

Andhra Pradesh State Council of Higher Education

Notations :

- 1.Options shown in green color and with ✓ icon are correct.
- 2.Options shown in red color and with ✗ icon are incorrect.

Question Paper Name :	Chemical Engineering 06th May 2025 Shift 1
Subject Name :	Chemical Engineering
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Share Answer Key With Delivery Engine :	Yes
Change Font Color :	No
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Chemical Engineering

Group Number :	1
Group Id :	89040171
Group Maximum Duration :	0
Group Minimum Duration :	180
Show Attended Group? :	No
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Break time :	0
Group Marks :	200

Mathematics

Section Id :	890401275
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory

Number of Questions :	50
Number of Questions to be attempted :	50
Section Marks :	50
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	890401299
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 89040114013 Question Type : MCQ Option Shuffling : No
 Display Question Number : Yes
 Correct Marks : 1 Wrong Marks : 0

If the matrix $A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$, then which of the following is true?

Options :

1. ✖ *The matrix is invertible*
2. ✔ *The matrix is singular*
3. ✖ *The matrix is diagonalizable*
4. ✖ *The matrix is symmetric.*

Question Number : 2 Question Id : 89040114014 Question Type : MCQ Option Shuffling : No
 Display Question Number : Yes
 Correct Marks : 1 Wrong Marks : 0

If $A = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$, and the determinant of A is 5, then determinant of the matrix $2A$ is

Options :

1. ✖ 10
2. ✔ 20
3. ✖ 5

4. ✖ 25

Question Number : 3 Question Id : 89040114015 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If the matrix A is of order 3×3 and the system of equations $AX = B$ has a unique solution,
what can be concluded about the determinant of A?

Options :

1. ✖ The determinant of A is zero
2. ✔ The determinant of A is non-zero
3. ✖ The determinant of A must be 1 only
4. ✖ The determinant of A cannot be negative

Question Number : 4 Question Id : 89040114016 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $A = \begin{bmatrix} x & 3 \\ 2 & 4 \end{bmatrix}$ and $A^{-1} = \begin{bmatrix} -2 & 1.5 \\ 1 & -0.5 \end{bmatrix}$ then the value of x is

Options :

1. ✖ -2
2. ✔ 1
3. ✖ 1.5
4. ✖ -0.5

Question Number : 5 Question Id : 89040114017 Question Type : MCQ Option Shuffling : No
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Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 0 \\ 1 & 0 \end{bmatrix}$, then $(AB)^T =$

Options :

1. ✖ $\begin{bmatrix} 0 & 0 \\ 3 & 4 \end{bmatrix}$

2. ✖ $\begin{bmatrix} 0 & 0 \\ 3 & 7 \end{bmatrix}$

3. ✔ $\begin{bmatrix} 3 & 7 \\ 0 & 0 \end{bmatrix}$

4. ✖ $\begin{bmatrix} 3 & 6 \\ 0 & 0 \end{bmatrix}$

Question Number : 6 Question Id : 89040114018 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $\frac{2x+5}{(x-1)(x+3)} = \frac{A}{(x-1)} + \frac{B}{(x+3)}$ then $A+B =$

Options :

1. ✖ -2

2. ✔ 2

3. ✖ 1

4. ✖ -1

Question Number : 7 Question Id : 89040114019 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $\frac{3x-1}{(x-1)(x-2)(x-3)} = \frac{A}{(x-1)} + \frac{B}{(x-2)} + \frac{C}{(x-3)}$ then the values of (A, B, C) are

Options :

1. ✓ (1, -5, 4)

2. ✗ (1, 5, 4)

3. ✗ (4, 5, 1)

4. ✗ (1, 4, 5)

Question Number : 8 Question Id : 89040114020 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $\sin \theta = \frac{3}{5}$, then $\cos \theta =$

Options :

1. ✗ $\frac{4}{5}$ but not $-\frac{4}{5}$

2. ✓ $-\frac{4}{5}$ or $\frac{4}{5}$

3. ✗ $-\frac{4}{5}$ but not $\frac{4}{5}$

4. ✗ $\frac{3}{5}$ but not $-\frac{3}{5}$

Question Number : 9 Question Id : 89040114021 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $\cos \theta \operatorname{cosec} \theta = -1$ and θ lies in the second quadrant then $\cos \theta =$

Options :

1. ✗

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

2. ✖ $\frac{\sqrt{2}}{2}$

3. ✔ $-\frac{\sqrt{2}}{2}$

4. ✖ $-\sqrt{2}$

Question Number : 10 Question Id : 89040114022 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $5 \sin \theta = 4$ then the value of $\frac{\operatorname{Cosec} \theta - \cot \theta}{\operatorname{Cosec} \theta + \cot \theta}$ is

Options :

1. ✖ $-1/4$

2. ✖ $-1/2$

3. ✖ $1/2$

4. ✔ $1/4$

Question Number : 11 Question Id : 89040114023 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

For real x and if $x + \frac{1}{x} = 2 \cos \theta$ then $\cos \theta$ is

Options :

1. ✔ ± 1

2. ✖ $1/2$

3. ✖ 1

4. ✖ $\pm \frac{1}{2}$

Question Number : 12 Question Id : 89040114024 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$$\sin^6 \theta + \cos^6 \theta + 3\sin^2 \theta \cos^2 \theta =$$

Options :

1. ✖ 0

2. ✔ 1

3. ✖ 2

4. ✖ -1

Question Number : 13 Question Id : 89040114025 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The maximum value of $3 \cos \theta + 4 \sin \theta$ is

Options :

1. ✖ 2

2. ✖ 4

3. ✔ 5

4. ✖ 1

Question Number : 14 Question Id : 89040114026 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

If $\sin 5x + \sin 3x + \sin x = 0$ then the value of x other than zero lying between $0 \leq x \leq \frac{\pi}{2}$ is

Options :

1. ✖ $\frac{\pi}{6}$

2. ✔ $\frac{\pi}{3}$

3. ✖ $\frac{\pi}{12}$

4. ✖ $\frac{\pi}{4}$

Question Number : 15 Question Id : 89040114027 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The general solution of the equation $\tan^2 x = 1$ is

Options :

1. ✖ $n\pi + \frac{\pi}{4}$ only

2. ✔ $n\pi \pm \frac{\pi}{4}$

3. ✖ $2n\pi \pm \frac{\pi}{4}$

4. ✖ $n\pi - \frac{\pi}{4}$ only

Question Number : 16 Question Id : 89040114028 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The value of $\cos \frac{5\pi}{17} + \cos \frac{7\pi}{17} + 2\cos \frac{11\pi}{17} \cos \frac{\pi}{17}$ is

Options :

- 1. ✓ 0
- 2. ✗ 1
- 3. ✗ -1
- 4. ✗ $1/2$

Question Number : 17 Question Id : 89040114029 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $\sin \theta - \cos \theta = 4/5$ then the value of $\sin \theta + \cos \theta =$

Options :

- 1. ✗ $\frac{5}{\sqrt{34}}$
- 2. ✗ $-\frac{5}{\sqrt{34}}$
- 3. ✗ $-\frac{\sqrt{34}}{25}$
- 4. ✓ $\frac{\sqrt{34}}{5}$

Question Number : 18 Question Id : 89040114030 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The real part of $\frac{1+2i}{(2-i)^2}$ is

Options :

1. ✓ $-\frac{1}{5}$

2. ✗ $\frac{1}{5}$

3. ✗ $-\frac{2}{5}$

4. ✗ $\frac{2}{5}$

Question Number : 19 Question Id : 89040114031 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Modulus of the complex number $\frac{(1+i)^{10}}{(2i-4)^4}$ is equal to

Options :

1. ✓ $\frac{2}{25}$

2. ✗ $-\frac{2}{25}$

3. ✗ $\frac{1}{25}$

4. ✗ $-\frac{1}{25}$

Question Number : 20 Question Id : 89040114032 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In a circle with center O, a 6cm long chord is at a distance 4 cm from the center.

Then the length of diameter is

Options :

1. ✖ 5 cm

2. ✔ 10 cm

3. ✖ 15 cm

4. ✖ 8 cm

Question Number : 21 Question Id : 89040114033 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The length of the tangent from the point (5, 1) to the circle $x^2 + y^2 + 6x - 4y - 3 = 0$ is

Options :

1. ✖ 81

2. ✔ 7

3. ✖ 29

4. ✖ 21

Question Number : 22 Question Id : 89040114034 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

If length of the tangent is 8 cm and the distance between the center of the circle and the external point is 11 cm, then the area of the circle is

Options :

1. ✖ 100 cm

2. ✖ 197.14 cm

3. ✓ 179.14 cm

4. ✗ 110.14 cm

Question Number : 23 Question Id : 89040114035 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The equation of the parabola with focus (2, 0) and vertex (1, 0) is

Options :

1. ✗ $y^2 = 4x$

2. ✓ $y^2 = 4x - 4$

3. ✗ $y^2 = 4(x + 1)$

4. ✗ $y^2 = -4(x - 1)$

Question Number : 24 Question Id : 89040114036 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

If (2, 0) is the vertex and y-axis is the directrix of a parabola then its focus is

Options :

1. ✗ (2, 0)

2. ✗ (-2, 0)

3. ✓ (4, 0)

4. ✗ (-4, 0)

Question Number : 25 Question Id : 89040114037 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The *eccentricity* of the ellipse $16x^2 + 7y^2 = 112$ is

Options :

1. ✖ $\frac{4}{3}$

2. ✖ $\frac{7}{16}$

3. ✖ $\frac{3}{\sqrt{7}}$

4. ✔ $\frac{3}{4}$

Question Number : 26 Question Id : 89040114038 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The value of $\lim_{n \rightarrow \infty} \frac{4x^3 - x + 1}{x^2 - 4x(1 - x^2)} =$

Options :

1. ✖ 0

2. ✔ 1

3. ✖ -1

4. ✖ ∞

Question Number : 27 Question Id : 89040114039 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The value of $\lim_{x \rightarrow 1} \left(\frac{x^3 - 1}{x - 1} \right)$ is

Options :

1. ✖ 0
2. ✖ 1
3. ✔ 3
4. ✖ Limit does not exist

Question Number : 28 Question Id : 89040114040 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The derivative of x^x with respect to x is

Options :

1. ✖ $x^x(x + \log x)$
2. ✖ $x^x(x - \log x)$
3. ✖ $x^x(1 - \log x)$
4. ✔ $x^x(1 + \log x)$

Question Number : 29 Question Id : 89040114041 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$\frac{d}{dx} \left(\tan^{-1} \frac{x}{a} \right) =$

Options :

1. ✖ $\frac{a}{a^2-x^2}$

2. ✖ $\frac{1}{a^2+x^2}$

3. ✖ $\frac{1}{a^2-x^2}$

4. ✔ $\frac{a}{a^2+x^2}$

Question Number : 30 Question Id : 89040114042 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $y = \sqrt{\sin x + \sqrt{\sin x + \sqrt{\sin x + \dots \infty}}}$ then $\frac{dy}{dx} =$

Options :

1. ✖ $\frac{\cos x}{1-2y}$

2. ✖ $\frac{\sin x}{1-2y}$

3. ✖ $\frac{-\sin x}{1-2y}$

4. ✔ $\frac{-\cos x}{1-2y}$

Question Number : 31 Question Id : 89040114043 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Slope of the normal to the curve $x^{2/3} + y^{2/3} = 2$ at the point (1, 1) is

Options :

1. ✖ -1

2. ✔ 1

3. ✖ $1/2$

4. ✖ $-1/2$

Question Number : 32 Question Id : 89040114044 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The equation of the tangent to the curve $y = x^3$ at $(1, 1)$ is

Options :

1. ✖ $3x - y + 2 = 0$

2. ✖ $x - 10y - 50 = 0$

3. ✔ $3x - y - 2 = 0$

4. ✖ $x - 10y + 50 = 0$

Question Number : 33 Question Id : 89040114045 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

For what value of x , the function $2x^3 + 3x^2 - 36x + 10$ has minimum

Options :

1. ✖ -2

2. ✖ -3

3. ✔

4. ✖ 1

Question Number : 34 Question Id : 89040114046 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $z = x^2 - y^2$ then $\frac{1}{x} \frac{\partial z}{\partial x} + \frac{1}{y} \frac{\partial z}{\partial y} =$

Options :

1. ✖ 1

2. ✖ $2x + 2y$

3. ✔ 0

4. ✖ $2x - 2y$

Question Number : 35 Question Id : 89040114047 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $u = e^{xy}$, then the value of $\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2}$ at $(1, 1)$ is

Options :

1. ✖ e 2. ✔ $2e$

3. ✖ 1

4. ✖ 0

Question Number : 36 Question Id : 89040114048 Question Type : MCQ Option Shuffling : No

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The value of $\int (\log \sec x) \tan x \, dx$ is

Options :

1. ✖ $\sec x + c$

2. ✖ $\log \sec x + c$

3. ✔ $\frac{1}{2} (\log \sec x)^2 + c$

4. ✖ $\log (\log \sec x)$

Question Number : 37 Question Id : 89040114049 Question Type : MCQ Option Shuffling : No

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$$\int \sin^2 x \, dx =$$

Options :

1. ✖ $\frac{x}{2} + \frac{\sin 2x}{4} + c$

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

3. ✖ $\frac{x}{2} + \frac{\cos 2x}{4} + c$

4. ✔ $\frac{x}{2} - \frac{\sin 2x}{4} + c$

Question Number : 38 Question Id : 89040114050 Question Type : MCQ Option Shuffling : No

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$$\int \frac{dx}{25-x^2} =$$

Options :

1. ✖ $\frac{1}{5} \log \left| \frac{x-5}{x+5} \right| + c$

2. ✖ $\frac{1}{5} \log \left| \frac{x+5}{x-5} \right| + c$

3. ✔ $\frac{1}{10} \log \left| \frac{5+x}{5-x} \right| + c$

4. ✖ $\frac{1}{10} \log \left| \frac{5-x}{5+x} \right| + c$

Question Number : 39 Question Id : 89040114051 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The value of $\int_0^1 x(1-x)^9 dx$ is

Options :

1. ✔ $\frac{1}{110}$

2. ✖ $\frac{1}{120}$

3. ✖ $\frac{-1}{110}$

4. ✖ $\frac{-1}{120}$

Question Number : 40 Question Id : 89040114052 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$$\int_{-a}^a |x| dx =$$

Options :

1. ✖ a

2. ✖ $2a$

3. ✖ 0

4. ✔ a^2

Question Number : 41 Question Id : 89040114053 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$$\int_0^{\pi/2} \frac{\cos 2x}{\sin x + \cos x} dx =$$

Options :

1. ✖ -1

2. ✔ 0

3. ✖ 1

4. ✖ $\frac{\pi}{2}$

Question Number : 42 Question Id : 89040114054 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The area bounded by the curve $y = 4x^2$, the x-axis, the line $x=0$ and the line $x = 1$ is

Options :

1. ✖ 2

2. ✖ $\frac{2}{3}$

3. ✖ $\frac{1}{3}$

4. ✔ $\frac{4}{3}$

Question Number : 43 Question Id : 89040114055 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The RMS value of x^2 in $[0, 1]$ is

Options :

1. ✔ $\frac{1}{\sqrt{5}}$

2. ✖ $\frac{1}{5}$

3. ✖ $\frac{1}{\sqrt{3}}$

4. ✖ $\frac{1}{3}$

Question Number : 44 Question Id : 89040114056 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The degree of the differential equation $y' + y = \frac{5}{y'}$ is

Options :

1. ✖ 1

2. ✔ 2

3. ✖ 3

4. ✖ 4

Question Number : 45 Question Id : 89040114057 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The order of the differential equation whose general solution is $y = a \sin x + b \cos x$ is

(where a and b are arbitrary constants)

Options :

1. ✔ 2

2. ✖ 4

3. ✖ 1

4. ✖ 3

Question Number : 46 Question Id : 89040114058 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The differential equation $\frac{dy}{dx} = -\left(\frac{x+y}{1+x^2}\right)$ is

Options :

1. ✖ of Variable separable form

2. ✔ First order Linear equation

3. ✖ Homogeneous

4. ✖ Exact differentia Equation

Question Number : 47 Question Id : 89040114059 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The solution of the differential equation $\frac{dy}{dx} = 1 + y^2$ is

Options :

1. ✖ $y = \tan x + c$
2. ✔ $y = \tan (x + c)$
3. ✖ $y = \tan x$
4. ✖ $y = -\tan (x + c)$

Question Number : 48 Question Id : 89040114060 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The solution of the differential equation $\frac{dy}{dx} + \frac{y}{x} = x^2$ under the condition that $y(1) = 1$ is

Options :

1. ✖ $4xy = x^3 + 3$
2. ✔ $4xy = x^4 + 3$
3. ✖ $4xy = x^3 - 3$
4. ✖ $4xy = x^4 - 3$

Question Number : 49 Question Id : 89040114061 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The solution of the differential equation $\frac{d^3y}{dx^3} + 3\frac{d^2y}{dx^2} + 2\frac{dy}{dx} = 0$ is

Options :

1. ✓ $y = a + be^{-x} + ce^{-2x}$
2. ✗ $y = a + be^x + ce^{2x}$
3. ✗ $y = ae^{-x} + be^{-2x} + ce^x$
4. ✗ $y = a + be^{-2x} + ce^{-3x}$

Question Number : 50 Question Id : 89040114062 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✓ $-xe^{-2x}$
2. ✗ xe^{-2x}
3. ✗ $-\frac{x}{2}e^{-2x}$
4. ✗ $\frac{x}{2}e^{-2x}$

Physics

Section Id :

890401276

Section Number :

2

Section type :

Online

Mandatory or Optional :

Mandatory

Number of Questions :	25
Number of Questions to be attempted :	25
Section Marks :	25
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	890401300
Question Shuffling Allowed :	Yes

Question Number : 51 Question Id : 89040114063 Question Type : MCQ Option Shuffling : No
 Display Question Number : Yes
 Correct Marks : 1 Wrong Marks : 0

If we choose velocity V , length L and force F as fundamental physical quantities then how would you express power in terms of V , L and F ?

Options :

1. ✓ $F^1 L^0 V^1$
2. ✗ $F^1 L^{-1} V^1$
3. ✗ $F^1 L^{-1} V^2$
4. ✗ $F^1 L^{-2} V^3$

Question Number : 52 Question Id : 89040114064 Question Type : MCQ Option Shuffling : No
 Display Question Number : Yes
 Correct Marks : 1 Wrong Marks : 0

Which pair of physical quantities have same dimensional formula

Options :

1. ✗ Torque and momentum
2. ✗ Surface tension and tension
3. ✓ Pressure and modulus of elasticity
4. ✗ Force constant and Planck's constant

Question Number : 53 Question Id : 89040114065 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $A + B = C$ and $A^2 + B^2 = C^2$ then the angle between vectors A and B is

Options :

1. ✖ 0°
2. ✖ 60°
3. ✔ 90°
4. ✖ 120°

Question Number : 54 Question Id : 89040114066 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The area of rectangle with sides as $A = 3i + 4j$ and $B = i + 3j$ is

Options :

1. ✔ $5\sqrt{10}$ units
2. ✖ 10 units
3. ✖ $2\sqrt{10}$ units
4. ✖ $10\sqrt{5}$ units

Question Number : 55 Question Id : 89040114067 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If a pebble is thrown vertically upwards from the top of a tower with velocity 5 m/s. It strikes the ground after 3 seconds. With what velocity the pebble strikes the ground? (take $g = 10 \text{ ms}^{-2}$)

Options :

- 1. ✖ 10 m/s
- 2. ✖ 20 m/s
- 3. ✔ 25 m/s
- 4. ✖ 30 m/s

Question Number : 56 Question Id : 89040114068 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If a body released from the top of a tower of height H meter takes T seconds to reach the ground , where is the body at time T/2 seconds from the ground ?

Options :

- 1. ✖ $\frac{H}{2}$
- 2. ✖ $\frac{H}{4}$
- 3. ✔ $\frac{3H}{4}$
- 4. ✖ $\frac{2H}{3}$

Question Number : 57 Question Id : 89040114069 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A body starts from rest and travels with uniform acceleration. If the distance covered in first 2 seconds is 'x' and next 2 seconds is 'y', then

Options :

1. ✖ $y = x$
2. ✖ $y = 2x$
3. ✔ $y = 3x$
4. ✖ $y = 4x$

Question Number : 58 Question Id : 89040114070 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A juggler throws ball into air. He throws one whenever the previous one is at its highest point. How high do the balls rise if he throws n balls each second ?

Options :

1. ✔ $\frac{g}{2n^2}$
2. ✖ $\frac{g}{n}$
3. ✖ $\frac{g}{2n}$
4. ✖ $\frac{n^2}{g}$

Question Number : 59 Question Id : 89040114071 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A block of mass m is lying on an inclined plane. The coefficient of friction between the plane and the block is μ . The force required to move the block up the inclined plane will be

Options :

1. ✖ $mg \sin \theta - \mu mg \cos \theta$
2. ✔ $mg \sin \theta + \mu mg \cos \theta$
3. ✖ $mg \cos \theta - \mu mg \sin \theta$
4. ✖ $mg \cos \theta + \mu mg \sin \theta$

Question Number : 60 Question Id : 89040114072 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The time taken by a body to slide down the smooth inclined plane is 4sec. The time taken by a body to slide $1/4^{\text{th}}$ of the length of the plane is

Options :

1. ✖ 1 sec
2. ✔ 2 sec
3. ✖ 3 sec
4. ✖ 0.5 sec.

Question Number : 61 Question Id : 89040114073 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A body of mass 2 Kg changes its velocity from $(3\mathbf{i} - 4\mathbf{j})$ m/s to $(6\mathbf{j} + 2\mathbf{k})$ m/s.

what is the change in kinetic energy of the body?

Options :

- 1. ✓ 15 J
- 2. ✗ 12 J
- 3. ✗ 18 J
- 4. ✗ 20 J

Question Number : 62 Question Id : 89040114074 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

At her maximum height a girl in a swing is 3m above the ground and at the lowest point she is 2m above the ground. Her maximum velocity is

Options :

- 1. ✗ $\sqrt{29.4}$ m/s
- 2. ✗ $\sqrt{9.8}$ m/s
- 3. ✓ $\sqrt{19.6}$ m/s
- 4. ✗ 9.8 m/s

Question Number : 63 Question Id : 89040114075 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

An engine delivers 1000 watt of power with 80% efficiency. The input power is

Options :

1. ✖ 800 W
2. ✖ 1000 W
3. ✔ 1250 W
4. ✖ 1500 W

Question Number : 64 Question Id : 89040114076 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

If a seconds pendulum on the earth is taken to a planet whose gravity is half of the gravity on earth, its time period on that planet is

Options :

1. ✖ 2 sec
2. ✖ 4 sec
3. ✖ $4\sqrt{2}$ sec
4. ✔ $2\sqrt{2}$ sec

Question Number : 65 Question Id : 89040114077 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The amplitude of a simple harmonic oscillator is A. When the velocity of particle is half of its maximum velocity, then its position is at

Options :

1. ✖ $\frac{A}{2}$
2. ✖

$$\frac{\sqrt{3} A}{4}$$

3. ✖ $\frac{A}{4}$

4. ✔ $\frac{\sqrt{3} A}{2}$

Question Number : 66 Question Id : 89040114078 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The displacement of a particle executing SHM is $x = 3 \sin 2t + 4 \cos 2t$.

The amplitude of particle is

Options :

1. ✖ 7

2. ✖ 3

3. ✖ 4

4. ✔ 5

Question Number : 67 Question Id : 89040114079 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The beats are produced by two sound sources of same amplitude and of nearly equal frequencies. The maximum intensity of beats will be _____ when compared to that of one source is

Options :

1. ✖ Same

2. ✖ Double

3. ✓ Four times

4. ✗ Eight times

Question Number : 68 Question Id : 89040114080 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A siren emitting sound of frequency 800 Hz is going away from a static listener with a speed of 30 m/s. Frequency of sound heard by the listener is
(Velocity of sound in air = 340 m/s)

Options :

1. ✗ 286.5 Hz

2. ✗ 418.2 Hz

3. ✓ 733.3 Hz

4. ✗ 644.5 Hz

Question Number : 69 Question Id : 89040114081 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

During the melting of a slab of ice at 273K at atmospheric pressure

Options :

1. ✗ Positive work is done by the ice-water system on the atmosphere

2. ✓ Positive work is done on the ice-water system by the atmosphere

3. ✗ Negative work is done on the ice-water system by the atmosphere

4. ✗ The internal energy of the ice-water system decreases

Question Number : 70 Question Id : 89040114082 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A gas is compressed at a constant pressure of 50 N/m^2 from a volume of 10 m^3 to a volume of 4 m^3 . Energy of 100 J is then added to the gas by heating. Its internal energy is

Options :

1. ✓ Increases by 400 J
2. ✗ Increases by 200 J
3. ✗ Increases by 100 J
4. ✗ Decreases by 200 J

Question Number : 71 Question Id : 89040114083 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A vessel containing 10 liters of an ideal gas at a pressure of 760 mm of Hg is connected to an evacuated 9 liter vessel. The resultant pressure is

Options :

1. ✓ 400 mm of Hg
2. ✗ 1440 mm of Hg
3. ✗ 40 mm of Hg
4. ✗ 760 mm of Hg

Question Number : 72 Question Id : 89040114084 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A sealed glass jar is full of water. When its temperature is decreased to 0°C

Options :

1. ✖ The glass jar remains as it is with ice
2. ✖ The glass jar remains as it is with water
3. ✖ Glass jar contains half the amount of ice mixed with water
4. ✔ The glass jar breaks due to the formation of ice

Question Number : 73 Question Id : 89040114085 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A bubble rises from the bottom of a lake 90 m deep on reaching the surface, its volume becomes (Atmospheric pressure is 10 m of water)

Options :

1. ✖ 4 times
2. ✖ 8 times
3. ✔ 10 times
4. ✖ 3 times

Question Number : 74 Question Id : 89040114086 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

An endoscope is employed by a physician to view the internal parts of a body organ. It is based on the principle of

Options :

1. ✖ Refraction
2. ✖ Reflection
3. ✖ Dispersion
4. ✔ Total internal reflection

Question Number : 75 Question Id : 89040114087 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Light of wavelength $5000 \text{ \AA}$ falls on a sensitive plate with photo electric work function of 1.9 eV . The kinetic energy of the emitted photoelectron will be

Options :

1. ✔ 0.58 eV
2. ✖ 2.48 eV
3. ✖ 1.24 eV
4. ✖ 1.16 eV

Chemistry

Section Id :	890401277
Section Number :	3
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	25
Number of Questions to be attempted :	25
Section Marks :	25
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	890401301

Question Shuffling Allowed :

Yes

Question Number : 76 Question Id : 89040114088 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Consider the elements with atomic numbers $Z = 1$ to $Z=20$. The number of elements with only one unpaired electron in their ground state is

Options :

1. ✖ 10

2. ✖ 6

3. ✔ 8

4. ✖ 12

Question Number : 77 Question Id : 89040114089 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Identify the orbital which has lobes not orienting on the axis

Options :

1. ✖ P_x

2. ✖ P_y

3. ✖ $d_{x^2-y^2}$

4. ✔ d_{yz}

Question Number : 78 Question Id : 89040114090 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If n , l , m and s represent the symbols of quantum numbers, the impossible quantum number set for the electron in terms of n , l , m and s respectively is

Options :

1. ✓ 2, 0, -1, +1/2

2. ✗ 3, 0, 0, -1/2

3. ✗ 4, 1, +1, +1/2

4. ✗ 3, 2, -1, -1/2

Question Number : 79 Question Id : 89040114091 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Consider the elements with atomic numbers $Z = 8, 9, 11, 19$ and 20 . The number of ionic compounds possible with the elements having these atomic numbers is

Options :

1. ✓ 6

2. ✗ 5

3. ✗ 10

4. ✗ 8

Question Number : 80 Question Id : 89040114092 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In which of the molecules lone pair, bond pair of electrons ratio is 2:3 ?

Options :

1. ✖ Cl_2

2. ✖ O_2

3. ✖ HCl

4. ✔ N_2

Question Number : 81 Question Id : 89040114093 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

How many moles of urea is present in 250 ml of 0.2 M solution of it?

Options :

1. ✖ 0.03

2. ✖ 0.04

3. ✔ 0.05

4. ✖ 0.06

Question Number : 82 Question Id : 89040114094 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

x ml of 0.1 M NaOH solution is diluted with distilled water to get 250 ml of 0.01 M solution.

The value of x (in ml) is

Options :

1. ✖ 12.5

2. ✔ 25

3. ✖ 37.5

4. ✖ 50

Question Number : 83 Question Id : 89040114095 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

3×10^{22} molecules of Na_2CO_3 (molecular weight = 106) present in 500 ml of solution.

The normality of the solution formed is ($N = 6 \times 10^{23} \text{ mol}^{-1}$)

Options :

1. ✖ 0.1 N

2. ✔ 0.2 N

3. ✖ 0.4 N

4. ✖ 0.05 N

Question Number : 84 Question Id : 89040114096 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Identify the pair containing only Lewis acids

Options :

1. ✔ BF_3 , NH_3

2. ✖ H^+ , BF_3

3. ✖ F^- , H_2O

4. ✖ NH_4^+ , NH_3

Question Number : 85 Question Id : 89040114097 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

4 g of NaOH is dissolved in 1.0 L solution. The pH of solution is

Options :

1. ✓ 13

2. ✗ 1

3. ✗ 12

4. ✗ 7.4

Question Number : 86 Question Id : 89040114098 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Number of coulombs corresponding to 1 mol of electrons approximately is equal to

Options :

1. ✗ 1.93×10^5

2. ✓ 9.65×10^4

3. ✗ 1.93×10^4

4. ✗ 9.65×10^5

Question Number : 87 Question Id : 89040114099 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Aqueous solution of which of the following does not act as electrolyte?

Options :

1. ✓ Urea
2. ✗ Copper Sulphate
3. ✗ Silver Nitrate
4. ✗ Sodium Chloride

Question Number : 88 Question Id : 89040114100 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The amount of silver (in mg) deposited when 9.65 coulombs of electricity is passed through an aqueous solution of silver nitrate is ($A_g=108$ u) ($1F=96500$ C mol⁻¹)

Options :

1. ✗ 16.2
2. ✗ 21.2
3. ✓ 10.8
4. ✗ 6.4

Question Number : 89 Question Id : 89040114101 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The standard electrode potentials of Zn, Ag and Cu are -0.76, +0.80 and +0.34 V respectively. Identify the correct statement from the following.

Options :

1. ✗ Ag can oxidize Zn and Cu

2. ✖ Ag can reduce Zn^{2+} and Cu^{2+}
3. ✔ Zn can reduce Ag^+ and Cu^{2+}
4. ✖ Cu can oxidize Zn and Ag

Question Number : 90 Question Id : 89040114102 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In the removal of permanent hardness of water by permutit process, Na^+ ions of permutit are exchanged with which ions of water ?

Options :

1. ✖ K^+ , Ba^{2+}
2. ✖ Fe^{2+} , K^+
3. ✔ Ca^{2+} , Mg^{2+}
4. ✖ Zn^{2+} , Cu^{2+}

Question Number : 91 Question Id : 89040114103 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

What is the degree of hardness (in ppm) of a sample containing 19 mg of MgCl_2 (Molecular Weight = 95) in 2 kg water sample?
(express it in terms of equivalents of CaCO_3)

Options :

1. ✔ 10
2. ✖ 20

3. ✖ 30

4. ✖ 40

Question Number : 92 Question Id : 89040114104 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Identify the pair of chlorides responsible for permanent hardness of water.

Options :

1. ✖ NaCl, KCl

2. ✖ CaCl₂, KCl

3. ✖ AlCl₃, MgCl₂

4. ✔ MgCl₂, CaCl₂

Question Number : 93 Question Id : 89040114105 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The cell formed in bent pipes is an example of

Options :

1. ✖ Concentration Cell

2. ✖ Composition Cell

3. ✔ Stress Cell

4. ✖ Electrolytic Cell

Question Number : 94 Question Id : 89040114106 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Tarnishing of silver is due to formation of

Options :

1. ✖ Its sulphate layer
2. ✖ Its nitrate layer
3. ✔ Its sulphide layer
4. ✖ Its chloride layer

Question Number : 95 Question Id : 89040114107 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following is not a co-polymer?

Options :

1. ✖ Buna-S rubber
2. ✔ Neoprene rubber
3. ✖ Bakelite
4. ✖ Urea – Formaldehyde

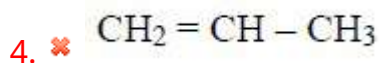
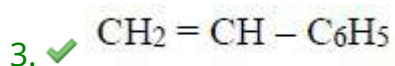
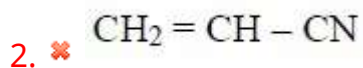
Question Number : 96 Question Id : 89040114108 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The monomer involved in the formation of polystyrene is

Options :

1. ✖ $\text{CH}_2 = \text{CH} - \text{Cl}$

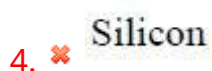
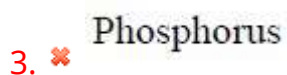
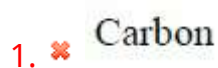


Question Number : 97 Question Id : 89040114109 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

We can overcome the undesirable properties of natural rubber by heating natural rubber with

Options :

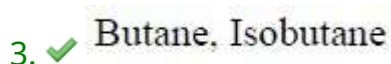
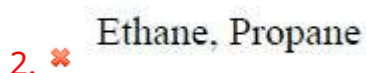
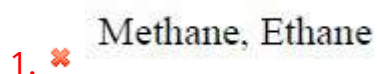


Question Number : 98 Question Id : 89040114110 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Liquefied petroleum gas (LPG) mainly contains

Options :



4. ✖ Ethene, Ethyne

Question Number : 99 Question Id : 89040114111 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Greenhouse effect is caused by

Options :

1. ✖ NO_2

2. ✖ CO

3. ✖ NO

4. ✔ CO_2

Question Number : 100 Question Id : 89040114112 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which compound is mainly responsible for the depletion of ozone layer?

Options :

1. ✖ CO_2

2. ✖ CH_4

3. ✖ CH_3OH

4. ✔ CF_2Cl_2

Chemical Engineering

Section Number :	4
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	100
Number of Questions to be attempted :	100
Section Marks :	100
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	890401302
Question Shuffling Allowed :	Yes

Question Number : 101 Question Id : 89040114113 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Ball bearings are made of

Options :

1. ✖ Plain carbon steel
2. ✔ Chrome carbon steel
3. ✖ Stainless steel
4. ✖ Malleable cast iron

Question Number : 102 Question Id : 89040114114 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Which of the following metal is the most prone to atmospheric corrosion?

Options :

1. ✖ Silver
2. ✖ Tin
3. ✔ Iron

4. ✖ Copper

Question Number : 103 Question Id : 89040114115 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A suitable material of construction to use with fuming sulphuric acid is

Options :

1. ✔ Monel

2. ✖ Nickel

3. ✖ Carbon steel

4. ✖ Stainless steel type 304

Question Number : 104 Question Id : 89040114116 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The main reducing agent in iron blast furnace is

Options :

1. ✖ Air

2. ✖ Carbon dioxide

3. ✔ Carbon monoxide

4. ✖ Oxygen

Question Number : 105 Question Id : 89040114117 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Glass reacts with

Options :

1. ✖ H_2SO_3
2. ✔ HF
3. ✖ HNO_3
4. ✖ $\text{K}_2\text{Cr}_2\text{O}_7$

Question Number : 106 Question Id : 89040114118 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Eutectic reaction for iron-carbon system occurs at

Options :

1. ✖ 650°C
2. ✖ 780°C
3. ✖ 570°C
4. ✔ 1147°C

Question Number : 107 Question Id : 89040114119 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A bypass stream in a chemical process is useful to

Options :

1. ✓ Control the flow streams
2. ✗ Improve conversion
3. ✗ limit the inerts
4. ✗ Increase the product yield

Question Number : 108 Question Id : 89040114120 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Weight of 56 litres of chlorine gas at S.T.P. is ----- g

Options :

1. ✗ 142
2. ✗ 71
3. ✓ 177.5
4. ✗ 197.5

Question Number : 109 Question Id : 89040114121 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Which of the following terms of Vander Walls equation of state for a non-ideal gas accounts for intermolecular attraction forces?

Options :

1. ✗ RT
2. ✓ $(P + a/V^2)$

3. ✖ $(V - b)$

4. ✖ $1/RT$

Question Number : 110 Question Id : 89040114122 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The density of a gas 'X' is twice that of another gas 'Y'.

If the molecular weight of gas 'Y' is 'M';

then the molecular weight of the gas 'X' will be

Options :

1. ✔ $2M$

2. ✖ $M/2$

3. ✖ M

4. ✖ $M/4$

Question Number : 111 Question Id : 89040114123 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

500 C.C each of hydrogen at 700 mm Hg pressure and oxygen at 600 mm Hg

pressure are put together in a vessel of 1 litre capacity. The final pressure of the

gas mixture will be ----- mm Hg

Options :

1. ✖ 600

2. ✖ 700

3. ✖

4. ✓ 650

Question Number : 112 Question Id : 89040114124 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Pure oxygen is mixed with air to produce an enriched air containing 50 volume % of oxygen. The ratio of moles of air to oxygen used is

Options :

1. ✗ 1.72

2. ✓ 0.58

3. ✗ 0.5

4. ✗ 0.2

Question Number : 113 Question Id : 89040114125 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Assuming that carbon dioxide obeys ideal gas law, the density of carbon dioxide (Kg/m^3) at 263°C and 2 atm is

Options :

1. ✗ 1

2. ✓ 2

3. ✗ 3

4. ✗ 4

Question Number : 114 Question Id : 89040114126 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A solution of specific gravity 1 consists of 35 % A by weight and the remaining B. If the specific gravity of A is 0.7, the specific gravity of B is

Options :

1. ✖ 1.25

2. ✖ 1.3

3. ✖ 1.35

4. ✔ 1.2

Question Number : 115 Question Id : 89040114127 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Air at a temperature of 20°C and 750 mm Hg pressure has a relative humidity of 80%. What is its percentage humidity? Vapor pressure of water at 20°C is 17.5 mm Hg

Options :

1. ✔ 88

2. ✖ 80

3. ✖ 79.62

4. ✖ 78.51

Question Number : 116 Question Id : 89040114128 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Rancidity of the oils can be reduced by

Options :

1. ✓ Hydrogenation
2. ✗ Oxidation
3. ✗ Decolouration
4. ✗ Winterization

Question Number : 117 Question Id : 89040114129 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Cooking liquor in case of sulphite process is

Options :

1. ✗ Sodium sulphide and sodium bisulphide
2. ✗ magnesium sulphide and magnesium bisulphite
3. ✓ sodium sulphite and sodium bisulphite
4. ✗ magnesium sulphite and magnesium bisulphite

Question Number : 118 Question Id : 89040114130 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Which of the following coal has the highest calorific value?

Options :

1. ✖ Lignite
2. ✔ Anthracite
3. ✖ Peat
4. ✖ Sub-bituminous

Question Number : 119 Question Id : 89040114131 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Ultimate analysis of coal determines

Options :

1. ✖ Carbon, ash, sulphur and nitrogen
2. ✖ Moisture, volatile matter, ash and carbon
3. ✖ Carbon, hydrogen, oxygen and sulphur
4. ✔ Carbon, hydrogen, nitrogen and sulphur

Question Number : 120 Question Id : 89040114132 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The catalyst used in shift converter is

Options :

1. ✔ Nickel
2. ✖

Vanadium

3. ✖ Silica gel

4. ✖ Alumina

Question Number : 121 Question Id : 89040114133 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Poly tetra fluoro ethylene is known as

Options :

1. ✖ Nylon

2. ✔ Teflon

3. ✖ Bakelite

4. ✖ Rayon

Question Number : 122 Question Id : 89040114134 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Hydrophilic group of a soap or detergent solution is

Options :

1. ✖ Water hating

2. ✖ Soil loving

3. ✔ Water loving

4. ✖ Soil hating

Question Number : 123 Question Id : 89040114135 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The end bleaching agent used to remove last traces of colour bodies from the pulp is

Options :

1. ✔ ClO_2

2. ✖ MgO

3. ✖ SO_2 gas

4. ✖ Mercaptans

Question Number : 124 Question Id : 89040114136 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Carborundum mainly consists of

Options :

1. ✖ bauxite

2. ✔ Silicon carbide

3. ✖ Boron carbide

4. ✖ Calcium carbide

Question Number : 125 Question Id : 89040114137 Question Type : MCQ Option Shuffling : No

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Unsaturated fatty acid is

Options :

1. ✖ Palmitic acid
2. ✖ Stearic acid
3. ✖ Oxalic acid
4. ✔ Oleic acid

Question Number : 126 Question Id : 89040114138 Question Type : MCQ Option Shuffling : No

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Commercially ethylene is produced from naphtha by

Options :

1. ✖ Catalytic cracking
2. ✖ Pyrolysis
3. ✔ Hydrocracking
4. ✖ Thermal cracking

Question Number : 127 Question Id : 89040114139 Question Type : MCQ Option Shuffling : No

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Triple superphosphate is manufactured by reacting

Options :

1. ✓ Phosphate rock with phosphoric acid
2. ✗ Phosphate rock with sulfuric acid
3. ✗ Phosphate rock with nitric acid
4. ✗ Ammonium phosphate with phosphoric acid

Question Number : 128 Question Id : 89040114140 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

In the manufacture of sulphuric acid from elemental sulphur, the sequence of major operations is

Options :

1. ✗ Converter to furnace to absorber
2. ✓ Furnace to converter to absorber
3. ✗ Furnace to evaporator to absorber
4. ✗ Furnace to absorber to converter

Question Number : 129 Question Id : 89040114141 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

In the chemical process industries, the term BOD signifies

Options :

1. ✗ characterisation of solid wastes
2. ✗ characterisation of gaseous effluents

3. ✖ characterisation of boiler feed water

4. ✔ characterisation of liquid effluents

Question Number : 130 Question Id : 89040114142 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The key raw material for the commercial production of methanol is

Options :

1. ✖ formaldehyde

2. ✖ Acetic acid

3. ✔ Synthesis gas

4. ✖ Ethanol

Question Number : 131 Question Id : 89040114143 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A bio-degradable detergent is one which

Options :

1. ✖ Contains branch chain alkyl benzenes

2. ✔ is easily decomposed by microorganisms

3. ✖ contains straight chain alkyl benzenes

4. ✖

is manufactured using microorganisms

Question Number : 132 Question Id : 89040114144 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The kinetic energy correction factor for velocity distribution of fully developed laminar flow is

Options :

1. ✖ 0.5

2. ✖ 1.66

3. ✖ 1

4. ✔ 2

Question Number : 133 Question Id : 89040114145 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A pressure head of 320 meters of water in meters of CCl_4 (sp.gr = 1.6)

Options :

1. ✖ 320

2. ✖ 100

3. ✔ 200

4. ✖ 160

Question Number : 134 Question Id : 89040114146 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Stoke's law is valid, when $N_{Re,p}$ is less than

Options :

1. ✓ 2
2. ✗ 100
3. ✗ 700
4. ✗ 2100

Question Number : 135 Question Id : 89040114147 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Tooth paste is a

Options :

1. ✗ Newtonian fluid
2. ✓ Bingham plastic
3. ✗ Pseudo plastic
4. ✗ Dilatant

Question Number : 136 Question Id : 89040114148 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Fluidised beds are formed when the

Options :

1. ✗

fluid friction is zero

- 2. ✓ gravity force is less than the fluid friction
- 3. ✗ pressure forces equal to gravity forces
- 4. ✗ pressure force is greater than the gravity force

Question Number : 137 Question Id : 89040114149 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

For an ideal fluid flow, Reynolds number is

Options :

- 1. ✗ 2100
- 2. ✗ 0
- 3. ✓ Infinity
- 4. ✗ 100

Question Number : 138 Question Id : 89040114150 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The hydrodynamic and thermal boundary layers will merge when

Options :

- 1. ✗ Prandtl number is zero
- 2. ✗ Schmidt number tends to infinity

3. ✖ Nusselt number tends to infinity

4. ✔ Prandtl number is one

Question Number : 139 Question Id : 89040114151 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Bernoulli's equation is applicable between any two points in which type of flow of an incompressible fluid

Options :

1. ✖ Unsteady, rotational

2. ✖ Steady, rotational

3. ✖ Unsteady, irrotational

4. ✔ Steady, irrotational

Question Number : 140 Question Id : 89040114152 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

What is the advantage of Gate valve over Globe valve?

Options :

1. ✖ It controls the flow equally well from either direction

2. ✔ It offers less resistance to flow

3. ✖ It can manually be closing the pipes to control the flow of water

4. ✖ It has quicker opening and closing

Question Number : 141 Question Id : 89040114153 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Natural convection is characterised by

Options :

1. ✓ Grashof number
2. ✗ Peclet number
3. ✗ Reynolds number
4. ✗ Prandtl number

Question Number : 142 Question Id : 89040114154 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The heat transfer coefficient in film type condensation is ----- that for drop wise condensation

Options :

1. ✗ Greater than
2. ✓ lower than
3. ✗ Is same as
4. ✗ twice

Question Number : 143 Question Id : 89040114155 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Viscous and heat sensitive liquids are concentrated in which type of evaporators ?

Options :

1. ✖ Open pan
2. ✖ long tube
3. ✔ agitated film
4. ✖ short tube

Question Number : 144 Question Id : 89040114156 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Prandtl number is the ratio of

Options :

1. ✖ mass diffusivity to thermal diffusivity
2. ✖ thermal diffusivity to mass diffusivity
3. ✖ thermal diffusivity to momentum diffusivity
4. ✔ momentum diffusivity to thermal diffusivity

Question Number : 145 Question Id : 89040114157 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The critical radius 'r' of insulation on a pipe is given by

Options :

1. ✖ $r = 2k/h$

2. ✓ $r = k/h$

3. ✗ $r = k/2h$

4. ✗ $r = h/k$

Question Number : 146 Question Id : 89040114158 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

If a baffle spacing in a shell and tube heat exchanger increases, then the
Reynolds number of the shell side fluid

Options :

1. ✗ remains unchanged

2. ✗ increases

3. ✓ decreases

4. ✗ Increases or decreases based on number of shell passes

Question Number : 147 Question Id : 89040114159 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Multiple effect evaporators are commonly used in the manufacture of

Options :

1. ✓ paper

2. ✗ sugar

3. ✖ super phosphate

4. ✖ paint

Question Number : 148 Question Id : 89040114160 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Prandtl number is minimum for

Options :

1. ✖ water

2. ✖ air

3. ✔ mercury

4. ✖ transformer oil

Question Number : 149 Question Id : 89040114161 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The absorptivity for a black body is

Options :

1. ✖ 0

2. ✔ 1

3. ✖ 0.8

4. ✖ 0.95

Question Number : 150 Question Id : 89040114162 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Increasing the liquor level in the evaporator results in the

Options :

1. ✖ Increased steam economy
2. ✖ Decreased steam economy
3. ✖ Increased steam capacity
4. ✔ decreased steam capacity

Question Number : 151 Question Id : 89040114163 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Raw materials are charged in the iron blast furnace using

Options :

1. ✖ Bucket elevator
2. ✔ Skip hoist
3. ✖ Screw conveyor
4. ✖ Belt conveyor

Question Number : 152 Question Id : 89040114164 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✓ vacuum filter
2. ✗ Sand filter
3. ✗ Basket centrifuge
4. ✗ Plate and frame filter press

Question Number : 153 Question Id : 89040114165 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A fluid energy mill is used for

Options :

1. ✗ Cutting
2. ✗ Grinding
3. ✓ Ultra-grinding
4. ✗ Crushing

Question Number : 154 Question Id : 89040114166 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Energy requirement is highest for

Options :

1. ✗ Jaw crusher

2. ✖ rod mill

3. ✖ ball mill

4. ✔ fluid energy mill

Question Number : 155 Question Id : 89040114167 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In a gyratory crusher size reduction is affected primarily by

Options :

1. ✖ Attrition

2. ✔ compression

3. ✖ Impact

4. ✖ Cutting action

Question Number : 156 Question Id : 89040114168 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following is a coarse crusher?

Options :

1. ✔ Jaw crusher

2. ✖ Disc crusher

3. ✖ conical crusher

4. ✖ Single roll crusher

Question Number : 157 Question Id : 89040114169 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In the Tayler standard screen scale series, when the mesh number increases
from 3 mesh to 10 mesh, then the

Options :

1. ✔ clear opening decreases
2. ✖ clear opening increases
3. ✖ clear opening is unchanged
4. ✖ wire diameter increases

Question Number : 158 Question Id : 89040114170 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Taking the acceleration due to gravity as 10 m/s^2 and with a cyclone 0.5 m
in diameter and having a tangential velocity of 20 m/s near the wall, then the separation factor is

Options :

1. ✖ 180
2. ✔ 160
3. ✖ 240
4. ✖ 350

Question Number : 159 Question Id : 89040114171 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The absolute entropy for all crystalline substances at absolute zero temperature is

Options :

1.  zero
2.  negative
3.  positive
4.  Indeterminate

Question Number : 160 Question Id : 89040114172 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Fundamental principle of refrigeration is based on the which law of thermodynamics ?

Options :

1.  Zeroth
2.  First
3.  Second
4.  third

Question Number : 161 Question Id : 89040114173 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The change in Gibbs free energy for vaporisation of a pure substance is

Options :

1. ✖ positive
2. ✖ negative
3. ✔ zero
4. ✖ may be positive or negative

Question Number : 162 Question Id : 89040114174 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A Carnot cycle consists of the following steps

Options :

1. ✖ two isobaric and two isothermal
2. ✖ two isochoric and two isobaric
3. ✖ two isothermal and two isochoric
4. ✔ two isothermal and two isentropic

Question Number : 163 Question Id : 89040114175 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

For a Carnot refrigerator operating between 40°C and 25°C , the coefficient of performance is

Options :

1. ✖ 39.74

2. ✔ 19.88

3. ✖ 1.97

4. ✖ 5.87

Question Number : 164 Question Id : 89040114176 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A plug flow reactor is characterised by

Options :

1. ✖ high capacity

2. ✖ presence of axial mixing

3. ✔ presence of lateral mixing

4. ✖ constant composition and temperature of the reaction

Question Number : 165 Question Id : 89040114177 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which of the following reactor is the most suitable for very high-pressure gas phase reaction?

Options :

1. ✖ Batch reactor

2. ✔ Tubular flow reactor

3. ✖ CSTR

4. ✖ Fluidised bed reactor

Question Number : 166 Question Id : 89040114178 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Promoter is added to the catalyst to improve its

Options :

1. ✔ sensitivity

2. ✖ porosity

3. ✖ surface area

4. ✖ surface tension

Question Number : 167 Question Id : 89040114179 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The equilibrium constant K of a chemical reaction depends on

Options :

1. ✔ temperature only

2. ✖ pressure only

3. ✖ pressure and temperature

4. ✖ catalyst concentration

Question Number : 168 Question Id : 89040114180 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A plot of $\ln k$ versus $1/T$ indicates

Options :

1. ✖ Vant's-Hoff isotherm
2. ✖ Cox chart
3. ✖ Bode plot
4. ✔ Arrhenius plot

Question Number : 169 Question Id : 89040114181 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In a binary system, separation is very efficient, when the relative volatility is

Options :

1. ✔ Greater than 1
2. ✖ 1
3. ✖ less than 1
4. ✖ 0.5

Question Number : 170 Question Id : 89040114182 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Bollman extractor is used for

Options :

1. ✖ Is a static bed leaching equipment
2. ✔ for extraction of oil from oil seeds
3. ✖ is a centrifugal extractor
4. ✖ employs counter-current extraction

Question Number : 171 Question Id : 89040114183 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A slurry is to be dried to produce flaky solid. Which dryer is recommended?

Options :

1. ✖ Tray dryer
2. ✖ drum dryer
3. ✔ spray dryer
4. ✖ rotary dryer

Question Number : 172 Question Id : 89040114184 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In which distillation, a solvent is added to alter the relative volatility of the mixture to be separated

Options :

1. ✖ Flash
2. ✖ azeotropic
3. ✖ steam
4. ✔ Extractive

Question Number : 173 Question Id : 89040114185 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The packed towers are preferred over plate columns in distillation, because of

Options :

1. ✔ low pressure drop and low hold up
2. ✖ low pressure drop and high hold up
3. ✖ high pressure drop and high hold up
4. ✖ high pressure drop and low hold up

Question Number : 174 Question Id : 89040114186 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In a binary distillation column, if the feed contains 40 mole % vapour, the slope of a 'q' line is

Options :

1. ✖ 0.6
2. ✔ -1.5

3. ✖ -0.6

4. ✖ 1.5

Question Number : 175 Question Id : 89040114187 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Ammonia present in the coke oven gas is removed by washing with

Options :

1. ✖ caustic solution

2. ✖ dilute HCl

3. ✔ dilute ammoniacal liquor

4. ✖ ethanolamine

Question Number : 176 Question Id : 89040114188 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The most efficient cooling tower arrangement is

Options :

1. ✖ Forced draft

2. ✖ Natural draft

3. ✖ atmospheric

4. ✓ induced draft

Question Number : 177 Question Id : 89040114189 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The reflux to a distillation column is 100 mole/hr, when the over head product rate is 50 moles/hr, the reflux ratio is

Options :

1. ✓ 2

2. ✗ 0.5

3. ✗ 1.5

4. ✗ 0.25

Question Number : 178 Question Id : 89040114190 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The following relates the absorption and evolution of heat at the junctions of a thermocouple to the current flow in the circuit

Options :

1. ✗ Seebeck effect

2. ✓ Peltier effect

3. ✗ Joule heating effect

4. ✗ Thomson effect

Question Number : 179 Question Id : 89040114191 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

_____ is used for measuring the rate of flow in both compressible and incompressible fluids

Options :

1. ✖ Orifice meter
2. ✖ Venturi meter
3. ✔ Pitot tube
4. ✖ Rota meter

Question Number : 180 Question Id : 89040114192 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The following controller has the maximum offset

Options :

1. ✖ P-I-D controller
2. ✖ P-D controller
3. ✖ P-I controller
4. ✔ P-controller

Question Number : 181 Question Id : 89040114193 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Thermal conductivity measurement comprises the working principle of

Options :

1. ✓ CO₂ analyser
2. ✗ polarimeter
3. ✗ spectrometer
4. ✗ chromatograph

Question Number : 182 Question Id : 89040114194 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Radiation pyrometer measurement temperature range _____ °C

Options :

1. ✗ 300 to 1200
2. ✓ 800 to 2000
3. ✗ -40 to 1000
4. ✗ 0 to 2000

Question Number : 183 Question Id : 89040114195 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The dynamic characteristic of an instrument is

Options :

1. ✗

reproducibility

2. ✖ sensitivity

3. ✖ dead zone

4. ✔ fidelity

Question Number : 184 Question Id : 89040114196 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Smoke density of the flue gas going out of the chimney is measured by

Options :

1. ✖ polarograph

2. ✖ thermal conductivity meter

3. ✔ photo electric cell

4. ✖ chromatograph

Question Number : 185 Question Id : 89040114197 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The local velocity of a fluid along a stream line can be measured by

Options :

1. ✔ pitot tube

2. ✖ venturi meter

3. ✖ Rota meter

4. ✖ Orifice meter

Question Number : 186 Question Id : 89040114198 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which gas is primarily responsible for the depletion of the ozone layer?

Options :

1. ✖ Carbon dioxide (CO₂)

2. ✖ Methane (CH₄)

3. ✔ Chlorofluorocarbons (CFCs)

4. ✖ Nitrogen oxides (NO_x)

Question Number : 187 Question Id : 89040114199 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following device of particulate collection is least efficient?

Options :

1. ✖ cyclone separator

2. ✖ electrostatic precipitator

3. ✔ fabric filter

4. ✖

wet scrubber

Question Number : 188 Question Id : 89040114200 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Particulates ($< 1\mu\text{m}$ size) remaining suspended in air and transported by wind currents are called as

Options :

1. ✖ fumes
2. ✖ mist
3. ✖ dust
4. ✔ aerosols

Question Number : 189 Question Id : 89040114201 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The air (prevention & control of pollution) act was legislated in the year

Options :

1. ✖ 1980
2. ✖ 1984
3. ✔ 1981
4. ✖ 1982

Question Number : 190 Question Id : 89040114202 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

1ppm is equivalent to

Options :

1. ✖ 0.1%
2. ✖ 0.01%
3. ✔ 0.0001%
4. ✖ 0.001%

Question Number : 191 Question Id : 89040114203 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

In a food chain of grass land ecosystem the top consumers are

Options :

1. ✖ herbivorous
2. ✔ carnivorous
3. ✖ bacteria
4. ✖ either carnivorous or herbivorous

Question Number : 192 Question Id : 89040114204 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The greatest industrial disaster leading to serious air pollution took place in Bhopal in the year 1984 where the extremely poisonous methyl isocyanide gas was accidentally released from Union Carbide's ----- manufacturing plant.

Options :

1. ✖ petrochemical
2. ✖ steel
3. ✖ fertilizer
4. ✔ pesticide

Question Number : 193 Question Id : 89040114205 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Acid rain is caused by increase in the atmospheric concentration of

Options :

1. ✖ ozone & dust
2. ✔ SO₂ & NO₂
3. ✖ carbon monoxide
4. ✖ nitrous oxide

Question Number : 194 Question Id : 89040114206 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following is not combustible?

Options :

1. ✖ Hydrogen
2. ✖ CO
3. ✔ CCl₄
4. ✖ CH₄

Question Number : 195 Question Id : 89040114207 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following is usually not used as the heat exchange fluid in a flat plate solar collector?

Options :

1. ✖ air
2. ✔ fuel oil
3. ✖ water
4. ✖ ethylene glycol and water

Question Number : 196 Question Id : 89040114208 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✖ Chemical energy
2. ✖

thermal energy

3. ✖ electrical energy

4. ✔ mechanical energy

Question Number : 197 Question Id : 89040114209 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following is an example for Renewable Fuels?

Options :

1. ✖ Kerosene

2. ✔ Biodiesel

3. ✖ Diesel

4. ✖ Naphtha

Question Number : 198 Question Id : 89040114210 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Nuclear energy is due to conversion of

Options :

1. ✖ light into heat

2. ✔ mass into energy

3. ✖ protons into neutrons

4. ✖ helium into hydrogen

Question Number : 199 Question Id : 89040114211 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Polluted water having low BOD is most economically treated in

Options :

1. ✖ sedimentation tanks

2. ✔ oxidation ponds

3. ✖ sludge digester

4. ✖ clarifier

Question Number : 200 Question Id : 89040114212 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The process of converting biomass into biogas is called:

Options :

1. ✖ Combustion

2. ✖ Gasification

3. ✔ Anaerobic digestion

4. ✖ Pyrolysis