Question Number : 1 Question Id : 67809417024 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $A = \begin{pmatrix} 2 & -1 & 0 \\ 3 & 4 & 7 \end{pmatrix}$ and $B = \begin{pmatrix} 5 & 2 & -3 \\ 1 & 0 & -2 \end{pmatrix}$ then $2A+3B =$

Options :

1. $\begin{pmatrix} 19 & 4 & -9 \\ 9 & 8 & 8 \end{pmatrix}$

2. $\begin{pmatrix} -19 & -4 & 9 \\ 9 & 8 & -8 \end{pmatrix}$

3. $\begin{pmatrix} 18 & 4 & -9 \\ 9 & 8 & 8 \end{pmatrix}$

4. $\begin{pmatrix} 17 & 5 & -9 \\ 8 & 8 & 9 \end{pmatrix}$

Question Number : 2 Question Id : 67809417025 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $A = \begin{pmatrix} 2 & -3 & 0 \\ 1 & 4 & -1 \end{pmatrix}$ and $B = \begin{pmatrix} 6 & 1 \\ 3 & 0 \\ 5 & 2 \end{pmatrix}$ then $(AB)^{T} =$

Options :

1. $A^{T}B^{T}$

2. $B^T A^T$

3. $(BA)^T$

4. AB^T

Question Number : 3 Question Id : 67809417026 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If two rows or two columns of a determinant are identical then the value of the determinant is

Options :

1. 2

2. -1

3. 0

4. -2

Question Number : 4 Question Id : 67809417027 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\begin{vmatrix} 265 & 240 & 219 \\ 240 & 225 & 198 \\ 219 & 198 & 181 \end{vmatrix}$ is

Options :

1. -1

2. 0

3. 1

4. 2

Question Number : 5 Question Id : 67809417028 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The adjoint of the square matrix $A = \begin{pmatrix} 2 & 5 & 1 \\ 3 & 1 & 2 \\ 4 & 3 & 1 \end{pmatrix}$ is

Options :

1. $\begin{pmatrix} -5 & -2 & 9 \\ 5 & -2 & -1 \\ 5 & 14 & -13 \end{pmatrix}$

2. $\begin{pmatrix} 5 & 2 & 9 \\ 5 & -2 & -1 \\ 5 & 14 & -13 \end{pmatrix}$

3. $\begin{pmatrix} -5 & -2 & 9 \\ -5 & -2 & -1 \\ -5 & 14 & -13 \end{pmatrix}$

4. $\begin{pmatrix} -5 & -2 & -9 \\ 5 & 2 & 1 \\ 5 & 14 & -13 \end{pmatrix}$

Question Number : 6 Question Id : 67809417029 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Resolve into partial fractions: $\dfrac{5}{(2x-1)(3x-1)} =$

Options :

1. $\dfrac{8}{2x-1} + \dfrac{5}{3x-1}$

2. $\dfrac{10}{2x-1} - \dfrac{15}{3x-1}$

3. $\dfrac{11}{3x-1} + \dfrac{7}{2x-1}$

4. $\dfrac{1}{2x-1} + \dfrac{2}{3x-1}$

Question Number : 7 Question Id : 67809417030 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Resolve into partial fractions: $\dfrac{3x-1}{(x-1)(x-2)(x-3)} =$

Options :

1. $\dfrac{2}{x-1} + \dfrac{5}{x-2} - \dfrac{4}{x-3}$

2. $\dfrac{-1}{x-1} + \dfrac{5}{x-2} - \dfrac{4}{x-3}$

3. $\dfrac{1}{x-1} + \dfrac{5}{x-2} + \dfrac{4}{x-3}$

4. $\dfrac{1}{x-1} - \dfrac{5}{x-2} + \dfrac{4}{x-3}$

Question Number : 8 Question Id : 67809417031 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $\tan A = \dfrac{1}{2}$ and $\tan B = \dfrac{1}{3}$ then $\tan(A - B) =$

Options :

1. $\dfrac{1}{7}$

2. $\dfrac{-1}{7}$

3. $\dfrac{1}{5}$

4. $\dfrac{1}{3}$

Question Number : 9 Question Id : 67809417032 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\cot 2A + \tan A =$

Options :

1. $\sin 2A$

2. $\cos 2A$

3. $\sec 2A$

4. $\operatorname{cosec} 2A$

Question Number : 10 Question Id : 67809417033 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\dfrac{1-\cos 2A+\sin 2A}{1+\cos 2A+\sin 2A} =$

Options :

1. sinA

2. cosA

3. tanA

4. cotA

Question Number : 11 Question Id : 67809417034 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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

Options :

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

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

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

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

Question Number : 12 Question Id : 67809417035 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\cos 20^0 + \cos 100^0 + \cos 140^0 =$

Options :

1. 0

2. 3

3. 1

4. -3

Question Number : 13 Question Id : 67809417036 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\sum a(b^2 + c^2) \cos A$ is

Options :

1. 2abc

2. 4abc

3. 3abc

4. 5abc

Question Number : 14 Question Id : 67809417037 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 : 15 Question Id : 67809417038 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. $\pi/4$

2. $\pi/2$

3. $\pi/6$

4. $\pi/3$

Question Number : 16 Question Id : 67809417039 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. $2n\pi \pm \dfrac{\pi}{6}$

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

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

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

Question Number : 17 Question Id : 67809417040 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. -1

2. 3

3. 5

4. 1

Question Number : 18 Question Id : 67809417041 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 : 19 Question Id : 67809417042 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. $2\cos n\theta$

2. $-2\cos n\theta$

3. $3\cos\theta$

4. $2\sin n\theta$

Question Number : 20 Question Id : 67809417043 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The centre of the circle: $x^2 + y^2 - 2x + 6y - 6 = 0$ is

Options :

1. $(1,3)$

2. $(2,3)$

3. $(1,-3)$

4. $(-1,3)$

Question Number : 21 Question Id : 67809417044 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The radius of the circle: $5x^2 + 5y^2 - 6x + 8y - 75 = 0$ is

Options :

1. -4

2. 4

3. 2

4. 3

Question Number : 22 Question Id : 67809417045 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 : 67809417046 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 :

1. $(2, -1)$

2. $(-1, -2)$

3. $(1, -2)$

4. $(1, 2)$

Question Number : 24 Question Id : 67809417047 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The focus of the hyperbola: $\dfrac{x^2}{25} - \dfrac{y^2}{144} = 1$ is

Options :

1. $(-13, 0)$

2. $(13, 0)$

3. $(13, -1)$

4. $(13, 1)$

Question Number : 25 Question Id : 67809417048 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

3. 8

4. 13

Question Number : 26 Question Id : 67809417049 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\lim_{x \to 1} \frac{x^3 - 1}{x - 1}$ is

Options :

1. 3

2. -3

3. 2

4. 1

Question Number : 27 Question Id : 67809417050 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. $\frac{a + b}{(b - ax)^2}$

Question Number : 28 Question Id : 67809417051 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $y = x^3 e^x$ then $\frac{dy}{dx}$ is

Options :

1. $(x - 3)x^2 e^x$

2. $(x - 2)x^3 e^x$

3. $(x + 3)x^2 e^x$

4. $(x - 1)x^3 e^x$

Question Number : 29 Question Id : 67809417052 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $y = \sec x + \tan x$ then $\frac{dy}{dx}$ is

Options :

1. $y \cos x$

2. $y \sec x$

3. $-y \sin x$

4. $y \tan x$

Question Number : 30 Question Id : 67809417053 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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

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

If $y = \sqrt{\dfrac{1-\cos x}{1+\cos x}}$ then $\dfrac{dy}{dx}$ is

Options :

1. $\sec^2\left(\dfrac{x}{2}\right)$

2. $\cos^2\left(\dfrac{x}{2}\right)$

3. $\dfrac{1}{2}\cos^2\left(\dfrac{x}{2}\right)$

4. $\dfrac{1}{2}\sec^2\left(\dfrac{x}{2}\right)$

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. $\sin \theta = 3$

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

Options :

1. $(3, -5)$

2. $(-3, -5)$

3. $(3, 5)$

4. $(-3, 5)$

Question Number : 34   Question Id : 67809417057   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

Question Number : 35   Question Id : 67809417058   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. $n^2 u$

3. nu

4. $nu^2 + u$

Question Number : 36   Question Id : 67809417059   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. $2 \sin x + c$

4. $\sin \sqrt{x} + c$

Question Number : 37 Question Id : 67809417060 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. $\cos^{-1}\left(\frac{x}{a}\right) + c$

2. $\sin^{-1}\left(\frac{x}{a}\right) + c$

3. $\sinh^{-1}\left(\frac{x}{a}\right) + c$

4. $\sin^{-1}\left(\frac{a}{x}\right) + c$

Question Number : 38 Question Id : 67809417061 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\int \frac{dx}{4x^2 + 4x + 17}$ is

Options :

1. $\frac{1}{8} \tan^{-1}\left(\frac{2x+1}{4}\right) + c$

2. $\frac{1}{4} \cot^{-1}\left(\frac{2x+1}{4}\right) + c$

3. $\frac{1}{8} \sin^{-1}\left(\frac{2x+1}{4}\right) + c$

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

Question Number : 39 Question Id : 67809417062 Display Question Number : Yes Single Line Question Option : No Option 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. $x \log x - \dfrac{x^2}{2} + c$

Question Number : 40 Question Id : 67809417063 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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

Options :

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

2. $-\dfrac{20}{3}$

3. $\dfrac{10}{3}$

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

Question Number : 41 Question Id : 67809417064 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\int_0^{\pi/2} \sin^2 x \, dx$ is

Options :

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

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

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

4. $\dfrac{\pi}{4}$

Question Number : 42 Question Id : 67809417065 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. $\dfrac{64}{5}$ sq. units

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

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

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

Question Number : 43 Question Id : 67809417066 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. $\log 2$

2. $\log 3$

3. $-\log 2$

4. $\log n$

Question Number : 44 Question Id : 67809417067 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. $\dfrac{dy}{dx} = \dfrac{3y}{2x}$

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

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

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

Question Number : 45 Question Id : 67809417068 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The solution of $\sqrt{1-y^2}\,dx + \sqrt{1-x^2}\,dy = 0$ is

Options :

1. $\cos^{-1} x + \cos^{-1} y = c$

2. $\sinh^{-1} x + \cosh^{-1} y = c$

3. $\cos^{-1} x + \sec^{-1} x = c$

4. $\sin^{-1} x + \sin^{-1} y = c$

Question Number : 46 Question Id : 67809417069 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The solution of $\dfrac{dy}{dx} = (4x + y + 1)^2$ is

Options :

1. $\dfrac{1}{2}\tan^{-1}\left(\dfrac{4x+y+1}{2}\right) = x + c$

2. $\dfrac{1}{2}\cot^{-1}\left(\dfrac{4x+y+1}{2}\right) = x + c$

3. $-\dfrac{1}{2}\tan^{-1}\left(\dfrac{4x+y+1}{2}\right) = x + c$

$\frac{1}{2} \tan^{-1} \left(\frac{4x-y-1}{2} \right) = x + c$

4.

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

Options :

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

2. $x^2 y = c$

3. $x^3 y = c$

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

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

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

Options :

1. $\frac{-e^{-x}}{12}$

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

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

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

Question Number : 50 Question Id : 67809417073 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. $c_1 e^{-x} + c_2 e^{-2x}$

2. $c_1 e^x + c_2 e^{2x}$

3. $c_1 e^{-x} + c_2 e^{2x}$

4. $c_1 e^{2x} + c_2 e^{3x}$

Physics

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

Question Number : 51 Question Id : 67809417074 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is not the unit of energy?

Options :

1. watt second

2. Pascal metre

3. Newton metre

4. Kilowatt hour

Question Number : 52 Question Id : 67809417075 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The height of Mercury barometer is 76 cm and density of Mercury is 13.6 g/cc. The

corresponding height of water barometer in SI system is

Options :

1. 10.336 m

2. 103.36 m

3. 3.6m

4. 1.0336 m

Question Number : 53 Question Id : 67809417076 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Angle made by the vector $(\sqrt{3}\ \vec{i} + \vec{j})$ with the X-axis is

Options :

1. $\pi/2$

2. $\pi/4$

3. $\pi/3$

4. $\pi/6$

Question Number : 54 Question Id : 67809417077 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The minimum number of unequal forces in a plane that can keep a particle in equilibrium is

Options :

1. 4

2. 2

3. 3

4. 6

Question Number : 55 Question Id : 67809417078 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A body is thrown with a velocity of $(4\bar{i} + 3\bar{j})$ m/s. The maximum height attained by

the body is (g=10 ms^{-2})

Options :

1. 2.5 m

2. 4.5 m

3. 0.8 m

4. 0.45 m

Question Number : 56 Question Id : 67809417079 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A person in a lift, which ascends up with acceleration 10ms^{-2}, drops a stone from a height of

10m. The time of descent is (g=10 ms^{-2})

Options :

1. 0.5 s

2. 1 s

3. 1.5 s

4. 2 s

Question Number : 57 Question Id : 67809417080 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For a projectile, the ratio of maximum height reached to the square of time of flight is

Options :

1. 5:4

2. 5:2

3. 5:1

4. 10:1

Question Number : 58 Question Id : 67809417081 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The ratio of distances travelled by a body, starting from rest and travelling with uniform acceleration, in successive intervals of time of equal duration will be

Options :

1. 1:2:3

2. 1:4:9

3. 1:3:5

4. 1:9:16

Question Number : 59 Question Id : 67809417082 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A force of 12 N acts on a body of mass 4 kg placed on a rough surface. The coefficient of friction between body and surface is 0.2 and take g= 10 ms^{-2}. The acceleration of the body in ms^{-2} is

Options :

1. 1

2. 0.5

3. 0.25

4. Zero

Question Number : 60 Question Id : 67809417083 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Brakes stop a train in a certain distance d. When the braking force is made one fourth, the brakes will stop the train in a distance which is

Options :

1. d/2

2. 4d

3. 2d

4. d

Question Number : 61 Question Id : 67809417084 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The product of linear momentum and velocity of a body represents

Options :

1. Kinetic energy of the body

2. Potential energy of the body

3. Half the Kinetic energy of the body

4. Twice the kinetic energy of the body

Question Number : 62 Question Id : 67809417085 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A man weighing 60 kg eats plum cake whose energy content is 9800 calories. If all this energy could be utilised by him, he can ascend to a height of

Options :

1. 17 m

2. 100 m

3. 70 m

4. 60m

Question Number : 63 Question Id : 67809417086 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A crane can lift up 10,000 kg of coal in 1 hour from a mine of depth 180m. If the efficiency of

the crane is 80%, its input power must be (g=10 ms^{-2})

Options :

1. 62.5 kW

2. 6.25 kW

3. 50 kW

4. 5 kW

Question Number : 64 Question Id : 67809417087 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The graph of acceleration as a function of displacement in the case of a body executing

simple harmonic motion is

Options :

1. Parabola

2. Hyperbola

3. Straight line with positive slope

4. Straight line with negative slope

Question Number : 65 Question Id : 67809417088 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The pendulum of length 'L' swings from mean position to mean position 'n' times in one

second. The value of acceleration due to gravity is

Options :

1. $\pi^2 n^2 L$

2. $2\pi^2 n^2 L$

3. $(\pi^2 n^2 L)/2$

4. $4\pi^2 n^2 L$

Question Number : 66 Question Id : 67809417089 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

When a source of sound is in motion towards a stationary observer, the effect observed is

Options :

1. Decrease in velocity of sound

2. Increase in velocity of sound

3. increase in frequency of sound

4. decrease in frequency of sound

Question Number : 67 Question Id : 67809417090 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The voice of a male person is different from that of a female person because

Options :

1. Two sounds have different phases

2. Two persons are of different size

3. Two sounds travel with different velocities

4. Two sounds have different pitch

Question Number : 68 Question Id : 67809417091 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the sound absorption of a hall is changed by 2%, then the percentage change in the

reverberation time is

Options :

1. 2%

2. 4%

3. 1%

4. No change

Question Number : 69 Question Id : 67809417092 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In which of the following process, the internal energy of the system remains constant?

Options :

1. Adiabatic

2. Isothermal

3. Isobaric

4. Isochoric

Question Number : 70 Question Id : 67809417093 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Heat required to raise the temperature of one gram of water through 1 K is

Options :

1. 1.0 Kcal

2. 0.1 Kcal

3. 0.01 Kcal

4. 0.001 Kcal

Question Number : 71 Question Id : 67809417094 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The specific heat of a gas in an isothermal process is

Options :

1. infinity

2. Zero

3. Finite positive

4. Finite negative

Question Number : 72 Question Id : 67809417095 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Specific heat of aluminium is 0.25 cal/g/°C. The water equivalent of an aluminium vessel of

mass one kilogram is

Options :

1. 40 cal/°C

2. 400 cal/°C

3. 250 cal/°C

4. 25 cal/°C

Question Number : 73 Question Id : 67809417096 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

What should be the percentage increase in the pressure so that the volume of a gas may

decrease by 5% at constant temperature?

Options :

1. 5%

2. 5.26%

3. 10%

4. 4.26%

Question Number : 74 Question Id : 67809417097 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the maximum kinetic energy of emitted photo electrons from a metal is 0.9 eV and work function is 2.2 eV, then the wavelength of incident radiation is

Options :

1. 4000Å

2. 8000Å

3. 3000Å

4. 2000Å

If the angle of incidence of a ray is greater than the critical angle at the core – cladding interface in an optical fiber, then the ray travels

Options :

1. in the core

2. in the cladding

3. in the buffer

4. along the interface

Chemistry

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

Pauli's Exclusion principle states that two electrons in same orbital have

Options :

1. same spins

2. different spins

3. opposite spins

4. vertical spins

Question Number : 77 Question Id : 67809417100 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Orbits in which electrons move according to Bohr are

Options :

1. elliptical

2. cylindrical

3. circular

4. oval

Question Number : 78 Question Id : 67809417101 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Phosphorus has an atomic number of 15. A stable phosphorus atom has an electronic configuration of

Options :

1. $1s^2 2s^2 2p^6 3p^5$

2. $1s^2 2s^2 2p^6 3s^2 3p^3$

3. $1s^2 2s^2 2p^6 3s^2 3p^1 4s^2$

4. $1s^2 1p^6 1d^7$

Question Number : 79 Question Id : 67809417102 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

NaCl is classified as having what kind of bonds in the solid phase?

Options :

1. Covalent

2. Ionic

3. Polar

4. vander Waals

Question Number : 80 Question Id : 67809417103 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The Bond formed due to sharing of electrons is

Options :

1. Ionic bond

2. Metallic bond

3. Polar bond

4. Covalent bond

Question Number : 81 Question Id : 67809417104 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The normality of solution obtained by dissolving 5.3 grams of Na_2CO_3 in 1 litre solution is

Options :

1. 1N

2. 0.1N

3. 0.05N

4. 0.5N

Question Number : 82 Question Id : 67809417105 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The following solution has same molarity and normality

Options :

1. Na_2CO_3

2. $NaCl$

3. H_2SO_4

4. $K_2Cr_2O_7$

Question Number : 83 Question Id : 67809417106 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

5 moles of a solute is dissolved in 10 litres of solution. What is its molarity?

Options :

1. 5 M

2. 2M

3. 0.5M

4. 0.2M

Question Number : 84 Question Id : 67809417107 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Process in which acids (H^+) and bases (OH^-) react to form salts and water is called

Options :

1. Neutralization

2. Halogenation

3. Hydrogenation

4. Hydrolysis

Question Number : 85 Question Id : 67809417108 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A substance that donates a pair of electrons to form coordinate covalent bond is called

Options :

1. Lewis acid

2. Lewis base

3. Bronsted-Lowry acid

4. Bronsted-Lowry base

Question Number : 86 Question Id : 67809417109 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

One Faraday is equal to

Options :

1. 99650 C

2. 93100 C

3. 96500 C

4. 94500 C

Question Number : 87 Question Id : 67809417110 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The cell reaction of a cell is $Mg(s) + 2 H^+(aq) \rightarrow Mg^{2+}(aq) + H_2(g)$. If the standard reduction potential of Zn is -2.372 V, then the emf of the cell is

Options :

1. +2.372 V

2. -2.372 V

3. 0.00 V

4. -1.372 V

Question Number : 88 Question Id : 67809417111 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Galvanic cells are the cells which convert

Options :

1. Electrical energy to chemical energy

2. Chemical energy to electrical energy

3. Chemical energy to free energy

4. Potential energy to kinetic energy

Mass of substance produced at electrode is directly proportional to the quantity of electricity passed. This is known as

Options :

1. Faraday's second law

2. Faraday's first law

3. Newton's third law

4. Newton's first law

Hardness of water is expressed in terms of equivalent of

Options :

1. Na_2CO_3

2. K_2CO_3

3. $MgCO_3$

4. $CaCO_3$

Question Number : 91 Question Id : 67809417114 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Temporary hardness is caused by

Options :

1. Carbonates of calcium and magnesium

2. Chlorides of calcium and magnesium

3. Sulphates of calcium and magnesium

4. Nitrates of Calcium

Question Number : 92 Question Id : 67809417115 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The exhausted zeolite bed can be regenerated by washing with

Options :

1. NaCl

2. dil. NaOH

3. dil. HCl

4. Distilled water

Question Number : 93 Question Id : 67809417116 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Corrosion is an example of

Options :

1. Oxidation

2. Reduction

3. Electrolysis

4. Halogenation

Question Number : 94 Question Id : 67809417117 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The composition of rust is

Options :

1. $Fe(OH)_3$

2. $FeCl_3$

3. FeO

4. $Fe_2O_3 . xH_2O$

Question Number : 95 Question Id : 67809417118 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which one of the following statement is not true?

Options :

1. Natural rubber has the trans-configuration at every double bond

2. Buna-S is a copolymer of butadiene and styrene

3. Natural rubber is a 1, 4-polymer of isoprene

4. In vulcanization, the formation of sulphur bridges between different chains makes rubber harder and stronger

Question Number : 96 Question Id : 67809417119 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The monomers of Buna-S rubber are

Options :

1. Styrene and butadiene

2. Styrene and 2-propene

3. Isoprene and butadiene

4. Styrene and sulphur

Question Number : 97 Question Id : 67809417120 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The plastics which soften when heat is applied with or without pressure, but require cooling to set them to shape are called as

Options :

1. Thermosofting materials

2. Thermosetting materials

3. Thermoplastic materials

4. Thermostatting materials

Question Number : 98 Question Id : 67809417121 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which one of the following statement is not true about ideal fuel?

Options :

1. High calorific value

2. High moisture content

3. Low cost

4. Moderate ignition temperature

Question Number : 99 Question Id : 67809417122 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Environmental pollution affects

Options :

1. Humans only

2. Plants only

3. Biotic components

4. Both abiotic and biotic components

Question Number : 100 Question Id : 67809417123 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Layer of atmosphere in which ozone layer lies is

Options :

1. Troposphere

2. Stratosphere

3. Exosphere

4. Mesosphere

Chemical Engineering

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

Question Number : 101 Question Id : 67809417124 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Ethane gas (molecular weight = 30 amu) is stored in a cylinder at a temperature of $27^{\circ}C$ and a pressure of 1 bar. Take universal gas constant as 8 kJ/(kmol.K). Considering ethane to be ideal gas, the density is _____ kg/m^3.

Options :

1. 5/36

2. 1/80

3. 5/4

4. 1250

Question Number : 102 Question Id : 67809417125 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which communition equipment uses critical speed concept?

Options :

1. Hammer mill

2. Attrition mill

3. Jaw crusher

4. Ball mill

Question Number : 103 Question Id : 67809417126 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In all binary phase diagrams a two-phase region separates single phase regions. This is known as

Options :

1. Lever rule

2. Kirkendall effect

3. 1-2-1 rule

4. Ficks law

Question Number : 104 Question Id : 67809417127 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is used to measure Point velocity of a fluid?

Options :

1. Rotameter

2. Pitot Tube

3. Venturimeter

4. Coriolis meter

Question Number : 105 Question Id : 67809417128 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The resistance-temperature relation for platinum elements is given by

Options :

1. Cox chart

2. Callendar equation

3. Trouton's rule

4. Planck's law

Question Number : 106 Question Id : 67809417129 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which industry releases nitrogen oxides into atmosphere?

Options :

1. Nuclear power

2. Agriculture

3. Stone crushing

4. Petroleum refining

Question Number : 107 Question Id : 67809417130 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A gas mixture contains only methane (molecular weight = 16 amu) and ethane (molecular weight = 30 amu). The composition of ethane is 20 percent by volume. Assuming the application of ideal gas law, the average molecular weight of the gas mixture is
_____.

Options :

1. 23

2. 18.8

3. 14.6

4. 46

Question Number : 108 Question Id : 67809417131 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Binary gas diffusion coefficients for gas mixtures are in between _____ m^2/s.

Options :

1. 10^{-2} and 10^{-4}

2. 10^{-4} and 10^{-6}

3. 10^{-6} and 10^{-8}

4. 10^{-8} and 10^{-10}

Question Number : 109 Question Id : 67809417132 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The degree of polymerization in polyethylene is 2000. Molecular weight of ethylene is 28 amu. The average molecular weight of polyethylene is

Options :

1. 2000

2. 28000

3. 56000

4. 28

Question Number : 110 Question Id : 67809417133 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Duralumin is an alloy of

Options :

1. Aluminium and copper

2. Aluminium and deuterium

3. Aluminium and duron

4. Aluminium and chromium

Question Number : 111 Question Id : 67809417134 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Sacrificial anode is used for

Options :

1. Anodic protection

2. Cathodic protection

3. Passivation

4. Magnetization

Question Number : 112 Question Id : 67809417135 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Colour measurement can be done by

Options :

1. Optical pyrometer

2. Coriolis meter

3. Spectrometer

4. X-ray diffraction

Question Number : 113 Question Id : 67809417136 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Enthalpy change during a throttling process is

Options :

1. Negative

2. Positive

3. Zero

4. Cannot be determined

Question Number : 114 Question Id : 67809417137 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A Carnot engine operates with a heat source reservoir at $127^\circ C$ and a heat sink reservoir at $27^\circ C$. What is its thermal efficiency?

Options :

1. 0.25

2. 0.75

3. 0.50

4. 0.20

Question Number : 115 Question Id : 67809417138 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Actual pressure of isobutylene is 10 bar and its critical pressure is 40 bar. Then reduced pressure is_____

Options :

1. 30 bar

2. 4 bar

3. 0.25 bar

4. 50 bar

Question Number : 116 Question Id : 67809417139 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Activated sludge process is employed in the treatment of waste waters in

Options :

1. Primary treatment

2. Secondary treatment

3. Tertiary treatment

4. Ion-exchange

Question Number : 117 Question Id : 67809417140 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An example for path function is

Options :

1. Pressure

2. Volume

3. Work

4. Temperature

Question Number : 118 Question Id : 67809417141 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Absorption is the mass transfer operation that occurs between _____ phases.

Options :

1. Gas and gas

2. Gas and liquid

3. Liquid and solid

4. Liquid and liquid

Question Number : 119 Question Id : 67809417142 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following industries uses blast furnace?

Options :

1. Hindustan Petroleum Corporation Limited

2. Visakhapatnam Steel Plant

3. Coramandel Fertilizers Limited

4. Godavari Fertilizers Limited

Question Number : 120 Question Id : 67809417143 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The degree of freedom when ice, water and water vapour coexist in equilibrium is

Options :

1. -1

2. Zero

3. 1

4. 3

Question Number : 121 Question Id : 67809417144 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A refrigeration system requires 2 kilowatt power for a refrigeration rate of 5 kilojoules per second. What is its coefficient of performance?

Options :

1. 0.4

2. 0.6

3. 2.5

4. 3

Question Number : 122 Question Id : 67809417145 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In which reactor the residence time is same for all elements of fluid?

Options :

1. Batch reactor

2. Ideal plug flow reactor

3. CSTR

4. Packed bed reactor

Question Number : 123 Question Id : 67809417146 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The fluids for which the ratio of shear stress to the shear rate is constant are called as _____ fluids.

Options :

1. Dilatant

2. Bingham

3. Newtonian

4. Thixotropic

Question Number : 124 Question Id : 67809417147 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Film theory in interphase mass transfer is described by

Options :

1. Lewis and Whitman

2. Treybal

3. Dankwerts

4. Henry

Question Number : 125 Question Id : 67809417148 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a chemical reaction the thermodynamic equilibrium constant is unaffected by

Options :

1. Temperature

2. Concentration of materials

3. Conversion of reactants

4. Presence of inerts

Question Number : 126 Question Id : 67809417149 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The temperature of a furnace is raised at the rate of 5°C per minute. The thermometer that is used to measure the furnace temperature is a first order system with a time constant of 2 min. The maximum dynamic error would be _____ °C.

Options :

1. 2

2. 5

3. 10

4. 25

Question Number : 127 Question Id : 67809417150 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Antoine equation is used to compute _____ at a given temperature.

Options :

1. Atomic radius

2. Vapour pressure

3. Bond energy

4. Wave length

Question Number : 128 Question Id : 67809417151 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A gas is confined in a vessel with rigid and insulating walls. This is an example of _____ system.

Options :

1. Closed

2. Open

3. Isolated

4. Extensive

Question Number : 129 Question Id : 67809417152 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Entropy of the universe is

Options :

1. Constant

2. Decreasing

3. Increasing

4. Negative

Question Number : 130 Question Id : 67809417153 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The temperature at which the equilibrium vapour pressure of the liquid is equal to the existing partial pressure of the vapour is termed as _____ of the mixture.

Options :

1. Normal boiling point

2. Critical temperature

3. Bubble point

4. Dew point

Question Number : 131 Question Id : 67809417154 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An ideal gas undergoes a polytropic change which can be represented by $PV^{\delta} =$ constant. If δ is taken as infinity then the path that is followed by the gas is

Options :

1. Isothermal

2. Isobaric

3. Adiabatic

4. Isovolumic

Question Number : 132 Question Id : 67809417155 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An example for extensive property in thermodynamics is

Options :

1. Pressure

2. Temperature

3. Enthalpy

4. Density

Question Number : 133 Question Id : 67809417156 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In sedimentation operation , which of the following settling takes place at final stages?

Options :

1. Free Settling

2. Compressive Settling

3. Hindered Settling

4. Brownian Settling

Question Number : 134 Question Id : 67809417157 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The ratio of area of opening of two successive Tyler screens is _____

Options :

1. $2^{1/2}$

2. 1

3. 2

4. 4

Question Number : 135 Question Id : 67809417158 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The tower internals that are difficult to clean are

Options :

1. Perforated trays

2. Valve trays

3. Random packing

4. Structured packing

Question Number : 136 Question Id : 67809417159 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

_____ states that in conduction heat flux is proportional to the temperature gradient.

Options :

1. Planck's law

2. Stefan-Boltzmann law

3. Fourier law

4. Kirchhoff law

Question Number : 137 Question Id : 67809417160 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a shell and tube heat exchanger, to promote cross flow and raise the average velocity of the shell side fluid, _____ are installed in the shell side.

Options :

1. Nozzles

2. Tie rods

3. Tube sheets

4. Baffles

Question Number : 138 Question Id : 67809417161 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Cross-ambient effect is associated with _____ thermometer.

Options :

1. Bimetallic

2. Vapour-actuated

3. Resistance

4. Mercury-in-glass

Question Number : 139 Question Id : 67809417162 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An example for non-Newtonian fluid is

Options :

1. Water

2. Alcohol

3. Benzene

4. Toothpaste

Question Number : 140 Question Id : 67809417163 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Continuous vacuum filter ordinarily uses _____ mm Hg vacuum.

Options :

1. Less than 250

2. 250

3. 250 – 500

4. Above 500

Question Number : 141 Question Id : 67809417164 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Units of thermal conductivity are _____

Options :

1. $W/(m.K)$

2. $(W.m)/K$

3. $W/(m^2.K)$

4. $(W.m^2)/K$

Question Number : 142 Question Id : 67809417165 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Filter aid is used to _____

Options :

1. Increase the rate of filtration

2. Decrease the pressure drop

3. Increase the porosity of the cake

4. Support base for the system

Question Number : 143 Question Id : 67809417166 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Decanters are used in the _____ operation.

Options :

1. Distillation

2. Extraction

3. Absorption

4. Drying

Question Number : 144 Question Id : 67809417167 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For monatomic gases, the ratio of heat capacities $C_p/C_V =$

Options :

1. 1.0

2. 1.25

3. 1.4

4. 1.67

Question Number : 145 Question Id : 67809417168 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The Power Law which makes use of work index is

Options :

1. Kick's law

2. Bond's law

3. Rittinger's law

4. Fick's law

Question Number : 146 Question Id : 67809417169 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The size reduction mechanism in Jaw crushers is _____

Options :

1. Attrition

2. Compression

3. Cutting

4. Impact

Question Number : 147 Question Id : 67809417170 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Air borne suspension of solid or liquid is known as

Options :

1. Aerosol

2. Cresol

3. Xylol

4. Dirt

Question Number : 148 Question Id : 67809417171 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Absolute pressure at a point is 5.0 bar and surrounding pressure is 2.0 bar. The

gauge pressure is _____ bar.

Options :

1. 7.0

2. 3.0

3. 2.5

4. 0.4

Question Number : 149 Question Id : 67809417172 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Raoult's law is applicable for the case of _____ operation.

Options :

1. Extraction

2. Distillation

3. Absorption

4. Drying

Question Number : 150 Question Id : 67809417173 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

_____ type of tower is used for gas dispersed in the liquid in the form of bubbles.

Options :

1. Packed tower

2. Spray tower

3. Venture scrubber

4. Tray tower

Question Number : 151 Question Id : 67809417174 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which type of heat exchangers are generally used in diary and food industries?

Options :

1. Shell and tube

2. Double pipe

3. Plate type

4. Extended surface

Question Number : 152 Question Id : 67809417175 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Reynolds number is defined as

Options :

1. (inertial force)/(gravity force)

2. (gravity force)/(inertial force)

3. (inertial force)/(viscous force)

4. (viscous force)/(inertial force)

Question Number : 153 Question Id : 67809417176 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the viscosity is 1 centipoise, diffusivity is 1 cm^2/s and density is 1 g/cm^3, then

the Schmidt number is

Options :

1. 1

2. 0.1

3. 0.01

4. 0.001

Question Number : 154 Question Id : 67809417177 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Let h = heat transfer coefficient, D = diameter, k = thermal conductivity,

then Nusselt number is given by

Options :

1. (hD)/k

2. (hk)/D

3. (kD)/h

4. D/(kh)

Question Number : 155 Question Id : 67809417178 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For concentration of highly heat sensitive materials such as orange juice _____ evaporator is used.

Options :

1. Long-tube climbing film

2. Falling film type

3. Forced circulation

4. Agitated film

Question Number : 156 Question Id : 67809417179 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An instrument is composed of four parts. Each part has a specified accuracy of

±0.25 percent. The least accuracy is _____ percent.

Options :

1. ±1.0

2. ±2.0

3. ±0.25

4. ±0.5

Question Number : 157 Question Id : 67809417180 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, butane and nitrogen oxide

3. Butane, pentane and sulphur dioxide

4. Carbon dioxide and water

Question Number : 158 Question Id : 67809417181 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The temperature at which ignition will occur without the presence of a spark or flame is known as

Options :

1. Adiabatic reaction temperature

2. Autoignition temperature

3. Theoretical flame temperature

4. Fire point

Question Number : 159 Question Id : 67809417182 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Fault-tree analysis is a

Options :

1. Hazard assessment technique

2. Biochemical analysis method

3. Tree trunk morphology study

4. Combustion based activity

Question Number : 160 Question Id : 67809417183 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Bhopal disaster was due to

Options :

1. Methyl isocynate

2. Methyl cynate

3. Isomethyl cynate

4. Potassium cyanide

Question Number : 161 Question Id : 67809417184 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which property of the fluid is a measure of its resistance to flow?

Options :

1. Density

2. Viscosity

3. Vapour pressure

4. Surface tension

Question Number : 162 Question Id : 67809417185 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The equation that is applicable to the flow of homogeneous fluid through packed beds is _____

Options :

1. Darcy

2. Bernoulli

3. Hagen-poisueille

4. Ergun

Question Number : 163 Question Id : 67809417186 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In evaporator design, steam economy is defined as_____

Options :

1. Mass of water evaporated per unit time

2. Mass of steam fed per unit time

3. Mass of water evaporated per mass of steam fed

4. Mass of steam fed per mass of water evaporated

Question Number : 164 Question Id : 67809417187 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Recovery of penicillin from fermentation broth is the application of _____ type of mass transfer operation.

Options :

1. Absorption

2. Distillation

3. Extraction

4. Adsorption

Question Number : 165 Question Id : 67809417188 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Double pipe heat exchangers are used when the heat transfer areas are _____ ft².

Options :

1. More than 1000

2. Between 100 and 150

3. Between 200 and 500

4. Between 500 and 1000

Question Number : 166 Question Id : 67809417189 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Bottoms from the beer still are known as

Options :

1. Molasses

2. Slops

3. Bagasse

4. Ethanol

Question Number : 167 Question Id : 67809417190 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Burning of solid wastes at high temperatures is known as

Options :

1. Flocculation

2. Incineration

3. Digestion

4. Calcination

Question Number : 168 Question Id : 67809417191 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The final products of combustion of hydrocarbons are

Options :

1. Hydrogen and carbon

2. Carbon dioxide and water

3. Carbon, carbon monoxide, carbon dioxide, hydrogen

4. Carbon, carbon dioxide, hydrogen

Question Number : 169 Question Id : 67809417192 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following resembles natural rubber?

Options :

1. Polythene

2. Polyisoprene

3. PVC

4. Polystyrene

Question Number : 170 Question Id : 67809417193 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

India's coal production is mainly in

Options :

1. Jharkhand

2. Andhra Pradesh

3. Kerala

4. Goa

Question Number : 171 Question Id : 67809417194 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An example for solid fuel is

Options :

1. Naphtha

2. LPG

3. Coal

4. Granite

Question Number : 172 Question Id : 67809417195 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Coal gasification can be done using

Options :

1. Lurgi process

2. United German process

3. Unilever process

4. Coal Reich process

Question Number : 173 Question Id : 67809417196 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Energy audits help in improving

Options :

1. Energy consumption

2. Energy conversion

3. Energy conservation

4. Energy dissipation

Question Number : 174 Question Id : 67809417197 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is a residue product from petroleum refinery?

Options :

1. LPG

2. Petrol

3. Diesel

4. Grease

Question Number : 175 Question Id : 67809417198 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The amount of moisture in a solid that exerts a vapour pressure less than the normal vapour pressure of water at the given temperature is called as _____

Options :

1. Bound moisture

2. Unbound moisture

3. Free moisture

4. Equilibrium moisture

Question Number : 176 Question Id : 67809417199 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An example for variable area meter is _____

Options :

1. Rotameter

2. Orifice meter

3. Venturi meter

4. Wet gas meter

Question Number : 177 Question Id : 67809417200 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is not a function of an instrument?

Options :

1. Registering

2. Indicating

3. Drifting

4. Recording

Question Number : 178 Question Id : 67809417201 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Channeling is an undesirable operation in _____

Options :

1. Packed towers

2. Spray towers

3. Venture scrubbers

4. Tray towers

Question Number : 179 Question Id : 67809417202 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Unit for overall heat transfer coefficient is

Options :

1. $W/(m^2.K)$

2. $W/(m.K)$

3. $(W.m)/K$

4. $(W.m^2)/K$

Question Number : 180 Question Id : 67809417203 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An example for toxic metal is

Options :

1. Calcium

2. Sodium

3. Potassium

4. Mercury

Question Number : 181 Question Id : 67809417204 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Cyclone separator is used for removing _____ from a gas.

Options :

1. Carbon monoxide

2. Sulphur dioxide

3. Nitrogen oxides

4. Particulate matter

Question Number : 182 Question Id : 67809417205 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The calibrated range of a thermometer is $200^{o}C$ to $500^{o}C$. The span of the

thermometer is

Options :

1. $200^{o}C$

2. $500^{o}C$

3. 300°C

4. 250°C

Question Number : 183 Question Id : 67809417206 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

_____ operation is carried out for economical removal of phenol from aqueous wastes.

Options :

1. Distillation

2. Extraction

3. Absorption

4. Drying

Question Number : 184 Question Id : 67809417207 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Handling of corrosive liquids can be done using _____ pump.

Options :

1. Piston

2. Plunger

3. Gear

4. Diaphragm

Question Number : 185 Question Id : 67809417208 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

_____ oil is an edible oil.

Options :

1. Lube

2. Linseed

3. Rice bran

4. Castorseed

Question Number : 186 Question Id : 67809417209 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Saponification process is used in the manufacture of _____

Options :

1. Soaps

2. Soda ash

3. Soda lime glass

4. Varnishes

Question Number : 187 Question Id : 67809417210 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Bypassing a fluid stream by splitting it into two parallel streams is done for the purpose of achieving _____

Options :

1. Accurate control in concentration

2. Maximum yield

3. Optimum conversion

4. Isothermal conditions

Question Number : 188 Question Id : 67809417211 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Contact process is used for manufacture of

Options :

1. Nitric acid

2. Hydrochloric acid

3. Phosphoric acid

4. Sulphuric acid

Question Number : 189 Question Id : 67809417212 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Synthesis gas is a mixture of

Options :

1. Carbon monoxide and hydrogen

2. Water vapour and carbon monoxide

3. Water vapour and carbon dioxide

4. Carbon dioxide and hydrogen

Question Number : 190 Question Id : 67809417213 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Sylvinite is a mineral of

Options :

1. Iron

2. Potassium

3. Copper

4. Silver

Question Number : 191 Question Id : 67809417214 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The catalyst used in the synthesis of ammonia from nitrogen and hydrogen is

Options :

1. Cuprous oxide

2. Iron oxide

3. Platinum

4. Nickel

Question Number : 192 Question Id : 67809417215 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Prilling process is required in the manufacture of

Options :

1. Industrial gases

2. Urea

3. Glucose

4. Nitric acid

Question Number : 193 Question Id : 67809417216 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

IMI process for phosphoric acid production employs

Options :

1. Hydrochloric acid leaching

2. Nitric acid leaching

3. Sulphuric acid leaching

4. Electric arc furnace

Question Number : 194 Question Id : 67809417217 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Solvay process is used in the production of

Options :

1. Soda ash

2. Coal tar

3. Lime soda

4. Gypsum

Question Number : 195 Question Id : 67809417218 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Hardness to water is caused by

Options :

1. Dissolved salts of calcium and magnesium

2. Dissolved gases

3. Insoluble matter

4. Pathogenic organisms

Question Number : 196 Question Id : 67809417219 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Green pigment is

Options :

1. Titanium dioxide

2. Chromium compound

3. Lithopone

4. Iron oxide

Question Number : 197 Question Id : 67809417220 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Coagulation is used for the removal of _____ from waste waters.

Options :

1. Bacteria

2. Suspended particles

3. Dissolved salts

4. Dissolved gases

Question Number : 198 Question Id : 67809417221 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The forces acting on a settling particle are _____

Options :

1. Drag, gravitational, buoyant

2. Shear, pressure, drag

3. Centrifugal, electrostatic, shear

4. Compressive, shear, tensile

Question Number : 199 Question Id : 67809417222 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In an experimental study, combustion of 1 mol of methane gas is carried out under adiabatic conditions with stoichiometric quantity of air. The adiabatic reaction temperature obtained is T_1. A second experiment is also conducted under identical conditions but with 25 percent excess air. The adiabatic reaction temperature obtained in the second case is T_2. Which of the following is true?

Options :

1. $T_1 \leq T_2$

2. $T_1 < T_2$

3. $T_1 = T_2$

4. $T_1 > T_2$

Question Number : 200 Question Id : 67809417223 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Spring-dashpot models are used to describe _____

Options :

1. laminar flow

2. viscoelastic behavior

3. potential flow

4. molecular motion