3 & 15 \\ 2 & 8 \end{pmatrix}$

3. ✖ $\begin{pmatrix} 13 & 1 \\ 20 & 2 \end{pmatrix}$

4. ✔ $\begin{pmatrix} 2 & 3 \\ 4 & 7 \end{pmatrix}$

Question Number : 3 Question Id : 7225444404 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The system of the simultaneous linear equations

$$x - y - 2z = 3; \quad 2x + y + z = 5; \quad 4x - y - 2z = 1 \text{ then } z =$$

Options :

1. ✔ -10

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2. ✖ 3

3. ✖ 0

4. ✖ -1

Question Number : 4 Question Id : 7225444405 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $A = \begin{pmatrix} 1 & 2 \\ 2 & 4 \end{pmatrix}$ and $B = \begin{pmatrix} -4 & 6 \\ 2 & -3 \end{pmatrix}$ then $AB =$

Options :

1. ✖ 1

2. ✖ -8

3. ✖ -4

4. ✔ 0

Question Number : 5 Question Id : 7225444406 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If A is a square matrix such that $A^T = A$ then A is called _____

Options :

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1. ✓ symmetric matrix

2. ✗ skew symmetric matrix

3. ✗ singular matrix

4. ✗ scalar matrix

Question Number : 6 Question Id : 7225444407 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $\frac{10-x}{x^2+x-12} = \frac{A}{x+4} + \frac{B}{x-3}$ then $A + B =$

Options :

1. ✓ -1

2. ✗ 1

3. ✗ -2

4. ✗ 5

Question Number : 7 Question Id : 7225444408 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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If $\frac{4x^2+5x+8}{(x^2+5)(x+2)} = \frac{Ax+B}{x^2+5} + \frac{C}{x+2}$ then $B + C$ =

Options :

1. ✖ 12/7

2. ✖ -15/9

3. ✔ 15/9

4. ✖ 17/9

Question Number : 8 Question Id : 7225444409 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $sin\theta = \frac{3}{5}$, θ *is acute,* then $2tan\theta + 3sec\theta + 4sec\theta\ cosec\theta =$

Options :

1. ✖ -1

2. ✔ $\frac{163}{12}$

3. ✖ $\frac{-163}{12}$

4. ✖ $\frac{13}{12}$

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Question Number : 9 Question Id : 7225444410 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $x = asec\theta$, $y = btan\theta$ then $\frac{x^2}{a^2} - \frac{y^2}{b^2} =$

Options :

1. ✖ $\frac{1}{2}$

2. ✖ $-\frac{1}{2}$

3. ✖ $\frac{1}{4}$

4. ✔ 1

Question Number : 10 Question Id : 7225444411 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of $tan^2 60^0 + 2tan^2 45^0$ is

Options :

1. ✔ 5

2. ✖ 2

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3. ✖ -5

4. ✖ -3

Question Number : 11 Question Id : 7225444412 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of $tan20^0\ tan40^0\ tan60^0\ tan80^0$ is

Options :

1. ✖ -2

2. ✖ 2

3. ✖ -3

4. ✔ 3

Question Number : 12 Question Id : 7225444413 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $(1+tanA)(1+tanB)=2$ then $A+B=$

Options :

1. ✖ 65^0

2. ✔ 45^0

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3. ✖ 35^0

4. ✖ 25^0

Question Number : 13 Question Id : 7225444414 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of $sin20^0\ sin40^0\ sin60^0\ sin80^0$ is

Options :

1. ✖ $\frac{-3}{16}$

2. ✖ $\frac{23}{16}$

3. ✖ $\frac{31}{16}$

4. ✔ $\frac{3}{16}$

Question Number : 14 Question Id : 7225444415 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If in a triangle ABC , $a = 13, b = 14, c = 15$ then the area of the triangle is

Options :

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1. ✖ 35 sq. units

2. ✖ 56 sq. units

3. ✔ 84 sq. units

4. ✖ 94 sq. units

Question Number : 15 Question Id : 7225444416 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of $sin^{-1}\frac{5}{13} + \tan^{-1}\frac{12}{5}$ is

Options :

1. ✖ $-\frac{\pi}{2}$

2. ✖ $\frac{\pi}{4}$

3. ✔ $\frac{\pi}{2}$

4. ✖ $-\frac{\pi}{3}$

Question Number : 16 Question Id : 7225444417 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response

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

The general solution of trigonometric equation $sec4\theta - sec2\theta = 2$ is

Options :

1. ✓ $\frac{2n\pi}{5} \pm \frac{\pi}{10}$ or $2n\pi \pm \frac{\pi}{2}$

2. ✗ $\frac{3\pi}{5}$

3. ✗ $\frac{5\pi}{4}$

4. ✗ $\frac{\pi}{4}$

Question Number : 17 Question Id : 7225444418 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of $\tan^{-1}(2sin150^0)$is

Options :

1. ✗ π

2. ✗ 3π

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3. ✖ $\frac{\pi}{2}$

4. ✔ $\frac{\pi}{4}$

Question Number : 18 Question Id : 7225444419 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The modulus of $\frac{(1+i)(i-\sqrt{3})i}{1-i}$ is

Options :

1. ✔ 2

2. ✖ 6

3. ✖ -2

4. ✖ 4

Question Number : 19 Question Id : 7225444420 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $1, \omega, \omega^2$ are the cube roots of unity, then $(1-\omega)(1-\omega^2)(1-\omega^4)(1-\omega^5) =$

Options :

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1. ✖ 3

2. ✔ 9

3. ✖ 1

4. ✖ 0

Question Number : 20 Question Id : 7225444421 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The length of the tangent from(-3,1) to the circle $3x^2 + 3y^2 - 5x - 6y - 12 = 0$ is

Options :

1. ✖ -3

2. ✔ 3

3. ✖ 4

4. ✖ 9

Question Number : 21 Question Id : 7225444422 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The eccentricity of an equilateral hyperbola is

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Options :

1. ✖ 1

2. ✔ $\sqrt{2}$

3. ✖ 3

4. ✖ $\sqrt{3}$

Question Number : 22 Question Id : 7225444423 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The eccentricity of the hyperbola $36x^2 - 25y^2 = 900$ is

Options :

1. ✔ $\frac{\sqrt{61}}{5}$

2. ✖ $\frac{9}{2}$

3. ✖ $\frac{3}{2}$

4. ✖ $\frac{5}{2}$

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Question Number : 23 Question Id : 7225444424 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The equation of tangent to parabola $y^2 = 16x$ at an end point of latus rectum is

Options :

1. ✗ $2x - 3y - 4 = 0$

2. ✗ $2x + 2y + 4 = 0$

3. ✓ $x - y + 4 = 0$

4. ✗ $x - y - 4 = 0$

Question Number : 24 Question Id : 7225444425 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $y = 4x + k$ is a tangent to the hyperbola $\frac{x^2}{64} - \frac{y^2}{49} = 1$ then the value of k is

Options :

1. ✗ $\pm\sqrt{775}$

2. ✗ $\pm\sqrt{995}$

3. ✗ $\pm\sqrt{275}$

4. ✓ $\pm\sqrt{975}$

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Question Number : 25 Question Id : 7225444426 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the line $2x + \sqrt{6}\,y = 2$ touches the hyperbola $x^2 - 2y^2 = 4$ then the point of contact is

Options :

1. ✗ $(4, \sqrt{6})$

2. ✓ $(4, -\sqrt{6})$

3. ✗ $(-4,6)$

4. ✗ $(5,7)$

Question Number : 26 Question Id : 7225444427 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of $\lim_{x\to 2}\left(\frac{x^3-3x-2}{2x^2-5x+2}\right)$ is

Options :

1. ✗ $\frac{1}{3}$

2. ✓ 3

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3. ✗ $\frac{1}{5}$

4. ✗ $\frac{1}{2}$

Question Number : 27 Question Id : 7225444428 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $2x^2 - 3xy + 4y^2 = 1$ then $\frac{dy}{dx} =$

Options :

1. ✓ $\frac{4x-3y}{3x-8y}$

2. ✗ $\frac{4x-7y}{3x-8y}$

3. ✗ $\frac{4x-3y}{3x+8y}$

4. ✗ $\frac{4x-3y}{3x-18y}$

Question Number : 28 Question Id : 7225444429 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $x = a\sin^2 t$ and $y = a\cos^2 t$ then $\frac{dy}{dx} =$

Options :

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1. ✖ -2

2. ✖ $\tan t$

3. ✖ $\sin t$

4. ✔ -1

Question Number : 29 Question Id : 7225444430 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The curve $xy^2 = 16$ at the point where the ordinate is -2 then the equation of tangent is

Options :

1. ✖ $x + 4y - 12 = 0$

2. ✖ $2x - 4y - 12 = 0$

3. ✔ $x - 4y - 12 = 0$

4. ✖ $x - 5y - 12 = 0$

Question Number : 30 Question Id : 7225444431 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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The equation of the normal to the curve $y^2 = \frac{x^3}{2a-x}$ at the point (a, a) is

Options :

1. ✓ $x + 2y = 3a$

2. ✗ $x - 2y = 4a$

3. ✗ $2x + y = 2a$

4. ✗ $3x - 4y = 5a$

Question Number : 31 Question Id : 7225444432 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The angle between the curves $xy = 2$ and $y^2 = 4x$ is

Options :

1. ✗ $-\tan^{-1}(3)$

2. ✓ $\tan^{-1}(3)$

3. ✗ $\sin^{-1}(3)$

4. ✗ $\cos^{-1}(3)$

ZOLLEGE.in

Question Number : 32 Question Id : 7225444433 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The maximum value of xe^{-x} is

Options :

1. ✔ $\frac{1}{e}$

2. ✘ $-\frac{1}{e}$

3. ✘ $2e$

4. ✘ e

Question Number : 33 Question Id : 7225444434 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The height of the right circular cylinder of greatest volume which is inscribed in a sphere of radius a is

Options :

1. ✘ $\frac{-2a}{7}$

2. ✘ $-\frac{a}{2}$

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3. ✓ $\frac{2a}{\sqrt{3}}$

4. ✗ $\frac{1}{2}$

Question Number : 34 Question Id : 7225444435 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The volume of a spherical ball is increasing at the rate of 4π cc/s, then the rate of increase of the radius, when the volume is $288\pi\ cc$ is

Options :

1. ✗ 36 cm/sec

2. ✗ 6 cm/sec

3. ✓ $\frac{1}{36} cm/sec$

4. ✗ $\frac{1}{6} cm/sec$

Question Number : 35 Question Id : 7225444436 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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If $z = e^{(ax+by)} f(ax-by)$ then $b\frac{\partial z}{\partial x} + a\frac{\partial z}{\partial y} =$

Options :

1. ✖ $-2abz$

2. ✖ $3abz$

3. ✔ 2abz

4. ✖ 5abz

Question Number : 36 Question Id : 7225444437 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of $\int \frac{e^x - e^{-x}}{e^x + e^{-x}} dx$ is

Options :

1. ✖ $\log(e^{2x} - 1) - x + c$

2. ✖ $-\log(e^{2x} + 1) - x + c$

3. ✖ $\log(e^{2x} + 7) - x + c$

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4. ✔ $log(e^{2x}+1)-x+c$

Question Number : 37 Question Id : 7225444438 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of $\int \frac{dx}{\sqrt{4x^2-4x+2}}$ is

Options :

1. ✘ $-\frac{1}{2}\sinh^{-1}(x-1)+c$

2. ✘ $\frac{1}{2}\sinh^{-1}(2x+1)+c$

3. ✔ $\frac{1}{2}\sinh^{-1}(2x-1)+c$

4. ✘ $\frac{1}{2}\sinh^{-1}(3x-1)+c$

Question Number : 38 Question Id : 7225444439 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of $\int logx\,dx$ is

Options :

1. ✘ $logx-x+c$

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2. ✓ $xlogx - x + c$

3. ✗ $2xlogx + x + c$

4. ✗ $-xlogx + x + c$

Question Number : 39 Question Id : 7225444440 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of $\int_0^{\pi/4} \sqrt{1 + sin2x}\, dx$ is

Options :

1. ✓ 1

2. ✗ 2

3. ✗ -1

4. ✗ π

Question Number : 40 Question Id : 7225444441 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The area enclosed between the curves $y^2 = 4x$ and $x^2 = 4y$ is

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Options :

1. ✓ $\frac{16}{3}$ square units

2. ✗ $\frac{5}{2}$ square units

3. ✗ $\frac{3}{2}$ square units

4. ✗ $\frac{9}{2}$ square units

Question Number : 41 Question Id : 7225444442 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The mean value of $\frac{1}{4+x^2}$ on $[-2,2]$ is

Options :

1. ✗ $\frac{\pi}{12}$

2. ✗ $-\frac{\pi}{2}$

3. ✗ $\frac{\pi}{2}$

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4. ✓ $\frac{\pi}{4}$

Question Number : 42 Question Id : 7225444443 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of $\int \frac{1}{1+4x^2}\,dx$ on R is

Options :

1. ✗ $-\frac{1}{2}tan^{-1}(2x)+c$

2. ✗ $\frac{1}{2}tan^{-1}(5x)+c$

3. ✗ $-\frac{1}{2}tan^{-1}(x)+c$

4. ✓ $\frac{1}{2}tan^{-1}(2x)+c$

Question Number : 43 Question Id : 7225444444 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of $\int_0^1 \frac{x\sin^{-1}x}{\sqrt{1-x^2}}\,dx$ is

Options :

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1. ✖ -1

2. ✖ 0

3. ✔ 1

4. ✖ 5

Question Number : 44 Question Id : 7225444445 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The order and degree of the differential equation $\left(\frac{dy}{dx}\right)^2 + 3\left(\frac{dy}{dx}\right) + 2 = 0$ is

Options :

1. ✖ Order=2, degree=2

2. ✖ Order=2, degree=1

3. ✔ order = 1, degree = 2

4. ✖ Order=3, degree=1

Question Number : 45 Question Id : 7225444446 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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The general solution of the differential equation $\frac{dy}{dx} + ycotx = 4xcosecx$ is

Options :

1. ✖ $ycosx = 2x^2+c$

2. ✔ $ysinx = 2x^2+c$

3. ✖ $ysinx = -2x^2+c$

4. ✖ $ysinx = 3x^2+c$

Question Number : 46 Question Id : 7225444447 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The general solution of the linear differential equation $\frac{dy}{dx} - \frac{y}{x+1} = e^{3x}(x+1)$ is

Options :

1. ✖ $y/\sin x = -\frac{e^{4x}}{4} + c$

2. ✔ $\frac{y}{x+1} = \frac{e^{3x}}{3} + c$

3. ✖ $y\,e^{3x}\,x = -\frac{\cos 2x}{4} + ce^{3x}$

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4. ✖ $y \sin x = \frac{e^{3x}}{4} + c$

Question Number : 47 Question Id : 7225444448 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The particular integral of the differential equation $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = e^x$ is

Options :

1. ✖ $-\frac{e^x}{6}$

2. ✖ $\frac{e^x}{16}$

3. ✖ $\frac{e^x}{9}$

4. ✔ $\frac{e^x}{6}$

Question Number : 48 Question Id : 7225444449 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The particular integral for the differential equation $(D^2 + 4D + 3)y = sin3x$ is

Options :

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1. ✖ $sinx + 3cos2x$

2. ✖ $cos3x - 2sin4x$

3. ✖ $\frac{2}{30}(2cos2x + sinx)$

4. ✔ $\frac{-1}{30}(2cos3x + sin3x)$

Question Number : 49 Question Id : 7225444450 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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

Options :

1. ✔ $\frac{1}{xy} = -x + c$

2. ✖ $\frac{-1}{xy} = -x + c$

3. ✖ $\frac{2}{xy} = x + c$

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4. ✗ $\frac{1}{y} = -x + c$

Question Number : 50 Question Id : 7225444451 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The general solution of the differential equation $(2x + y + 1)dx + (x + 2y + 1)dy = 0$ is

Options :

1. ✗ $x^2 + xy + 3y^2 + 2x + y = c$

2. ✓ $x^2 + xy + y^2 + x + y = c$

3. ✗ $2x^2 + xy + 2y^2 + x + y = c$

4. ✗ $x^2 - xy + 2y^2 + x + y = c$

Physics

Section Id :	72254489
Section Number :	2
Mandatory or Optional :	Mandatory
Number of Questions :	25
Section Marks :	25
Enable Mark as Answered Mark for Review and Clear Response :	Yes

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Maximum Instruction Time : 0

Question Number : 51 Question Id : 7225444452 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The dimensions of permeability is

Options :

1. ✓ $MLT^{-2}A^{-2}$

2. ✗ $MLT^{-1}A^{-2}$

3. ✗ $MLT^{-2}A^{-1}$

4. ✗ $MLT^{-1}A^{-1}$

Question Number : 52 Question Id : 7225444453 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If velocity (V), force (F) and energy (E) are taken as fundamental units, then dimensional formula for mass will be

Options :

1. ✗ V^0FE^2

2. ✗ $VF^{-2}E^0$

3. ✗ $V^{-2}F^0E$

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4. ✓ $V^{-2}F^{0}E$

Question Number : 53 Question Id : 7225444454 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Vector A extends from the origin to a point having polar coordinates $(7, 70^0)$ and vector B extends from the origin to a point having polar coordinates $(4, 130^0)$. Find $A \bullet B$

Options :

1. ✗ 28

2. ✓ 14

3. ✗ 0

4. ✗ 7

Question Number : 54 Question Id : 7225444455 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If two vectors $2\hat{\imath} + 3\hat{\jmath} - \hat{k}$ and $-4\hat{\imath} - 6\hat{\jmath} - \lambda\hat{k}$ are parallel to each other then value of λ be

Options :

1. ✗ 2

2. ✓ 4

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3. ✖ 0

4. ✖ 6

Question Number : 55 Question Id : 7225444456 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The coefficient of static friction between contact surfaces of two bodies is 1. The contact surface of one body supports the other till the inclination is less than

Options :

1. ✖ 30^0

2. ✔ 45^0

3. ✖ 60^0

4. ✖ 90^0

Question Number : 56 Question Id : 7225444457 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A smooth block is released from rest on a 45^0 inclined plane and it slides a distance 'd'. The time taken to slide is 'n' times that on a smooth inclined plane. The coefficient of friction is

Options :

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1. ✔ $\mu_k = 1 - \frac{1}{n^2}$

2. ✖ $\mu_k = \sqrt{1 - \frac{1}{n^2}}$

3. ✖ $\mu_k = \frac{1}{1-n^2}$

4. ✖ $\mu_k = \sqrt{\frac{1}{1-n^2}}$

Question Number : 57 Question Id : 7225444458 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A body is projected at an angle other than 90^0 with the horizontal with some velocity. If the time of ascent of the body is 1second, then the maximum height it can reach is (Take g=10ms^{-2})

Options :

1. ✔ 5 m

2. ✖ 10 m

3. ✖ 2.5 m

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4. ✖ 75 m

Question Number : 58 Question Id : 7225444459 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A bullet fired from a gun falls at a distance half of its maximum range. The angle of projection of the bullet is

Options :

1. ✖ 45^0

2. ✖ 60^0

3. ✖ 30^0

4. ✔ 15^0

Question Number : 59 Question Id : 7225444460 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A body is thrown vertically upwards with a velocity. Select the incorrect statements from the following

I. Both velocity and acceleration are zero at its highest point.

II. Velocity is maximum and acceleration is zero at the highest point

III. Velocity is maximum and acceleration is 'g' downwards at its highest point

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Options :

1. ✓ I,II and III

2. ✗ II and III

3. ✗ I and II

4. ✗ I and III

Question Number : 60 Question Id : 7225444461 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A person standing on a tower of height 60 m throws an object upwards with velocity of 40 m/s at an angle 30^0 to the horizontal. Find the total time taken by the object to gain maximum height and fall on the ground (take g= 10 m/s^2).

Options :

1. ✗ 3 s

2. ✗ 20 s

3. ✓ 6 s

4. ✗ 16 s

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Question Number : 61 Question Id : 7225444462 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A bucket full of water is drawn up by a person. In this case the work done by the gravitational force is

Options :

1. ✓ Negative because the force and displacement are in opposite directions

2. ✗ Positive because the force and displacement are in the same direction

3. ✗ Negative because the force and displacement are the same direction

4. ✗ Positive because the force and displacement are in opposite direction

Question Number : 62 Question Id : 7225444463 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When a long spring is stretched by x cm, its potential energy is U. If the spring is stretched by Nx cm, the potential energy stored in it will be

Options :

1. ✗ U/N

2. ✗ NU

3. ✓ N^2U

4. ✗ U/N^2

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Question Number : 63 Question Id : 7225444464 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is a non-renewable source of energy?

Options :

1. ✔ Coal

2. ✖ Solar

3. ✖ Geothermal

4. ✖ Tidal

Question Number : 64 Question Id : 7225444465 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If a class room has dimensions 20x15x5 m^3 and reverberation time 1.5 sec, the total absorption of all surfaces and the average absorption coefficient will be

Options :

1. ✖ 0.7 and 69

2. ✔ 69 and 0.07

3. ✖ 6.9 and 0.7

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4. ✖ 0.69 and 0.7

Question Number : 65 Question Id : 7225444466 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A source of sound of frequency 450 cycles/sec is stationary but an observer is moving towards the source with 34 m/sec speed. If the speed of sound is 340 m/sec, the apparent frequency will be

Options :

1. ✖ 410 cycles/sec

2. ✖ 500 cycles/sec

3. ✖ 550 cycles/sec

4. ✔ 495 cycles/sec

Question Number : 66 Question Id : 7225444467 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A simple pendulum has a time period T in vacuum. Its time period when it is completely immersed in a liquid of density one-eighth of the density of material of the bob is

Options :

1. ✖ $\sqrt{\frac{7}{8}}T$

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2. ✖ $\sqrt{\frac{5}{8}}T$

3. ✖ $\sqrt{\frac{3}{8}}T$

4. ✔ $\sqrt{\frac{8}{7}}T$

Question Number : 67 Question Id : 7225444468 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A particle executes simple harmonic motion represented by displacement function as $x(t) = A \sin(\omega t + \phi)$. If the position and velocity of the particle at $t = 0$ s are 2 cm and 2ω cm s^{-1} respectively, then its amplitude is $x\sqrt{2}$ cm where the value of x is

Options :

1. ✔ 2

2. ✖ $2\sqrt{2}$

3. ✖ 4

4. ✖ 1

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Question Number : 68 Question Id : 7225444469 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An observer standing between two parallel cliffs emits an intense sound note. If two successive echoes are heard after 5 s and 7 s, then distance between the cliffs is (velocity of sound is 340 m/s)

Options :

1. ✗ 850 m

2. ✗ 1190 m

3. ✓ 2040 m

4. ✗ 340 m

Question Number : 69 Question Id : 7225444470 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

M grams of steam at 100°C is mixed with 200 g of ice at its melting point in a thermally insulated container. If it produced liquid water at 40°C [heat of vaporization of water is 540 cal/g and heat of fusion of ice is 80 cal/g] the value of M is

Options :

1. ✗ 20

2. ✗ 80

3. ✓ 40

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4. ✖ 10

Question Number : 70 Question Id : 7225444471 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which type of ideal gas will have the largest value for $C_p - C_v$?

Options :

1. ✖ Polyatomic

2. ✖ Diatomic

3. ✖ Monoatomic

4. ✔ The value will be the same for all

Question Number : 71 Question Id : 7225444472 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In thermodynamics, heat and work are

Options :

1. ✔ Path functions

2. ✖ Intensive thermodynamic state variables

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3. ✖ Extensive thermodynamic state variables

4. ✖ Point functions

Question Number : 72 Question Id : 7225444473 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For an adiabatic expansion of an ideal gas, the fractional change in its pressure is equal to (where γ is the ratio of specific heats):

Options :

1. ✖ $-\gamma\frac{V}{dV}$

2. ✔ $-\gamma\frac{dV}{V}$

3. ✖ $-\frac{1}{\gamma}\frac{V}{dV}$

4. ✖ $-\frac{1}{\gamma}\frac{dV}{V}$

Question Number : 73 Question Id : 7225444474 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following processes must violate the first law of thermodynamics?

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Options :

1. ✓ $W > 0, Q > 0,$ and$\Delta E_{int} < 0$

2. ✗ $W > 0, Q < 0,$ and $\Delta E_{int} > 0$

3. ✗ $W < 0, Q > 0,$ and $\Delta E_{int} < 0$

4. ✗ $W > 0, Q < 0,$ and $\Delta E_{int} = 0$

Question Number : 74 Question Id : 7225444475 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The critical angle for total internal reflection is maximum for

Options :

1. ✗ Red light

2. ✗ Blue light

3. ✗ Ultraviolet rays

4. ✓ Infrared rays

Question Number : 75 Question Id : 7225444476 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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Photon of frequency (f) has a momentum (p) associated with it. If c is the velocity of light, the momentum is

Options :

1. ✓ hf/c

2. ✗ f/c

3. ✗ hfc

4. ✗ hf/c^2

Chemistry

Section Id :	72254490
Section Number :	3
Mandatory or Optional :	Mandatory
Number of Questions :	25
Section Marks :	25
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0

Question Number : 76 Question Id : 7225444477 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Bohr's theory can be applied to which of the following ions?

Options :

1. ✗ Na^+

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2. ✗ Be^{2+}

3. ✗ Li^{+}

4. ✓ Li^{2+}

Question Number : 77 Question Id : 7225444478 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the correct orbital designation of an electron with the quantum number , n=4, l=3, m=2, s=1/2?

Options :

1. ✗ 3d

2. ✓ 4f

3. ✗ 5p

4. ✗ 6s

Question Number : 78 Question Id : 7225444479 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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The Two electrons present in an orbital are distinguished by

Options :

1. ✗ Principal Quantum number

2. ✗ Azimuthal Quantum number

3. ✗ Magnetic Quantum number

4. ✓ Spin Quantum number

Question Number : 79 Question Id : 7225444480 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Favorable conditions for the formation of an ionic bond are

Options :

1. ✗ Small cation, large anion, high charge on both the ions.

2. ✓ Large cation, small anion, low charge on both the ions

3. ✗ Large cation, large anion, high charge on both the ions.

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Small cation, small anion, high charge on both the ions

4. ✖

Question Number : 80 Question Id : 7225444481 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The maximum covalent character is observed in

Options :

1. ✖ LiCl

2. ✖ $BeCl_2$

3. ✖ LiF

4. ✔ $BeBr_2$

Question Number : 81 Question Id : 7225444482 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a reaction of H_2SO_4 with NaOH, $NaHSO_4$ is formed. Equivalent weight of H_2SO_4 is

Options :

1. ✖ 49 grams

2. ✔ 98 grams

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3. ✗ 98 amu

4. ✗ 49 amu

Question Number : 82 Question Id : 7225444483 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If 5.85 grams of NaCl are dissolved in water and the solution is made up to 0.5 litre, the molarity of solution will be:

Options :

1. ✓ 0.2

2. ✗ 0.4

3. ✗ 1.0

4. ✗ 0.1

Question Number : 83 Question Id : 7225444484 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The solution of Mercury with other metals is called

Options :

1. ✗ Saturated solutions

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2. ✗ Unsaturated solutions

3. ✓ Amalgam

4. ✗ Supersaturated solutions.

Question Number : 84 Question Id : 7225444485 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A strong acid has a

Options :

1. ✗ Weak conjugate acid

2. ✓ Weak conjugate base

3. ✗ Strong conjugate base

4. ✗ Strong conjugate acid

Question Number : 85 Question Id : 7225444486 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Electron pair donor is

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Options :

1. ✗ Lowry- Bronsted base

2. ✗ Lowry- Bronsted acid

3. ✗ Lewis acid

4. ✓ Lewis base

Question Number : 86 Question Id : 7225444487 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The poor conductor of the electricity among the following is:

Options :

1. ✗ Copper

2. ✗ Aluminium

3. ✗ Silver

4. ✓ Pure water

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Question Number : 87 Question Id : 7225444488 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The amount of electricity that can deposit 108 g of silver from $AgNO_3$ solution is

Options :

1. ✖ 1 ampere

2. ✖ 1 coulomb

3. ✔ 1 faraday

4. ✖ 1 siemen

Question Number : 88 Question Id : 7225444489 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is false regarding galvanic cells?

Options :

1. ✖ It converts chemical energy into electrical energy

2. ✖ The electrolytes taken in the two beakers are different

3. ✔ The reactions taking place are non-spontaneous

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4. ✖ To set up this cell, a salt bridge is required

Question Number : 89 Question Id : 7225444490 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the standard reduction potential of cathode of a galvanic cell if the standard EMF of the cell and standard reduction potential of the anode are 2.71 volts and -2.37 volts respectively?

Options :

1. ✖ 0.68 volts

2. ✖ -0.68 volts

3. ✖ -0.34 volts

4. ✔ 0.34 volts.

Question Number : 90 Question Id : 7225444491 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Hardness of water is conventionally expressed in terms of equivalent amount of

Options :

1. ✖ $MgCO_3$

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2. ✓ $CaCO_3$

3. ✗ Na_2CO_3

4. ✗ K_2CO_3

Question Number : 91 Question Id : 7225444492 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Zero hardness of water is achieved by

Options :

1. ✗ Using Lime soda process

2. ✗ Excess lime treatment

3. ✗ Using excess alum dosage

4. ✓ Ion-Exchange method

Question Number : 92 Question Id : 7225444493 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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What is the hardness of water in terms of $CaCO_3$ equivalent if water contains 27.6 mg/L of $MgSO_4$

Options :

1. ✔ 23 mg/L

2. ✖ 2.3 mg/L

3. ✖ 28 mg/L

4. ✖ 12 mg/L

Question Number : 93 Question Id : 7225444494 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Electrochemical corrosion in acidic environment is carried with

Options :

1. ✖ Evolution of oxygen

2. ✖ Absorption of oxygen

3. ✔ Evolution of hydrogen

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4. ✖ Absorption of hydrogen

Question Number : 94 Question Id : 7225444495 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following metal oxide film is protective from corrosion?

Options :

1. ✖ Porous

2. ✔ Non- porous

3. ✖ Volatile

4. ✖ Unstable

Question Number : 95 Question Id : 7225444496 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is thermosetting plastic?

Options :

1. ✖ PVC

2. ✖ Teflon

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3. ✖ Polystyrene

4. ✔ Bakelite

Question Number : 96 Question Id : 7225444497 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Ebonite is

Options :

1. ✔ highly vulcanized rubber

2. ✖ PVC

3. ✖ Synthetic rubber

4. ✖ polystyrene

Question Number : 97 Question Id : 7225444498 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Buna-S rubber is made up of the monomers of

Options :

1. ✖ 1,3 butadiene and acrylonitrile

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2. ✔ 1,3 butadiene and styrene

3. ✖ 1,3 butadiene and formaldehyde

4. ✖ 1,3 butadiene and phenol

Question Number : 98 Question Id : 7225444499 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Composition of water gas is

Options :

1. ✖ $CO + N_2$

2. ✖ $CO + CH_4$

3. ✔ $CO + H_2$

4. ✖ $CH_4 + N_2$

Question Number : 99 Question Id : 7225444500 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is not a green house gas

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Options :

1. ✓ Hydrogen

2. ✗ Carbon monoxide

3. ✗ Methane

4. ✗ Nitrous oxide

Question Number : 100 Question Id : 7225444501 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Photochemical smog is due to the presence of

Options :

1. ✗ Oxide of carbon

2. ✗ Lead

3. ✗ Oxide of sulphur

4. ✓ Oxide of nitrogen

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Chemical Engineering

Section Id :	72254491
Section Number :	4
Mandatory or Optional :	Mandatory
Number of Questions :	100
Section Marks :	100
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0

Question Number : 101 Question Id : 7225444502 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The ability of materials to develop a characteristic behavior under repeated loading known as _____

Options :

1. ✘ Toughness

2. ✘ Resilience

3. ✘ Hardness

4. ✔ Fatigue

Question Number : 102 Question Id : 7225444503 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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Which spectrometer allows analysis of carbon and sulfur?

Options :

1. ✓ Vacuum spectrometer

2. ✗ Airpath spectrometer

3. ✗ Tube spectrometer

4. ✗ Rayleigh spectrometer

Question Number : 103 Question Id : 7225444504 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the disadvantage of atomization?

Options :

1. ✗ Electrical resistivity

2. ✓ Oxidation

3. ✗ Poor mechanical strength

4. ✗ Coarse grains

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Question Number : 104 Question Id : 7225444505 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The eutectic reaction of Iron-carbon occurs at

Options :

1. ✗ $537\ ^{\circ}C$

2. ✗ $667\ ^{\circ}C$

3. ✓ $727\ ^{\circ}C$

4. ✗ $937\ ^{\circ}C$

Question Number : 105 Question Id : 7225444506 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What are lead glasses used for?

Options :

1. ✗ Kitchenware

2. ✓ Optical components

3. ✗ Electronic tubes

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4. ✗ Temperature thermometers

Question Number : 106 Question Id : 7225444507 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following alloys is also called as weathering steels?

Options :

1. ✓ Low-alloy steels used for atmospheric applications

2. ✗ High-alloy steels used for atmospheric applications

3. ✗ Low-alloy copper alloys

4. ✗ Low-alloy aluminum alloys

Question Number : 107 Question Id : 7225444508 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Natural rubber is _____

Options :

1. ✓ Poly isoprene

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2. ✖ Ethylene glycol

3. ✖ Butadiene

4. ✖ Acrylonitrile

Question Number : 108 Question Id : 7225444509 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the molarity of a 15 ml 2 M aqueous solution when 285 ml of water is added to it

Options :

1. ✖ 0.40

2. ✔ 0.10

3. ✖ 0.22

4. ✖ 0.38

Question Number : 109 Question Id : 7225444510 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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A mixture of hydrogen gas and oxygen gas exerts a total pressure of 1.5 atm on the walls of its container. If the partial pressure of hydrogen is 1 atm, find the mole fraction of oxygen in the mixture.

Options :

1. ✖ 0.11

2. ✖ 0.22

3. ✔ 0.33

4. ✖ 0.44

Question Number : 110 Question Id : 7225444511 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A solution with reasonably permanent pH is called a/an _____ solution.

Options :

1. ✔ Buffer

2. ✖ Colloidal

3. ✖ Ideal

4. ✖ Non-ideal

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Question Number : 111 Question Id : 7225444512 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Recycle stream is purged for

Options :

1. ✗ To remove product

2. ✗ To add fresh feed

3. ✓ To remove unwanted material

4. ✗ To add material

Question Number : 112 Question Id : 7225444513 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A graph relating to Antoine equation is called

Options :

1. ✗ Psychometric chart

2. ✓ Cox chart

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3. ✖ Triangular chart

4. ✖ P – H chart

Question Number : 113 Question Id : 7225444514 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The maximum adiabatic flame temperature in air is _____ the maximum flame temperature in pure oxygen.

Options :

1. ✔ Lower than

2. ✖ Higher than

3. ✖ Same as

4. ✖ No relation to

Question Number : 114 Question Id : 7225444515 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

With increase in excess air for combustion which of the following will result in flue gas

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Options :

1. ✖ % Oxygen decreases

2. ✔ % CO_2 decreases

3. ✖ % Oxygen and CO_2 decreases

4. ✖ % Oxygen and CO_2 increases

Question Number : 115 Question Id : 7225444516 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For hydrocarbon fuels, the adiabatic flame temperature _____ with increasing C/H ratio

Options :

1. ✔ Increases

2. ✖ Decreases

3. ✖ Remain constant

4. ✖ Has no relation

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Question Number : 116 Question Id : 7225444517 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A coal containing very high percentage of durain is called

Options :

1. ✗ Bright Coal

2. ✗ Non-banded Coal

3. ✗ Boghead Coal

4. ✓ Splint Coal

Question Number : 117 Question Id : 7225444518 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Coke is used for manufacturing of

Options :

1. ✗ Lead

2. ✗ Iron

3. ✓ Steel

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4. ✖ Copper

Question Number : 118 Question Id : 7225444519 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following has maximum hydrogen/carbon ratio (by weight)?

Options :

1. ✖ Naphtha

2. ✖ Diesel

3. ✖ Fuel oil

4. ✔ Gasoline

Question Number : 119 Question Id : 7225444520 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following has the lowest cetane number?

Options :

1. ✔ Aromatics

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2. ✖ *i*-paraffins

3. ✖ Naphthene

4. ✖ Olefins

Question Number : 120 Question Id : 7225444521 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Flash point of atmospheric distillation residue is determined by _____ apparatus?

Options :

1. ✖ Pensky-Martens (closed cup type)

2. ✖ Abel

3. ✔ Cleveland (open cup type)

4. ✖ Viscometer

Question Number : 121 Question Id : 7225444522 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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Which of the following sugars is the sweetest?

Options :

1. ✖ Glucose

2. ✖ Sucrose

3. ✔ Fructose

4. ✖ Lactose

Question Number : 122 Question Id : 7225444523 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Dehydrogenation of isopropanol produces

Options :

1. ✖ Propyl alcohol

2. ✔ Acetone

3. ✖ Trichloroethylene

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4. ✖ Formaldehyde

Question Number : 123 Question Id : 7225444524 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is a detergent ?

Options :

1. ✖ Benzene hexachloride

2. ✖ Polytetraflouroethylene

3. ✔ Alkyl benzene sulphonate

4. ✖ Cellulose nitrate

Question Number : 124 Question Id : 7225444525 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Starting raw material for the manufacture of alum is

Options :

1. ✖ gypsum

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2. ✖ alumina

3. ✔ bauxite

4. ✖ ammonium bicarbonate

Question Number : 125 Question Id : 7225444526 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Ion exchange process is also called as _____

Options :

1. ✖ Permutit's process

2. ✔ Demineralization

3. ✖ Zeolite process

4. ✖ Lime soda process

Question Number : 126 Question Id : 7225444527 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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What is recovery in membrane treatment

Options :

1. ✔ Permeate flow/feed flow

2. ✖ Reject flow / feed flow

3. ✖ Permeate flow/Reject flow

4. ✖ Feed flow/Permeate flow

Question Number : 127 Question Id : 7225444528 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Solvay process is used for the manufacture of

Options :

1. ✖ Caustic Soda

2. ✔ Soda ash

3. ✖ Caustic Potash

4. ✖ Soda lime

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Question Number : 128 Question Id : 7225444529 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which are the factors favoured in the reaction kinetics in the NH_3 oxidation stage?

Options :

1. ✖ High temperature, low pressure

2. ✖ Low temperature, high pressure

3. ✖ Low temperature, low pressure

4. ✔ High temperature, high pressure

Question Number : 129 Question Id : 7225444530 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which raw material is used in the production of water gas?

Options :

1. ✖ Natural gas

2. ✖ Off- gases

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3. ✗ Naphtha

Bituminous

4. ✓

Question Number : 130 Question Id : 7225444531 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In paints the pigment is responsible for

Options :

1. ✗ Durability

2. ✓ Colour

3. ✗ Smoothness

4. ✗ Glassy face

Question Number : 131 Question Id : 7225444532 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Silicon carbide is used as

Options :

1. ✗ Dehydrating agent

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2. ✗ Disinfectant

3. ✓ Abrasive

4. ✗ Making casts for statues

Question Number : 132 Question Id : 7225444533 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one of the following compounds is responsible for quick setting of cement?

Options :

1. ✗ MgO

2. ✗ SiO_2

3. ✗ Fe_2O_3

4. ✓ Al_2O_3

Question Number : 133 Question Id : 7225444534 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Streamline and equipotential lines in a flow field

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Options :

1. ✖ Are parallel to each other

2. ✖ Are identical to each other

3. ✔ Are perpendicular to each other

4. ✖ Intersect at acute angles

Question Number : 134 Question Id : 7225444535 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The dynamic viscosity of a liquid is 1.2×10^{-4} Ns/m^2, whereas, the density is 600 kg/m^3. The kinematic viscosity in m^2/s is

Options :

1. ✖ 72×10^{-3}

2. ✔ 20×10^{-8}

3. ✖ 7.2×10^{3}

4. ✖ 70×10^{6}

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Question Number : 135 Question Id : 7225444536 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The continuity equation is the result of application of the following law to the flow field

Options :

1. ✖ First law of thermodynamics

2. ✖ Conservation of energy

3. ✖ Newtons second law of motion

4. ✔ Conservation of mass

Question Number : 136 Question Id : 7225444537 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which fluid does not experience shearing stress during flow?

Options :

1. ✖ Pseudoplastic

2. ✖ Dilatant

3. ✖ Newtonian

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4. ✔ Inviscid

Question Number : 137 Question Id : 7225444538 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

With increase of speed in fluid drag force on an object will be

Options :

1. ✔ Increases

2. ✖ Decreases

3. ✖ Remain same

4. ✖ Gets doubled

Question Number : 138 Question Id : 7225444539 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Water flowing through hose having diameter 1 cm at speed of 1 ms^{-1} if water is to emerge at 21 ms^{-1} then diameter of nozzle is

Options :

1. ✔ 0.2 cm

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2. ✖ 0.1 cm

3. ✖ 0.02 cm

4. ✖ 0.01 cm

Question Number : 139 Question Id : 7225444540 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The head loss in turbulent flow in a pipe varies

Options :

1. ✖ as velocity

2. ✖ inversely as the square of diameter

3. ✖ inversely as the velocity

4. ✔ as (velocity)^2

Question Number : 140 Question Id : 7225444541 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Discharge capacity of the reciprocating pump is _____ that of the centrifugal pump.

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Options :

1. ✖ higher than

2. ✖ same as

3. ✖ unpredictable

4. ✔ lower than

Question Number : 141 Question Id : 7225444542 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The compression ratios for axial flow compressors are ____

Options :

1. ✖ Lesser

2. ✔ Higher

3. ✖ Moderate

4. ✖ Zero

Question Number : 142 Question Id : 7225444543 Display Question Number : Yes Is Question Mandatory : No Calculator : None

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

LMTD in case of counter flow heat exchanger as compared to parallel flow heat exchanger is

Options :

1. ✔ Higher

2. ✘ Lower

3. ✘ Same

4. ✘ Depends on the area of heat exchanger

Question Number : 143 Question Id : 7225444544 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In free convection heat transfer transition from laminar to turbulent flow is governed by the critical value of the

Options :

1. ✘ Reynold's number

2. ✘ Grashoff's number

3. ✘ Reynold's number, Grashoff's number

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4. ✓ Prandtl number, Grashoff's number

Question Number : 144 Question Id : 7225444545 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Temperature of steam at around 540°C can be measured by

Options :

1. ✗ Thermometer

2. ✗ Thermistor

3. ✓ Thermocouple

4. ✗ Rheostat

Question Number : 145 Question Id : 7225444546 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When absorptivity (α) = 1, reflectivity (ρ) = 0 and transmissivity (τ) = 0, then the body is said to be a

Options :

1. ✓ Black body

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Grey body

2. ✖

Opaque body

3. ✖

White body

4. ✖

Question Number : 146 Question Id : 7225444547 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Two balls of same material and finish have their diameters in the ratio of 2: 1 and both are heated to same temperature and allowed to cool by radiation. Rate of cooling by big ball as compared to smaller one will be in the ratio of

Options :

1. ✖ 1:1

2. ✖ 2: 1

3. ✔ 1: 2

4. ✖ 4: 1

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Question Number : 147 Question Id : 7225444548 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The ratio of Nusselt number and the product of Reynold's number and Prandtl number is equal to

Options :

1. ✓ Stanton number

2. ✗ Biot number

3. ✗ Peclet number

4. ✗ Grashoff number

Question Number : 148 Question Id : 7225444549 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Heat is mainly transferred by conduction, convection and radiation in

Options :

1. ✗ Insulated pipes carrying hot water

2. ✗ Refrigerator freezer coil

3. ✓ Boiler furnaces

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Condensation of steam in a condenser

4. ✗

Question Number : 149 Question Id : 7225444550 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The ratio of energy transferred by convection to that by conduction is called

Options :

Stanton number

1. ✗

Nusselt number

2. ✗

Biot number

3. ✓

Preclet number

4. ✗

Question Number : 150 Question Id : 7225444551 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Air at 20° C blows over a plate of 50 cm x 75 cm maintained at 250° C. If the convection heat transfer coefficient is 25 W/m^2 °C, the heat transfer rate is

Options :

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1. ✗ 215.6 kW

2. ✗ 2156 kW

3. ✓ 2.156 kW

4. ✗ 21.56 kW

Question Number : 151 Question Id : 7225444552 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The fouling factor

Options :

1. ✗ Is a dimensionless number

2. ✗ Is a safety factor

3. ✓ Accounts for all resistances due to heat transfer

4. ✗ Increases the heat transfer

Question Number : 152 Question Id : 7225444553 Display Question Number : Yes Is Question Mandatory : No Calculator : None

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

Ball mills and tube mills with flint or porcelain balls are used for size reduction of

Options :

1. ✖ Rubber

2. ✖ Asbestos

3. ✖ Limestone

4. ✔ Non-metallic ores

Question Number : 153 Question Id : 7225444554 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Diatomaceous earth is a/an

Options :

1. ✖ Catalyst

2. ✔ Filter aid

3. ✖ Explosive

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4. ✗ Filter medium

Question Number : 154 Question Id : 7225444555 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is a pressure filter ?

Options :

1. ✓ Plate and flame filter.

2. ✗ Leaf filter (Moore filter).

3. ✗ Rotary drum filter.

4. ✗ Sand filter.

Question Number : 155 Question Id : 7225444556 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The main size reduction operation in ultrafine grinders is

Options :

1. ✗ Compression

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2. ✗ Cutting

3. ✗ Impact

4. ✓ Attrition

Question Number : 156 Question Id : 7225444557 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Jigging is a technique by which different particles can be

Options :

1. ✗ Separated by particle density.

2. ✓ Separated by particle size.

3. ✗ Separated by particle shape.

4. ✗ Mixed

Question Number : 157 Question Id : 7225444558 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For transporting pasty material, one will use a/an

Options :

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1. ✖ Apron conveyor

2. ✔ Screw conveyor

3. ✖ Bucket elevator

4. ✖ Belt conveyor

Question Number : 158 Question Id : 7225444559 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Crushing efficiency is the ratio of the

Options :

1. ✖ Energy fed to the machine to the surface energy created by crushing.

2. ✖ Energy absorbed by the solid to that fed to the machine.

3. ✔ Surface energy created by crushing to the energy absorbed by the solid.

4. ✖ Energy absorbed by the solid to the surface energy created by crushing.

Question Number : 159 Question Id : 7225444560 Display Question Number : Yes Is Question Mandatory : No Calculator : None

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

Which is not a state function ?

Options :

1. ✖ Specific volume

2. ✔ Work

3. ✖ Pressure

4. ✖ Temperature

Question Number : 160 Question Id : 7225444561 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Throttling process is a/an _____ process.

Options :

1. ✖ Reversible and constant entropy

2. ✔ Irreversible and constant enthalpy

3. ✖ Reversible and isothermal

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4. ✖ Reversible and constant enthalpy

Question Number : 161 Question Id : 7225444562 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For spontaneous changes in an isolated system (S = entropy)

Options :

1. ✖ ds = Constant

2. ✖ ds < 0

3. ✖ ds = 0

4. ✔ ds > 0

Question Number : 162 Question Id : 7225444563 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An isentropic flow is one which is

Options :

1. ✔ adiabatic and reversible

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2. ✖ adiabatic and irreversible

3. ✖ isothermal and reversible

4. ✖ isothermal and irreversible

Question Number : 163 Question Id : 7225444564 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For a specific reaction, the equilibrium constant (K) ?

Options :

1. ✖ Always remains the same at different reaction conditions.

2. ✖ Increases if the concentration of one of the products is increased.

3. ✔ Changes with changes in the temperature.

4. ✖ Increases if the concentration of one of the reactants is increased.

Question Number : 164 Question Id : 7225444565 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The excess energy of the reactants required to dissociates into products is known as

Options :

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1. ✓ Activation energy

2. ✗ Binding energy

3. ✗ Threshold energy

4. ✗ Thermal energy

Question Number : 165 Question Id : 7225444566 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Liquid A decomposes by irreversible first-order kinetics and the half-life period of this reaction is 12 min. The time required for 75% conversion of A is

Options :

1. ✗ 21 min

2. ✗ 16 min

3. ✓ 24 min

4. ✗ 18 min

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Question Number : 166 Question Id : 7225444567 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A batch reactor is suitable for

Options :

1. ✖ obtaining uniform polymerisation products in highly exothermic reactions.

2. ✖ achieving cent percent conversion of reactants into products.

3. ✖ large scale gaseous phase reactions.

4. ✔ liquid phase reactions.

Question Number : 167 Question Id : 7225444568 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The dispersion model accounts for ____

Options :

1. ✔ Deviation from ideal PFR

2. ✖ Modelling ideal CSTR

3. ✖ Combining batch and CSTR

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4. ✗ CSTRs connected in parallel

Question Number : 168 Question Id : 7225444569 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A photochemical reaction is _____ light.

Options :

1. ✓ Initiated by

2. ✗ Used to convert heat energy into

3. ✗ Accompanied with emission of

4. ✗ Catalysed by

Question Number : 169 Question Id : 7225444570 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Pore diffusion resistance in a catalyst is considered negligible if Thiele modulus is

Options :

1. ✗ > 1

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2. ✗ < 1

3. ✓ < 0.5

4. ✗ > 0.5

Question Number : 170 Question Id : 7225444571 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which columns are used for liquid dispersion in a continuous gas phase.

Options :

1. ✗ Pulse

2. ✓ Packed

3. ✗ Sieve plate

4. ✗ Bubble cap

Question Number : 171 Question Id : 7225444572 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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Fenske's equation for determining the minimum number of theoretical stages in distillation column holds good, when the

Options :

1. ✗ Mixture (to be separated) shows negative deviation from ideality.

2. ✓ Relative volatility is reasonably constant.

3. ✗ Multicomponent distillation is involved.

4. ✗ Mixture (to be separated) shows positive deviation from ideality.

Question Number : 172 Question Id : 7225444573 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In batch distillation with constant reflux, overhead product composition _____ with time.

Options :

1. ✗ May increase on decrease, depends on the system.

2. ✓ Decreases

3. ✗ Increases

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4. ✗ Does not vary

Question Number : 173 Question Id : 7225444574 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

During constant rate drying period, vaporisation rate per unit drying surface area

Options :

1. ✗ Increases with time.

2. ✓ Does not change with time.

3. ✗ Decreases with time.

4. ✗ Does not affect the moisture content of the wet solid.

Question Number : 174 Question Id : 7225444575 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Molecular diffusion is caused by the

Options :

1. ✓ Thermal energy of the molecules.

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2. ✖ Transfer of molecules from low concentration to high concentration region.

3. ✖ Activation energy of the molecules.

4. ✖ Potential energy of the molecules.

Question Number : 175 Question Id : 7225444576 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In crystallisation, solubility diagrams are useful in determining

Options :

1. ✔ Equilibrium condition

2. ✖ Saturation condition

3. ✖ Super-saturation condition

4. ✖ Saturation and super saturation conditions

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Question Number : 176 Question Id : 7225444577 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The adsorption of gases on metal surfaces is called

Options :

1. ✗ Catalysis

2. ✓ Occlusion

3. ✗ Adsorption

4. ✗ Absorption

Question Number : 177 Question Id : 7225444578 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Humidification is the process of addition moisture in air at

Options :

1. ✗ Constant wet bulb temperature

2. ✗ Constant latent heat

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3. ✗ Constant velocity

4. ✓ Constant dry bulb temperature

Question Number : 178 Question Id : 7225444579 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is not an adsorbent?

Options :

1. ✗ Carbon

2. ✗ Polymers and resins

3. ✗ Clay

4. ✓ Dry sponge

Question Number : 179 Question Id : 7225444580 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is a desirable characteristic of an instrument ?

Options :

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1. ✓ High fidelity

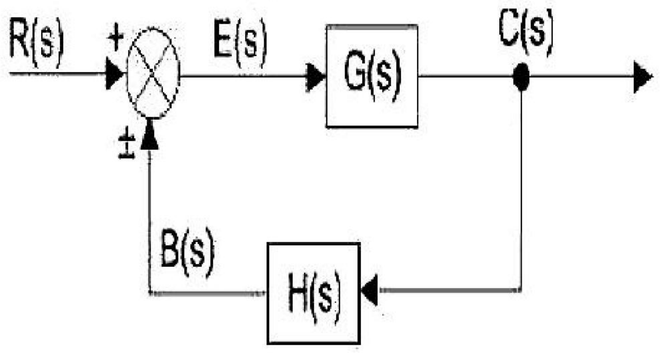
2. ✗ High drift

3. ✗ High measuring lag

4. ✗ Poor reproducibility

Question Number : 180 Question Id : 7225444581 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For the following control system the $\frac{C(s)}{R(s)}$ is given by



Options :

1. ✗ $\frac{H(s)}{1 \pm G(s)H(s)}$

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2. ✖ $\frac{G(s)}{1+G(s)H(s)}$

3. ✖ $\frac{G(s)}{1-G(s)H(s)}$

4. ✔ $\frac{G(s)}{1\mp G(s)H(s)}$

Question Number : 181 Question Id : 7225444582 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The time constant of a first order process with resistance R and capacitance C is

Options :

1. ✖ 1/RC

2. ✖ R - C

3. ✖ R + C

4. ✔ RC

Question Number : 182 Question Id : 7225444583 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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The second order system with the transfer function $4/(s^2 + 2s + 4)$ has a damping ratio of

Options :

1. ✖ 2.0

2. ✔ 0.5

3. ✖ 0.25

4. ✖ 1.0

Question Number : 183 Question Id : 7225444584 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The system is said to be marginally stable, if gain margin is _____

Options :

1. ✔ 0

2. ✖ 1

3. ✖ $+\infty$

4. ✖ -1

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Question Number : 184 Question Id : 7225444585 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Feed forward control is used to account for _____ changes

Options :

1. ✔ Load

2. ✖ Set point

3. ✖ Deviations in measurement

4. ✖ Output

Question Number : 185 Question Id : 7225444586 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Phase plane analysis is limited up to ___ variables

Options :

1. ✖ One

2. ✔ Two

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Three

3. ✗

Four

4. ✗

Question Number : 186 Question Id : 7225444587 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Controlled variable in a water heater

Options :

Flow rate of water

1. ✗

2. ✗ Heat input

3. ✗ Temperature of inlet water

Temperature of outlet water

4. ✓

Question Number : 187 Question Id : 7225444588 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Bode stability method uses

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Options :

1. ✗ phase equation

2. ✗ characteristic equation

3. ✗ closed loop transfer function

4. ✓ open loop transfer function

Question Number : 188 Question Id : 7225444589 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Turbidity of water is an indication of the presence of

Options :

1. ✗ Dissolved solids

2. ✓ Suspended inorganic matter

3. ✗ Floating solids

4. ✗ Dissolved gases

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Question Number : 189 Question Id : 7225444590 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Persons working in cement plants and limestone quarries are more prone to disease like

Options :

1. ✗ Cancer

2. ✗ Asthma

3. ✓ Silicosis

4. ✗ Flourosis (bone disease)

Question Number : 190 Question Id : 7225444591 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Oil and grease present in an emulsified state in waste water discharged from industries can be removed by

Options :

1. ✗ Biological oxidation

2. ✗ Skimming off

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3. ✔ Settling out using chemical reagents

4. ✖ Chlorination

Question Number : 191 Question Id : 7225444592 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following devices is suitable for the removal of gaseous pollutants?

Options :

1. ✖ Cyclone separator

2. ✖ Electrostatic precipitator

3. ✖ Fabric filter

4. ✔ Wet scrubber

Question Number : 192 Question Id : 7225444593 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The primary air pollutant responsible for acid rains is:

Options :

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1. ✖ Carbon dioxide

2. ✖ Carbon monoxide

3. ✖ Ozone

4. ✔ Sulphur dioxide

Question Number : 193 Question Id : 7225444594 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Ozone layer thickness is measured in:

Options :

1. ✖ Millimeter

2. ✖ Centimeter

3. ✖ Decibels

4. ✔ Dobson units

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Question Number : 194 Question Id : 7225444595 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Producer gas is obtained through the process of _____

Options :

1. ✖ fermentation

2. ✖ carbonisation

3. ✔ combustion

4. ✖ pyrolysis

Question Number : 195 Question Id : 7225444596 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following colour is used for radiation hazard?

Options :

1. ✖ Red

2. ✖ Orange

3. ✖ Green

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4. ✔ Purple

Question Number : 196 Question Id : 7225444597 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

_____ is best suited to extinguishing oil or flammable liquid fire.

Options :

1. ✖ Soda acid

2. ✖ Vaporizing liquid

3. ✔ Foam

4. ✖ Dry chemical

Question Number : 197 Question Id : 7225444598 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which type of solar cell gives highest efficiency

Options :

1. ✖ Amorphous Silicon Solar Panels

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2. ✗ Polycrystalline Solar Panels

3. ✓ Monocrystalline Solar Panels

4. ✗ Polycrystalline germanium

Question Number : 198 Question Id : 7225444599 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Nuclear fusion is possible in which of the following cases?

Options :

1. ✓ Only between light nuclei

2. ✗ Only between heavy nuclei

3. ✗ Between both light and heavy nuclei

4. ✗ Only between nuclei, which are stable against decay

Question Number : 199 Question Id : 7225444600 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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L.D. converter is used in the production of_____?

Options :

1. ✖ Pig iron

2. ✔ Steel

3. ✖ Copper

4. ✖ Zinc

Question Number : 200 Question Id : 7225444601 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Wind and Hydrogen energy are examples of_____

Options :

1. ✖ Primary sources

2. ✖ Secondary sources

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Tertiary sources

3. ✖

Primary and secondary sources respectively

4. ✔

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