Question Paper Name:	Chemical Engineering 30th April 2019 Shift1
Subject Name:	Chemical Engineering
Share Answer Key With Delivery Engine:	Yes
Actual Answer Key:	Yes

	Mathematics
Number of Questions:	50
Display Number Panel:	Yes
Group All Questions:	No

Question Number : 1 Question Id : 67809438057 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The adjoint of $A = \begin{pmatrix} 1 & 4 & -2 \\ -2 & -5 & 4 \\ 1 & -2 & 1 \end{pmatrix}$ is

Options :

1. $\begin{pmatrix} 1 & 4 & -2 \\ -2 & -5 & 4 \\ 1 & -2 & 1 \end{pmatrix}$

2. $\begin{pmatrix} 1 & 4 & -2 \\ -2 & -5 & 4 \\ 1 & -2 & 1 \end{pmatrix}$

3. $\begin{pmatrix} 3 & 0 & 6 \\ 6 & 3 & 0 \\ 9 & 6 & 3 \end{pmatrix}$

4. $\begin{pmatrix} 3 & 2 & 1 \\ 4 & 1 & -1 \\ 0 & 3 & 4 \end{pmatrix}$

Question Number : 2 Question Id : 67809438058 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If A is a square matrix of order 3 then (adj A).A=

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1. [illegible]

2. $A\times(\text{adj } A)$

3. $A\text{-}(\text{adj } A)$

4. $A+(\text{adj } A)$

Question Number : 3 Question Id : 67809438059 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The inverse of $A=\begin{pmatrix}2 & 3\\ 2 & 5\end{pmatrix}$ is

Options :

1. $\begin{pmatrix}5/4 & -3/4\\ 1/2 & 1/2\end{pmatrix}$

2. $\begin{pmatrix}5/4 & 3/4\\ -1/2 & 1/2\end{pmatrix}$

3. $\begin{pmatrix}5/4 & -5/4\\ -1/2 & 1/2\end{pmatrix}$

4. $\begin{pmatrix}5/4 & -3/4\\ -1/2 & 1/2\end{pmatrix}$

Question Number : 4 Question Id : 67809438060 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $A=\begin{pmatrix}3 & 2 & x\\ 4 & 1 & -1\\ 0 & 3 & 4\end{pmatrix}$ is a singular matrix then the value of x is

Options :

1. $11/12$

2. $-11/12$

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3.

$5/4$

4.

Question Number : 5 Question Id : 67809438061 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $A=\begin{pmatrix} 3 & 1 \\ -1 & 2 \end{pmatrix}$ then $A^2 - 5A + 7I$ is

Options :

1. $\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$

2. $\begin{pmatrix} 0 & 3 \\ 2 & 0 \end{pmatrix}$

3. $\begin{pmatrix} 0 & 0 \\ 0 & 0 \end{pmatrix}$

4. $\begin{pmatrix} 2 & 3 \\ 2 & 5 \end{pmatrix}$

Question Number : 6 Question Id : 67809438062 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Resolve $\frac{3x+7}{(x-1)(x-2)}$ into partial fractions

Options :

1. $\frac{12}{(x-2)} - \frac{10}{(x-1)}$

2. $\frac{13}{(x-2)} - \frac{10}{(x-1)}$

3. $\frac{13}{(x-5)} - \frac{10}{(x-1)}$

4. $\frac{13}{(x-2)} - \frac{10}{(x-7)}$

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Resolve $\frac{5x^4+1}{x^3-1}$ into partial fractions

Options :

1. $\frac{12}{(x-2)} - \frac{10}{(x-1)}$

2. $\frac{13}{(x-2)} - \frac{10}{(x-1)}$

3. $\frac{13}{(x-5)} - \frac{10}{(x-1)}$

4. $\frac{2}{(x-1)} + \frac{3x+1}{x^2+x+1}$

Question Number : 8 Question Id : 67809438064 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $tan^2\theta + sec\theta = 5$ then the value of $\cos\theta$ is

Options :

1. $-1/3$ *or* $1/2$

2. $-11/12$ *or* $1/2$

3. $13/12$ or $-1/3$

4. $5/4$ *or* $1/2$

Question Number : 9 Question Id : 67809438065 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $16sin^3\theta + 8cos^3\theta$ is

Options :

1. 3

There is no correct option. All students will be given marks.

2. 1

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4. 0

Question Number : 10 Question Id : 67809438066 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $sin\alpha = {}^{15}/_{17}$, $cos\beta = {}^{12}/_{13}$ then the value of $sin(\alpha + \beta)$ is

Options :

1. ${}^{110}/_{105}$

2. ${}^{-121}/_{152}$

3. ${}^{220}/_{221}$

4. ${}^{5}/_{4}$

Question Number : 11 Question Id : 67809438067 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $cos20^0 cos40^0 cos60^0 cos80^0$ is

Options :

1. ${}^{11}/_{12}$

2. ${}^{1}/_{16}$

3. ${}^{13}/_{12}$

4. ${}^{5}/_{4}$

Question Number : 12 Question Id : 67809438068 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\frac{\cos 17^0 + \sin 17^0}{\cos 17^0 - \sin 17^0}$ is

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2. $\tan 65^0$

3. $\tan 60^0$

4. $\tan 62^0$

Question Number : 13 Question Id : 67809438069 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\sin\frac{\pi}{5}\sin\frac{2\pi}{5}\sin\frac{3\pi}{5}\sin\frac{4\pi}{5} =$

Options :

1. $\frac{4}{15}$

2. $\frac{5}{16}$

3. $\frac{-5}{16}$

4. $\frac{7}{15}$

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Question Number : 14 Question Id : 67809438070 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $\tan^{-1}x + \tan^{-1}y + \tan^{-1}z = \frac{\pi}{2}$ then the value of $xy + yz + zx$ is

Options :

1. -1

2. 3

3. 5

4. 1

Question Number : 15 Question Id : 67809438071 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The general solution of $4\cos^2 x - 3 = 0$ is

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2. $2n\pi \pm \frac{7\pi}{6}$

3. $3n\pi \pm \frac{5\pi}{6}$

4. $2n\pi \pm \frac{11\pi}{6}$

Question Number : 16 Question Id : 67809438072 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The modulus of a complex number $\sqrt{3}+i$ is

Options :

1. -2

2. 3

3. 2

4. 5

Question Number : 17 Question Id : 67809438073 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $(a-b)^2 cos^2\left(\frac{C}{2}\right)+(a+b)^2 sin^2\left(\frac{C}{2}\right)$ is

Options :

1. C^3

2. C

3. C^5

4. C^2

Question Number : 18 Question Id : 67809438074 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $x+\frac{1}{x}=2\cos\theta$ then the value of $x^n+\frac{1}{x^n}$ is

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2. $-2\cos n\theta$

3. $3\cos\theta$

4. $2\sin n\theta$

Question Number : 19 Question Id : 67809438075 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $2tan^{-1}\left(\frac{1}{3}\right)+tan^{-1}\left(\frac{1}{7}\right)$ is

Options :

1. $\frac{\pi}{4}$

2. $-\frac{\pi}{4}$

3. $\frac{\pi}{6}$

4. $\frac{\pi}{3}$

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Question Number : 20 Question Id : 67809438076 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The length of the major axis of the ellipse: $4x^2+3y^2=48$ is

Options :

1. 10

2. 11

There is no correct option. All students will be given marks.

3. 12

4. 13

Question Number : 21 Question Id : 67809438077 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The Centre of the ellipse: $9x^2+25y^2-18x+100y-116=0$ is

Options :

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2. $(-1,-2)$

3. $(1,-2)$

4. $(1,2)$

Question Number : 22 Question Id : 67809438078 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The equation of the parabola with vertex $(2,-1)$ and focus $(2,-3)$ is

Options :

1. $x^2-4x+8y+12=0$

2. $x^2-4x-8y-12=0$

3. $x^2+4x-8y-12=0$

4. $x^2+5x-8y-11=0$

Question Number : 23 Question Id : 67809438079 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The length of the latus rectum of the hyperbola: $\frac{x^2}{9}-\frac{y^2}{16}=1$ is

Options :

1. 9 units

2. 5 units

3. 6 units

4. 13 units

There is no correct option. All students will be given marks.

Question Number : 24 Question Id : 67809438080 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the length of latus rectum is $\frac{9}{2}$ and the distance between its foci is 10 then the equation of hyperbola is

Options :

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1.

2. $\frac{x^2}{18} - \frac{y^2}{9} = 1$

3. $\frac{x^2}{16} - \frac{y^2}{6} = 1$

4. $\frac{x^2}{16} - \frac{y^2}{9} = 1$

Question Number : 25 Question Id : 67809438081 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The equation of the parabola with focus at (-3.2) and vertex (-2.2) is

Options :

1. $x^2 - 4x + 8y + 12 = 0$

2. $x^2 + 5x - 8y - 11 = 0$

3. $y^2 + 4x - 4y + 12 = 0$

4. $x^2 - 4x - 8y - 12 = 0$

Question Number : 26 Question Id : 67809438082 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $y = \frac{a+bx}{b-ax}$ then the derivative of y with respect to x is

Options :

1. $\frac{a^2+b^2}{(b-ax)^2}$

2. $\frac{a^2+b^2}{(b+ax)^2}$

3. $\frac{a^2-b^2}{(b-ax)^2}$

4. $\frac{a+b}{(b-ax)^2}$

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If $y = \frac{2+3\sinh x}{3+2\sinh x}$ then the derivative of y with respect to x is

Options :

1. $\frac{5\cosh x}{(3+2\sinh x)^2}$

2. $\frac{5\sinh x}{(3+2\sinh x)^2}$

3. $\frac{5\sin x}{(3-2\cosh x)^2}$

4. $\frac{sinh^2 x}{(2-3\sinh x)^2}$

Question Number : 28 Question Id : 67809438084 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The range of x for which the function $x^3 - 3x^2 - 45x + 2$ is increasing with x is

Options :

1. $(3,-5)$

2. $(-3,-5)$

There is no correct option. All students will be given marks.

3. $(3,5)$

4. $(-3,5)$

Question Number : 29 Question Id : 67809438085 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If u is a homogeneous function of x and y with degree n then $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} =$

Options :

1. $-nu$

2. n^2u

3. nu

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Question Number : 30 Question Id : 67809438086 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The angle between the curves $y = x^2 + 3x - 7$ and $y^2 = 2x + 5$ at $(2,3)$ is

Options :

1. $\tan\theta = 2$

2. $\sec\theta = 2$

3. $\cos\theta = 1$

4. $\sin\theta = 3$

Question Number : 31 Question Id : 67809438087 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The maximum value of the function $2x^3 - 12x^2 + 18x + 5$ is

Options :

1. 13

2. 12

3. 10

4. 15

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Question Number : 32 Question Id : 67809438088 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The three sides of a trapezium are equal each being 6" long then the area of the trapezium when it is maximum is

Options :

1. 27 square units

2. 33 square units

3. $27\sqrt{3}$ square units

4. $29\sqrt{3}$ square units

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Orientation : Vertical

The interval in which the function $f(x) = x^2 log x$ is an increasing function is

Options :

1. $(1 , e^{-1/2})$

2. $(2 , e^{-1/2})$

3. $(0 , e^{1/2})$

4. $(0 , e^{-1/2})$

Question Number : 34 Question Id : 67809438090 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The stationary points and the corresponding values of the function $f(x) = x^3 - 9x^2 + 15x - 1$ is

Options :

1. 6.-26

2. 3.-26

3. 6.26

4. -6.-26

Question Number : 35 Question Id : 67809438091 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $u = \log\left(\frac{x^2+y^2}{x+y}\right)$ then $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} =$

Options :

1. 2

2. 4

3. 5

4. 1

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Orientation : Vertical

The value of $\int \log x \, dx$ is

Options :

1. $x \log x + x + c$

2. $x^2 \log x - x + c$

3. $x \log x - x + c$

4. $x \log x - \frac{x^2}{2} + c$

Question Number : 37 Question Id : 67809438093 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\lim_{n \to \infty} \left[\frac{1}{n+1} + \frac{1}{n+2} + \cdots .. + \frac{1}{n+n}\right]$ is

Options :

1. $\log 2$

2. $\log 3$

3. $-\log 2$

4. $\log n$

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Question Number : 38 Question Id : 67809438094 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\int \frac{\cos \sqrt{x}}{\sqrt{x}} dx$ is

Options :

1. $2 \sin \sqrt{x} + c$

2. $3 \sin \sqrt{x} + c$

3. $2 \sin x + c$

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Question Number : 39 Question Id : 67809438095 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The area enclosed between the curve $y^2 = 4ax$ and the line $x = 2y$ is

Options :

1. $\frac{64}{5}$ sq. units

2. $\frac{64}{3}$ sq. units

3. $\frac{65}{4}$ sq. units

4. $\frac{63}{4}$ sq. units

Question Number : 40 Question Id : 67809438096 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\int_1^{\frac{\pi}{2}} sin^2 x\, dx$ is

Options :

1. $\frac{\pi}{2}$

2. $-\frac{\pi}{4}$

3. $\frac{\pi}{6}$

4. $\frac{\pi}{4}$

Question Number : 41 Question Id : 67809438097 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\int_1^4 \left(\sqrt{x} + \frac{1}{\sqrt{x}}\right) dx$ is

Options :

1. $\frac{20}{3}$

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2.

3. $\frac{10}{3}$

4. $\frac{15}{3}$

Question Number : 42 Question Id : 67809438098 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. -1

2. -3

3. 3

4. 1

Question Number : 43 Question Id : 67809438099 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\int_0^{\pi/2} \frac{sinx}{1+cos^2x}\, dx =$

Options :

1. $\pi/4$

2. $-\pi/4$

3. $\pi/3$

4. $\pi/2$

Question Number : 44 Question Id : 67809438100 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The particular integral of $(D^2+5D+6)y = e^x$ is

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1. $\frac{}{12}$

2. $\frac{e^{2x}}{12}$

3. $\frac{e^{x}}{12}$

4. $\frac{e^{x}}{6}$

Question Number : 45 Question Id : 67809438101 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Form the differential equation by eliminating the arbitrary constant a from $ay^2 = x^3$

Options :

1. $\frac{dy}{dx} = \frac{3y}{2x}$

2. $\frac{dy}{dx} = \frac{2x}{3y}$

3. $\frac{dy}{dx} = \frac{x}{y}$

4. $\frac{dy}{dx} = \frac{2y}{x}$

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Question Number : 46 Question Id : 67809438102 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The solution of $\frac{dy}{dx} + y = e^{-x}$ is

Options :

1. $(x + c)e^{-x}$

2. $(x - c)e^{x}$

3. $(x + c)e^{x}$

4. $(x + c)e^{-2x}$

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Orientation : Vertical

The complementary function of $(D^2 + 3D + 2)y = 8sin5x$ is

Options :

1. $c_1e^{-x} + c_2e^{-2x}$

2. $c_1e^{x} + c_2e^{2x}$

3. $c_1e^{-x} + c_2e^{2x}$

4. $c_1e^{2x} + c_2e^{3x}$

Question Number : 48 Question Id : 67809438104 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The solution of exact differential equation $2xy\,dx + x^2dy = 0$ is

Options :

1. $x^2y^2 = c$

2. $x^2y = c$

3. $x^3y = c$

4. $x^2y^3 = c$

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Question Number : 49 Question Id : 67809438105 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Form the differential equation representing the family of curves $x^2 = 4ay$ .where a is any arbitrary constant

Options :

1. $x\frac{dy}{dx} - 2y = 0$

2. $x\frac{dy}{dx} + 2y = 0$

3. $x\frac{dy}{dx} - 6y = 0$

4. $x\frac{dy}{dx} - y = 0$

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Orientation : Vertical

The solution of $\frac{dy}{dx} + y \cot x = \cos x$ is

Options :

1. $y \sin x = \frac{-\cos 2x}{4} + c$

2. $y \sin x = \frac{\cos 2x}{4} + c$

3. $y \sin x = \frac{-\cos 5x}{4} + c$

4. $y \cos x = \frac{-\cos 2x}{4} + c$

Physics

Number of Questions:	25
Display Number Panel:	Yes
Group All Questions:	No

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Question Number : 51 Question Id : 67809438107 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In the equation $\frac{\alpha}{t^2} = Fv + \frac{\beta}{x^2}$ the dimensional formula for [α], [β] is (here t = time, F= force, v = velocity, x = distance)

Options :

1. MLT^{-1}, MLT^{-3}

2. ML^2T, ML^4T^2

3. ML^2T^{-1}, ML^4T^{-3}

4. ML^3T^{-1}, MLT^{-3}

Question Number : 52 Question Id : 67809438108 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following quantities has not been expressed in proper units?

Options :

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2. Surface tension=N/m

3. Pressure = N/m^2

4. Energy=kg m/s

Question Number : 53 Question Id : 67809438109 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Three vectors A, B and C satisfy the relation A.B=0 and A.C=0. The vector A is parallel to

Options :

1. B

2. C

3. B.C

4. BxC

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Question Number : 54 Question Id : 67809438110 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If three vectors A, B and C are 12, 5 and 13 in magnitude such that C=A+B, then the angle between A and B is

Options :

1. 60^0

2. 90^0

3. 120^0

4. 30^0

Question Number : 55 Question Id : 67809438111 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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after 3 seconds of its fall and then allowed to fall again. The time taken by the stone to reach the ground for the remaining distance is

Options :

1. 2 s

2. 6 s

3. 4 s

4. 1 s

Question Number : 56 Question Id : 67809438112 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The range of projectile fired at an angle of 15^0 is 50m. If it is fired with the same speed at an angle of 45^0, its range will be

Options :

1. 25 m

2. 37 m

3. 50 m

4. 100 m

Question Number : 57 Question Id : 67809438113 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A freely falling body acquires a velocity 'v' m/s in falling through a distance of 80m. How much further distance should it fall, so as to acquire a velocity of '2v' m/s?(Take g=10 m/s^2)

Options :

1. 240 m

2. 200 m

3. 400 m

4. 280 m

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A block is projected along a rough horizontal road with a speed of 10 m/s. If the coefficient of kinetic friction is 0.10, how far will it travel before coming to rest ?

Options :

1. 50 m

2. 60 m

3. 40 m

4. 10 m

Question Number : 59 Question Id : 67809438115 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

What force is required to push a 200 N body up a 30^0 smooth incline with an acceleration of 2 m/s^2? The force is to be applied along the plane is (Take g=10 m/s^2)

Options :

1. 40 N

2. 60 N

3. 80 N

4. 140 N

Question Number : 60 Question Id : 67809438116 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A block of mass 2 kg rests on a rough inclined plane making an angle of 30^0 with the horizontal. The coefficient of static friction between the block and the plane is 0.7. The frictional force on the block is

Options :

1. 9.8N

2. 0.78 x 9.8 N

3. 9.8 x √3 N

4. 0.7 x 9.8√3 N

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Orientation : Vertical

A man moves on a straight horizontal road with a block of mass 2 kg in his hand. If he covers a distance of 40 m with an acceleration of 0.5 m/s^2, the work done by the man on the block during the motion is (Take g=10 m/s^2)

Options :

1. 40 J

2. 1 J

3. 80 J

4. 20 J

Question Number : 62 Question Id : 67809438118 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a factory it is desired to lift 2000 kg of metal through a distance of 12 m in 1 minute. The minimum horse power of the engine to be used is

Options :

1. 3.5

2. 5.3

3. 4.3

4. 5.8

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Question Number : 63 Question Id : 67809438119 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Energy harnessed from flowing water is called -------- energy

Options :

1. Hydel

2. Solar

3. Tidal

4. Geothermal

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When a particle executing simple harmonic motion passes through the mean position, it has

Options :

1. minimum K.E and maximum P.E.

2. maximum K.E and maximum P.E.

3. maximum K.E and minimum P.E.

4. mimimum K.E. and mimimum P.E.

Question Number : 65 Question Id : 67809438121 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A particle of mass 200 g executes a simple harmonic motion. The restoring force is provided by a spring of spring constant 80 N/m. The time period is

Options :

1. 0.2 s

2. 0.41 s

3. 0.31 s

4. 0.5 s

Question Number : 66 Question Id : 67809438122 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The temperature at which the speed of sound will be double of its value at 0^0C is

Options :

1. 819^0 C

2. 850^0C

3. 919^0C

4. 900^0C

Question Number : 67 Question Id : 67809438123 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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Options :

1. The frequency of the source is increased

2. The velocity of sound in the medium is increased

3. The wavelength of sound in the medium towards the observer is decreased

4. The amplitude of vibration of the particles is increased.

Question Number : 68 Question Id : 67809438124 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A cinema hall has a volume of 7500 m^3. The total absorption in the hall if the reverberation time of 1.5 s is to be maintained is

Options :

1. 800 OWU

2. 925 OWU

3. 950 OWU

4. 825 OWU

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Question Number : 69 Question Id : 67809438125 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

One mole of oxygen is heated at constant pressure starting at 0^0C. The heat energy that must be supplied to the gas to double its volume is

Options :

1. 2.5 x 273 x R

2. 3.5 x 273 x R

3. 2.5 x 546 x R

4. 3.5 x 546 x R

Question Number : 70 Question Id : 67809438126 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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of the gas is released and the temperature of the remaining gas is raised by 30°C, the new pressure will be

Options :

1. 12.24 atm

2. 11.67 atm

3. 13.79 atm

4. 11 atm

Question Number : 71 Question Id : 67809438127 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The temperature of 5 gm of air is raised from 0^0 C to 1^0 C. The increase in the internal energy of air is (C_v = 0.172 cal/gm/ ^{0}C and J = 4.18 x 10^7 erg/cal)

Options :

1. 3.595 x 10^7 erg

2. 3 x 10^7 erg

3. 4.5 x 10^7 erg

4. 2.595 x 10^7 erg

Question Number : 72 Question Id : 67809438128 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In all reversible processes entropy of the system

Options :

1. decreases

2. increases

3. remains constant

4. remains zero

Question Number : 73 Question Id : 67809438129 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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($\gamma = 7/5$), the value of γ for the mixture is

Options :

1. 1.40

2. 1.50

3. 1.53

4. 3.07

Question Number : 74 Question Id : 67809438130 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Electrons are emitted with zero velocity from a certain metal surface when it is exposed to radiations of wavelength 7000 A^0. The work function of the metal is

Options :

1. 1 eV

2. 1.52 eV

3. 2.52 eV

4. 1.77 eV

Question Number : 75 Question Id : 67809438131 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A superconducting material exhibits

Options :

1. zero conductivity and complete diamagnetism

2. zero resistivity and complete paramagnetism

3. infinite conductivity and complete paramagnetism

4. zero resistivity and complete diamagnetism

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Question Number : 76 Question Id : 67809438132 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The splitting of spectral lines in a strong magnetic field is called

Options :

1. Stark effect

2. Pauli Exclusion Principle

3. Zeeman effect

4. Aufbau Principle

Question Number : 77 Question Id : 67809438133 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Bohr's model can explain

Options :

1. The spectrum of hydrogen atom only

2. The spectrum of hydrogen molecule

3. The solar spectrum

4. Spectrum of an atom or ion containing one electron only

Question Number : 78 Question Id : 67809438134 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The maximum number of electrons that a d-orbital can accommodate is

Options :

1. 2

2. 6

3. 10

4. 14

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Orientation : Vertical

Magnesium Atomic number is 12, which of the following is the electronic configuration

Options :

1. $1S^2\ 2S^1\ 2P^6\ 3S^2$

2. $1S^2\ 2S^2\ 2P^5\ 3S^2$

3. $1S^2\ 2S^2\ 2P^6\ 3S^2$

4. $1S^2\ 2S^2\ 2P^6\ 3S^1 3d^1$

Question Number : 80 Question Id : 67809438136 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

N_2 molecule contains

Options :

1. Covalent bond

2. Ionic bond

3. Hydrogen bond

4. Metalic bond

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Question Number : 81 Question Id : 67809438137 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

One mole of any of the particles contains

Options :

1. $6.023X\ 10^{-23}$

2. $6.022X\ 10^{23}$

3. $60.23X\ 10^{23}$

4. $6.023X\ 10^{25}$

Question Number : 82 Question Id : 67809438138 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The normality of the solution obtained by dissolving 4 gm of NaOH in 1Litre is

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2. 0.1N

3. 0.5N

4. 0.02N

Question Number : 83 Question Id : 67809438139 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Molecular weight of H_2SO_4 is

Options :

1. 92

2. 96

3. 98

4. 99

Question Number : 84 Question Id : 67809438140 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A Lewis acid is a substance which

Options :

1. Accept protons

2. Accept a lone pair of electrons

3. Donate protons

4. Donate a lone pair of electrons

Question Number : 85 Question Id : 67809438141 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

P^H of a solution is 9.5, the solution is

Options :

1. Basic

2. Acidic

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4. Amphoteric

Question Number : 86 Question Id : 67809438142 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Laws of electrolysis were given by

Options :

1. Ostwald

2. Faraday

3. Arrhenius

4. Volta

Question Number : 87 Question Id : 67809438143 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Common electrolyte used in the salt bridge is

Options :

1. NaOH

2. $NaCO_3$

3. KCl

4. KOH

Question Number : 88 Question Id : 67809438144 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Standard Reduction Potential of an element is equal to

Options :

1. 1 X Its reduction potential

2. -1 X Its standard oxidation potential

3. -1 X Its reduction potential

4. 1 X Its standard oxidation potential

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The standard emf for the cell reaction, $Zn+Cu^{+2} \rightarrow Cu + Zn^{2+}$ is 1.10 V at 25°C. The emf of the cell reaction when 0.1 M Cu^{+2} and 0.1 M Zn^{+2} solutions are used at 25°C is

Options :

1. 1.10V
2. 0.11V
3. -1.10V
4. -0.11V

Question Number : 90 Question Id : 67809438146 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which chemical is responsible for permanent hardness of water?

Options :

1. KCl
2. $MgCl_2$
3. NaCl
4. AgCl

Question Number : 91 Question Id : 67809438147 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Permutit is chemically

Options :

1. Sodium Silicate
2. Aluminium Silicate
3. Hydrated Sodium alumino silicate
4. Calicium silicate

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Orientation : Vertical

The cation exchange resin possesses

Options :

1. Acidic group

2. Basic group

3. Amphoteric group

4. Benzo group

Question Number : 93 Question Id : 67809438149 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Chemically the rust is

Options :

1. Fe_2O_3

2. Fe_2O_3. FeO

3. $Fe_2O_3.XH_2O$

4. Fe_2O_3 . NH_3

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Question Number : 94 Question Id : 67809438150 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Galvanizing is the process of coating iron with

Options :

1. Mg

2. Cu

3. Au

4. Zn

Question Number : 95 Question Id : 67809438151 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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Options :

1. Bakelite

2. Polystyrene

3. Polythene

4. Nylon

Question Number : 96 Question Id : 67809438152 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Isoprene is a monomer of

Options :

1. Starch

2. Cellulose

3. Natural rubber

4. Lignin

Question Number : 97 Question Id : 67809438153 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Buna-S is a copolymer of

Options :

1. Butadiene and Styrene

2. Butadiene and Acrylonitrile

3. Butadiene and Isoprene

4. Formaldehyde and Styrene

Question Number : 98 Question Id : 67809438154 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Main constituent of natural gas is

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2. Methane

3. Butane

4. Carbon Monoxide

Question Number : 99 Question Id : 67809438155 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Ozone layer is present at

Options :

1. Staratosphere

2. Inosphere

3. Thermosphere

4. Atmosphere

Question Number : 100 Question Id : 67809438156 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The amount of DO required to aerobically decompose biodegradable organic matter of a given volume of water is

Options :

1. Biochemical Oxygen Demand

2. Biological Oxygen Demand

3. Chemical Oxygen demand

4. Biomagnification

Chemical Engineering

Number of Questions:	100
Display Number Panel:	Yes
Group All Questions:	No

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Brass is an alloy of _____

Options :

1. Iron and carbon

2. Copper and zinc

3. Copper and magnesium

4. Iron and iron carbide

Question Number : 102 Question Id : 67809438158 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is not an example of completely miscible liquid-solid systems?

Options :

1. Silver – gold

2. Copper – nickel

3. Germanium – silicon

4. Iron – carbon

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Question Number : 103 Question Id : 67809438159 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Fully recoverable time independent deformation is called _____ deformation.

Options :

1. Permanent

2. Elastic

3. Anelastic

4. Viscoelastic

Question Number : 104 Question Id : 67809438160 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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Options :

1. Hooke's

2. Maxwell

3. Kelvin

4. Voigt

Question Number : 105 Question Id : 67809438161 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An example for anisotropic material is

Options :

1. Diamond

2. Graphite

3. NaCl crystal

4. Water

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Question Number : 106 Question Id : 67809438162 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Crystalline arrangement in solids can be detected by

Options :

1. Mass spectrometer

2. Polarograph

3. X-ray diffraction

4. Florescence spectroscope

Question Number : 107 Question Id : 67809438163 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Molecular weight of NaOH is 40. If 20 g of NaOH is dissolved in water in a 250 mL volumetric flask, the normality of the solution is

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1.

2. 1

3. 2

4. 4

Question Number : 108 Question Id : 67809438164 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An ideal gas mixture is formed by 3 ideal gases A, B and C. If the partial pressures of A and C are same and number of moles of B present are twice to the number of moles of A, then the mole fractions of A, B and C are respectively

Options :

1. 1:2:1

2. 2:1:1

3. 1:2:3

4. 2:1:2

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Question Number : 109 Question Id : 67809438165 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An ideal gas (Molecular weight = 16.6) is at 400 K and 1 bar. If universal gas constant is taken as 8.3 $(J)(mol.K)^{-1}$, the density of gas in $(kg.m^{-3})$ is given by

Options :

1. 0.5

2. 0.005

3. 20

4. 500

Question Number : 110 Question Id : 67809438166 Display Question Number : Yes Single Line

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Options :

1. Vapour pressures

2. Boiling temperatures

3. Emissivities

4. Heat capacities

Question Number : 111 Question Id : 67809438167 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

γ-Fe changed to ō-Fe at a particular temperature. The heat transaction involved in this transition is known as

Options :

1. Heat of reaction

2. Heat of fusion

3. Heat of formation

4. Heat of transition

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Question Number : 112 Question Id : 67809438168 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The standard heats of formation of HCl(g), $NH_3(g)$ and $NH_4Cl(s)$ are given as -25, -10 and -75 kCal respectively. What is standard heat of reaction in kCal?

Options :

1. -40

2. 40

3. -110

4. -60

Question Number : 113 Question Id : 67809438169 Display Question Number : Yes Single Line Question Option : No Option

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Options :

1. Duhring's rule

2. Trouton's rule

3. Clapeyron equation

4. Lever rule

Question Number : 114 Question Id : 67809438170 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Raoult's law is applicable to

Options :

1. Entropy

2. Heat of reaction

3. Vapour-liquid equilibrium

4. Crystallization

Question Number : 115 Question Id : 67809438171 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Cox chart is useful for estimating

Options :

1. Chemical potential

2. Heat of reaction

3. Vapour pressure

4. Flame temperature

Question Number : 116 Question Id : 67809438172 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

$(C_3H_4)_n$ is an approximate chemical formula of

Options :

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2. Coal

3. Butadiene

4. Styrene

Question Number : 117 Question Id : 67809438173 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Process not used to clean the coal is

Options :

1. Pneumatic cleaning

2. Froth floatation

3. Dimerization

4. Jigging

Question Number : 118 Question Id : 67809438174 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Gas oil is part of which fraction of petroleum products?

Options :

1. Gas fraction

2. Light ends

3. Intermediate distillates

4. Residues

Question Number : 119 Question Id : 67809438175 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Generally used solvent for extracting vegetable oils is

Options :

1. Methanol

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3. Hexane

4. Monoethylamine

Question Number : 120 Question Id : 67809438176 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Catalyst used in hydrogenation of edible oils is

Options :

1. Nickel

2. Vanadium pentoxide

3. Platinum

4. Iron oxide

Question Number : 121 Question Id : 67809438177 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is not a byproduct of sugar plant?

Options :

1. Bagasse

2. Molasses

3. Ethanol

4. Beer

Question Number : 122 Question Id : 67809438178 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Bleaching of pulp is used for

Options :

1. Removal of bacteria

2. Removal of colour

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Removal of viruses

4.

Question Number : 123 Question Id : 67809438179 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Monomer used in rubber manufacture is

Options :

1. Ethylene

2. Isoprene

3. Benzene

4. Amine

Question Number : 124 Question Id : 67809438180 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Frasch process is used in the production of

Options :

1. Fluorine

2. Phosphorous

3. Chlorine

4. Sulphur

Question Number : 125 Question Id : 67809438181 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Oleum is a mixture of sulphuric acid and

Options :

1. Sulphur trioxide

2. Nitric acid

3. Hydrochloric acid

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Question Number : 126 Question Id : 67809438182 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Synthesis gas is a mixture of

Options :

1. $CO + H_2$

2. $CO_2 + H_2O$

3. $SO_2 + SO_3$

4. $O_2 + H_2O$

Question Number : 127 Question Id : 67809438183 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Liquefaction by Linde Cycles is used to produce

Options :

1. Chlorine

2. Oxygen

3. Water

4. Ammonia

Question Number : 128 Question Id : 67809438184 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Urea is

Options :

1. A fertilizer

2. An explosive

3. An elastomer

4. A food additive

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IMI process is used for manufacture of

Options :

1. Sulphuric acid

2. Nitric acid

3. Formic acid

4. Phosphoric acid

Question Number : 130 Question Id : 67809438186 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

High temperature lubricant is

Options :

1. Diamond

2. Corundum

3. Graphite

4. Heavy water

Question Number : 131 Question Id : 67809438187 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Moderator used in nuclear industry is

Options :

1. Graphite

2. Zirconium

3. Aluminum

4. steel

Question Number : 132 Question Id : 67809438188 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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distance far from entrance of the pipe. (average velocity)/(maximum velocity) =

Options :

1. 0
2. 0.5
3. 2
4. 1

Question Number : 133 Question Id : 67809438189 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For laminar flow of a Newtonian fluid flowing in a pipe of circular cross section,

the value of kinetic energy correction factor is

Options :

1. 0
2. 1
3. 4/3
4. 2

Question Number : 134 Question Id : 67809438190 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Kozeny-Carman equation is applicable for flow through packed beds at particle

Reynolds number

Options :

1. Up to 1
2. More than 1 and less than100
3. Between 100 and 1000
4. Greater than 1000

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Orientation : Vertical

A solid particle having a diameter of 10 cm is settling in a gas under Newton's law regime. If the densities of the particle and gas are 401 kg/m^3 and 1 kg/m^3 respectively, calculate the terminal velocity of particle (take acceleration due to gravity as 10 m/s^2).

Options :

1. 175 m/s

2. 35 m/s

3. 3.5 m/s

4. 350 m/s

Question Number : 136 Question Id : 67809438192 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In case of flow of a fluid in a pipe of circular cross section, the total drag force is equal to

Options :

1. Zero

2. Shear force at wall

3. Shear force at the centre line of the pipe

4. Infinity

Question Number : 137 Question Id : 67809438193 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A fluid has a viscosity of 0.15 millipascal.second (mPa.S). In centipoises (cP),

this is equal to

Options :

1. 0.15

2. 150

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4. 0.0015

Question Number : 138 Question Id : 67809438194 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For preventing leakage of fluid around a moving part _____ is used.

Options :

1. Insulation

2. Lubrication

3. Rivet

4. Stuffing box

Question Number : 139 Question Id : 67809438195 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which pump can develop pressures greater than 1500 atm?

Options :

1. Piston pump

2. Diaphragm pump

3. Jet ejector

4. Plunger pump

Question Number : 140 Question Id : 67809438196 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An example for full-bore meter is

Options :

1. Cup anemometer

2. Rectangular weir

3. Venturi meter

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Question Number : 141 Question Id : 67809438197 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the fluid flows across banks of tubes at right angles to the axis of the tubes,

then this type of flow is called as

Options :

1. Parallel flow

2. Countercurrent flow

3. Rectilinear flow

4. Cross flow

Question Number : 142 Question Id : 67809438198 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following number has no relevance in natural convection?

Options :

1. Rayleigh number

2. Reynolds number

3. Prandtl number

4. Grashoff number

Question Number : 143 Question Id : 67809438199 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Steam is subjected to dropwise condensation. The value of heat transfer coefficient in $W/(m^2.K)$ is likely to be in the range of

Options :

1. 30,000 – 100,000

2. 6,000 – 20,000

3. 1000 – 2000

4. 1 – 50

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In a double pipe heat exchanger, the resistance offered by the inside pipe is neglected. If outside and inside heat transfer coefficients are 90 W/(m^2.K) and 10 W/(m^2.K), then the overall heat transfer coefficient in W/(m^2.K) is

Options :

1. 100
2. 900
3. 9
4. 0.11

Question Number : 145 Question Id : 67809438201 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

W_b = total emissive power of a black body

$W_{b,\lambda}$ = monochromatic emissive power of a black body.

The relation between W_b and $W_{b,\lambda}$ is given by

Options :

1. $W_b = \frac{dW_{b,\lambda}}{d\lambda}$
2. $W_{b,\lambda} = \frac{W_b}{\lambda}$
3. $W_b = \int_0^\infty W_{b,\lambda} d\lambda$
4. $W_b = W_{b,\lambda}^{\lambda}$

Question Number : 146 Question Id : 67809438202 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Wien's displacement law is derived from

Options :

1. Stefan-Boltzmann law

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3. Kirchhoff's law

4. Fourier's law

Question Number : 147 Question Id : 67809438203 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Transfer of energy from Sun to earth is by

Options :

1. Conduction

2. Natural convection

3. Forced convection

4. Radiation

Question Number : 148 Question Id : 67809438204 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Leidenfrost point is associated with

Options :

1. Boiling

2. Condensation

3. Distillation

4. Radiation

Question Number : 149 Question Id : 67809438205 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Transmittivity is zero for _____ body.

Options :

1. Transparent

2. Translucent

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4. Opaque

Question Number : 150 Question Id : 67809438206 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which dimensionless number depends on physical properties of fluids alone?

Options :

1. Reynolds

2. Prandtl

3. Nusselt

4. Grashoff

Question Number : 151 Question Id : 67809438207 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Sphericity is not equal to one for

Options :

1. Sphere

2. Cube

3. Short cylinder

4. Berl saddles

Question Number : 152 Question Id : 67809438208 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Principal mechanism in ultrafine grinders is

Options :

1. Attrition

2. Compression

3. Impact

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Question Number : 153 Question Id : 67809438209 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Size enlargement is not possible by

Options :

1. Compaction

2. Communition

3. Flocculation

4. Coagulation

Question Number : 154 Question Id : 67809438210 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A screen plugged with solid particles is said to be

Options :

1. Flooded

2. Loaded

3. Blinded

4. Binded

Question Number : 155 Question Id : 67809438211 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

_____ is used to increase the porosity of the cake.

Options :

1. Filter aid

2. Promoter

3. Collector

4. Thinner

Question Number : 156 Question Id : 67809438212 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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Options :

1. Coagulation

2. Flocculation

3. Electrostatic precipitation

4. Wilfley tabling

Question Number : 157 Question Id : 67809438213 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which process is not used in sewage water treatment?

Options :

1. Sedimentation

2. Thickening

3. Settling

4. Solvent extraction

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Question Number : 158 Question Id : 67809438214 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The device that removes all particles from a liquid is known as

Options :

1. Clarifier

2. Classifier

3. Sink-and-float settler

4. Differential settler

Question Number : 159 Question Id : 67809438215 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Work done in a constant volume process is

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1.

2. $P_2V_2 - P_1V_1$

3. $P_1V_1 - P_2V_2$

4. $R(T_2-T_1)/\gamma$

Question Number : 160 Question Id : 67809438216 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A polytropic process is represented by PV^{δ} = constant. It can be reduced to constant volume process by setting δ =

Options :

1. Zero

2. 1

3. γ

4. Infinity

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Question Number : 161 Question Id : 67809438217 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Vander Waals equation is given by $\left(P+\frac{a}{V^2}\right)(V-b)=RT$. If P has the units of pascals, V has m^3/mol, T has kelvins, then the units for a =

Options :

1. Pascals

2. Pascal.(m^3/mol)

3. Pascal.(m^6/mol^2)

4. Pascal.(mol^2/m^6)

Question Number : 162 Question Id : 67809438218 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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chamber outer surface as system boundary, which of the following is not correct?

Options :

1. $Q = 0$

2. Δ(Internal Energy) = 0

3. $W = 0$

4. It is open system.

Question Number : 163 Question Id : 67809438219 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An example for irreversible process is

Options :

1. Water flowing down a hill

2. Distillation under total reflux condition

3. A chemical reaction at equilibrium

4. An adiabatic process for which Q = 0.

Question Number : 164 Question Id : 67809438220 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

At 450 K and 1000 kPa, liquid water has an internal energy of 783 kJ/kg and its specific volume is 1000 cm^3/g. What is its enthalpy in kJ/kg?

Options :

1. 783

2. 1783

3. 10^6

4. 784

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Orientation : Vertical

15 kJ of work is done on a closed system while its internal energy increases by 5 kJ. The amount of heat lost by the system to the surroundings is _____ kJ.

Options :

1. 10

2. 20

3. -10

4. -20

Question Number : 166 Question Id : 67809438222 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The residence time of all fluid elements is same in _____ reactor.

Options :

1. Continuous flow stirred tank reactor

2. Ideal plug flow reactor

3. Batch reactor

4. Packed bed reactor

Question Number : 167 Question Id : 67809438223 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The relation between space time and space velocity for a flow reactor is given by:

Options :

1. Space time = (space velocity)/(length of flow reactor)

2. Space time + space velocity = 0

3. Space time = 1/(space velocity)

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Question Number : 168 Question Id : 67809438224 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following reactors cannot be operated under steady state?

Options :

1. Batch reactor

2. Plug flow reactor

3. Mixed flow reactor

4. Continuous flow stirred tank reactor

Question Number : 169 Question Id : 67809438225 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is not required for calculating Schmidt number?

Options :

1. Viscosity

2. Density

3. Diffusivity

4. Mass transfer coefficient

Question Number : 170 Question Id : 67809438226 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The third component added to a binary azeotrope in azeotropic distillation is called as

Options :

1. Collector

2. Frother

3. Entrainer

4. Depresser

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Orientation : Vertical

To obtain required separation in a distillation column, the actual number of plates is 16 when overall column efficiency is 62.5 percent. The theoretical number of plates is given by

Options :

1. 25

2. 10

3. 30

4. 20

Question Number : 172 Question Id : 67809438228 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Wetted wall column is associated with _____ operation.

Options :

1. Distillation

2. Extraction

3. Humidification

4. Adsorption

Question Number : 173 Question Id : 67809438229 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Freundlich equation is applicable to _____ operation.

Options :

1. Condensation

2. Adsorption

3. Absorption

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Question Number : 174 Question Id : 67809438230 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Crystallization is generally followed by

Options :

1. Humidification

2. Dehumidification

3. Dilution

4. Filtration

Question Number : 175 Question Id : 67809438231 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Supersaturation of solution cannot be accomplished by

Options :

1. Evaporation

2. Cooling

3. Vacuum

4. Dilution

Question Number : 176 Question Id : 67809438232 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

_____ is the moisture content in a substance that exerts an equilibrium vapour pressure equal to that of the pure liquid at the same temperature.

Options :

1. Unbound moisture

2. Bound moisture

3. Equilibrium moisture

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Question Number : 177 Question Id : 67809438233 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Preparation of tea is an example of

Options :

1. Distillation

2. Condensation

3. Leaching

4. Drying

Question Number : 178 Question Id : 67809438234 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In an orifice flow meter, wear and erosion of the orifice plate causes

Options :

1. Dead zone

2. Drift

3. Faster response

4. Heat dissipation

Question Number : 179 Question Id : 67809438235 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The time constant of a first-order system is 5 seconds. When subjected to step input. the time required to attain 95 percent of full change is ____ seconds.

Options :

1. 15

2. 10

3. 5

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Question Number : 180 Question Id : 67809438236 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Small dynamic error is not a result of

Options :

1. High fidelity

2. Small lag

3. Slow change in measured quantity

4. Dead zone

Question Number : 181 Question Id : 67809438237 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An example for a first order system is

Options :

1. Bare thermometer

2. Manometer

3. Pressure gage

4. Thermometer with thermal well

Question Number : 182 Question Id : 67809438238 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An example for expansion thermometer is

Options :

1. Mercury in glass thermometer

2. Bolometer

3. Optical pyrometer

4. Manometer

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Orientation : Vertical

To measure temperature above 1200°C which thermocouple can be used?

Options :

1. Copper-constantan

2. Iron-constantan

3. Chromel-alumel

4. Platinum – platinum+rhodium alloy

Question Number : 184 Question Id : 67809438240 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Direct method for composition measurement is done using

Options :

1. Spectroscope

2. Thermal conductivity cell

3. Interferometer

4. Refractive index

Question Number : 185 Question Id : 67809438241 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

To generate control action, pneumatic controllers use

Options :

1. Water

2. Vegetable oil

3. Air

4. Lubricating oil

Question Number : 186 Question Id : 67809438242 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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Options :

1. Bacteria

2. Dissolved solids

3. Suspended solids

4. COD

Question Number : 187 Question Id : 67809438243 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Ozone depletion occurred mainly due to

Options :

1. Carbon dioxide

2. Halocarbons

3. Hydrocarbons

4. Volcanoes

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Question Number : 188 Question Id : 67809438244 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Main pollutant from cement industry is

Options :

1. Sulphur dioxide

2. Nitrogen dioxide

3. Particulate matter

4. Calcium

Question Number : 189 Question Id : 67809438245 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Thermal pollution mainly results from ____ plants.

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1. [illegible]

2. Fertilizer

3. Thermal power

4. Soda ash

Question Number : 190 Question Id : 67809438246 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following process can not be used for the removal of dissolved salts?

Options :

1. Adsorption

2. Ion-exchange

3. Reverse osmosis

4. Coagulation

Question Number : 191 Question Id : 67809438247 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The decomposition of sludge under anaerobic conditions mainly gives methane and

Options :

1. Oxygen

2. Carbon dioxide

3. Chlorine

4. Ozone

Question Number : 192 Question Id : 67809438248 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Presence of phosphorous in effluent water is more likely to be with ____ industry.

Options :

1. Sugar

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3. Fertilizer

4. Chlor-alkali

Question Number : 193 Question Id : 67809438249 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is not a persistent bioaccumulative toxic substance?

Options :

1. Phenol

2. Mercury

3. Arsenic

4. Hydrogen oxide

Question Number : 194 Question Id : 67809438250 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For consumption of 1 kilwatt-hour energy, a 40-watt tube light should glow

continuously for _____ hours.

Options :

1. 25

2. 40

3. 100

4. 12

Question Number : 195 Question Id : 67809438251 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An example for solid fuel is

Options :

1. Naphtha

2. Coke

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4. LPG

Question Number : 196 Question Id : 67809438252 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Electricity generation in India is mainly from _____ power.

Options :

1. nuclear

2. Thermal

3. Gas

4. renewable

Question Number : 197 Question Id : 67809438253 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Main constituents of biogas are

Options :

1. Methane and carbon dioxide

2. Propane and butane

3. Ethanol and water

4. Esters

Question Number : 198 Question Id : 67809438254 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Solar Power generation is highest in which State?

Options :

1. Arunachal Pradesh

2. Andhra Pradesh

3. Kerala

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Question Number : 199 Question Id : 67809438255 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

LPG fire is an example of

Options :

1. Class A fire

2. Class C fire

3. Class B fire

4. Class D fire

Question Number : 200 Question Id : 67809438256 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which is not a renewable energy source?

Options :

1. Tidal

2. Solar

3. Coal

4. Wind

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