

Question Paper Preview

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 12th May 2025
Shift1

Subject Name :

Chemical Engineering

Creation Date :

2025-05-12 13:25:54

Duration :

180

Total Marks :

200

Display Marks:

No

Share Answer Key With Delivery Engine :

Yes

Actual Answer Key :

Yes

Change Font Color :

No

Change Background Color :

No

Change Theme :

No

Help Button :

No

Show Reports :

No

Show Progress Bar :

No

CHEMICAL ENGINEERING

Group Number :

1

Group Id :

50696127

Group Maximum Duration :

0

Group Minimum Duration :

180

Show Attended Group? :

No

Edit Attended Group? :

No

Break time :

0

Group Marks :

200

Mathematics

Section Id :

506961102

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 :	506961123
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 5069615216 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

If $A = \begin{pmatrix} 0 & 1 \\ -1 & 0 \end{pmatrix}$ and if $(aI + bA)^2 = A$, then $b^4 =$

Options :

1. ✖ 1

2. ✖ $\frac{1}{2}$

3. ✖ $-\frac{1}{4}$

4. ✔ $\frac{1}{4}$

Question Number : 2 Question Id : 5069615217 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

If $A = \begin{pmatrix} \cos \theta & \sin \theta & 0 \\ -\sin \theta & \cos \theta & 0 \\ 0 & 0 & 1 \end{pmatrix} = F(\theta)$, then $A^{-1} =$

Options :

1. ✖ $F(\theta)$

2. ✓ $F(-\theta)$

3. ✗ $-F(\theta)$

4. ✗ $-F(-\theta)$

Question Number : 3 Question Id : 5069615218 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If (x, y, z) is the solution of linear equations $x + y + z = 6$,

$x - y + z = 2$, $2x + y - z = 1$, then $\frac{yz}{x} =$

Options :

1. ✗ $\frac{1}{6}$

2. ✗ $\frac{3}{2}$

3. ✓ 6

4. ✗ 3

Question Number : 4 Question Id : 5069615219 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If A and B are square matrices of order 3 with $|A| = 2$, $|B| = -4$, then

$|2AB| =$

Options :

1. ✓ -64

2. ✖ 16

3. ✖ 64

4. ✖ -16

Question Number : 5 Question Id : 5069615220 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

If $\log_{\sqrt{27}}(x) = \frac{8}{3}$, then $x =$

Options :

1. ✖ 10

2. ✖ 16

3. ✔ 81

4. ✖ 27

Question Number : 6 Question Id : 5069615221 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

If $\frac{x^3}{(x-1)(x+2)} = Ax + B + \frac{C}{x-1} + \frac{D}{x+2}$, then $C + D =$

Options :

1. ✖ -3

2. ✔ 3

3. ✖ 2

4. ✖ 0

Question Number : 7 Question Id : 5069615222 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$$\frac{\sin^2 33^\circ - \sin^2 57^\circ}{\sin 21^\circ - \cos 21^\circ} =$$

Options :

1. ✖ $\frac{\sqrt{3}}{2}$

2. ✖ $\frac{1}{2}$

3. ✔ $\frac{1}{\sqrt{2}}$

4. ✖ 1

Question Number : 8 Question Id : 5069615223 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $A + B = \frac{\pi}{3}$ and $\cos A + \cos B = 1$, then $3\cos(A - B) =$

Options :

1. ✔ -1

2. ✖

2

3. ✖ -2

4. ✖ 1

Question Number : 9 Question Id : 5069615224 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $2 \tan^{-1} \left(\frac{2}{3} \right) = \tan^{-1}(k)$, then $k =$

Options :

1. ✖ $\frac{5}{12}$ 2. ✖ $\frac{4}{3}$ 3. ✔ $\frac{12}{5}$ 4. ✖ $\frac{3}{4}$

Question Number : 10 Question Id : 5069615225 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $\tan^{-1} \left(\frac{1-x}{1+x} \right) = \frac{1}{2} \tan^{-1}(x)$, $x > 0$, then $x =$

Options :

1. ✖

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

2. ✓ $\frac{1}{\sqrt{3}}$

3. ✗ $\frac{1}{2}$

4. ✗ 1

Question Number : 11 Question Id : 5069615226 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $\cosh x = \frac{3}{2}$, then $\cosh 2x =$

Options :

1. ✗ $\frac{1}{3}$

2. ✓ $\frac{7}{2}$

3. ✗ $\frac{5}{2}$

4. ✗ $\frac{11}{3}$

Question Number : 12 Question Id : 5069615227 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$$\left(\frac{\sqrt{3}+i}{2}\right)^6 + \left(\frac{\sqrt{3}-i}{2}\right)^6 =$$

Options :

1. ✖ 3

2. ✖ -3

3. ✖ 2

4. ✔ -2

Question Number : 13 Question Id : 5069615228 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The distance between the lines $y = 2x + 4$ and $6x - 3y = 5$ is (in units)

Options :1. ✖ $\frac{13}{2\sqrt{5}}$ 2. ✔ $\frac{17}{3\sqrt{5}}$ 3. ✖ $\frac{17}{2\sqrt{5}}$ 4. ✖ $\frac{14}{3\sqrt{5}}$

Question Number : 14 Question Id : 5069615229 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

If the radius of the circle $x^2 + y^2 - 4x + 6y - k = 0$ is 4, then $k =$

Options :

1. ✓ 3

2. ✗ -3

3. ✗ 2

4. ✗ $\frac{1}{2}$

Question Number : 15 Question Id : 5069615230 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

If the angle between the lines $3x - 4y + 1 = 0$ and $ax + by - 7 = 0$ is 90° , then $3a - 4b =$

Options :

1. ✗ 12

2. ✗ -1

3. ✓ 0

4. ✗

7

Question Number : 16 Question Id : 5069615231 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The equation of the tangent to the circle $x^2 + y^2 - 6x + 4y - 12 = 0$ at $(-1,1)$ is

Options :

1. ✖ $4x + 3y + 1 = 0$

2. ✖ $2x - 3y + 5 = 0$

3. ✖ $2x + 3y - 1 = 0$

4. ✔ $4x - 3y + 7 = 0$

Question Number : 17 Question Id : 5069615232 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The eccentricity of the ellipse whose latus rectum is equal to half of its major axis is

Options :

1. ✖ $\sqrt{3}$

2. ✔ $\frac{1}{\sqrt{2}}$

3. ✖ $\sqrt{2}$

4. ✖ $\frac{1}{\sqrt{3}}$

Question Number : 18 Question Id : 5069615233 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

$$\frac{d}{dx} \left(\sqrt{\sin(x^2)} \right) =$$

Options :

1. ✖ $\frac{x^2 \cos(x^2)}{\sqrt{\sin(x^2)}}$

2. ✖ $\frac{x \cos(x^2)}{2\sqrt{\sin(x^2)}}$

3. ✔ $\frac{x \cos(x^2)}{\sqrt{\sin(x^2)}}$

4. ✖ $\frac{x \sin(x^2)}{\sqrt{\cos(x^2)}}$

Question Number : 19 Question Id : 5069615234 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✖ 2

2. ✖ 4

3. ✖ 1

4. ✔ $\frac{1}{2}$

Question Number : 20 Question Id : 5069615235 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

If $y^x = x^{\cos y}$, then $\frac{dy}{dx} =$

Options :

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

2. ✖ $\frac{y(\cos y + x \log y)}{x(x + y \sin y \log x)}$

3. ✖ $\frac{y(\cos y - x \log y)}{x(x - y \sin y \log x)}$

4. ✖ $\frac{(\cos y - x \log y)}{(x + y \sin y \log x)}$

Question Number : 21 Question Id : 5069615236 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

$$\lim_{x \rightarrow 3} \frac{x^2 - x - 6}{x^2 + x - 12} =$$

Options :

1. ✖ $\frac{1}{6}$

2. ✖ $\frac{2}{3}$

3. ✖ $\frac{3}{4}$

4. ✔ $\frac{5}{7}$

Question Number : 22 Question Id : 5069615237 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The equation of the normal to the curve $y = x^3 - 3x$ at the point P(2, 2) is

Options :

1. ✖ $x + 9y - 2 = 0$

2. ✖ $x + 9y - 22 = 0$

3. ✔ $x + 9y - 20 = 0$

4. ✖ $x + 9y - 12 = 0$

Question Number : 23 Question Id : 5069615238 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The maximum value of $y = (x - 1)^2 e^x$ is

Options :

1. ✓ $\frac{4}{e}$

2. ✗ $\frac{2}{e}$

3. ✗ $\frac{1}{e}$

4. ✗ $\frac{9}{e}$

Question Number : 24 Question Id : 5069615239 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✗ $8e^4$

2. ✗ $4e^4$

3. ✓ $9e^4$

4. ✗ $16e^4$

Question Number : 25 Question Id : 5069615240 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

If $u(x, y) = \sin^{-1} \left(\frac{x^4 + y^4}{x^2 + y^2} \right)$, then $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} =$

Options :

1. ✖ $2 \cot u$

2. ✔ $2 \tan u$

3. ✖ $2 \sin u$

4. ✖ $2 \cos u$

Question Number : 26 Question Id : 5069615241 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

$\int \frac{1}{(1 - \cos x)} dx =$

Options :

1. ✔ $-\cot x - \operatorname{cosec} x + c$

2. ✖ $-\cot x + \operatorname{cosec} x + c$

3. ✖ $\cot x - \operatorname{cosec} x + c$

4. ✖ $-\tan x - \sec x + c$

Question Number : 27 Question Id : 5069615242 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$$\int_2^4 f(x) dx =$$

Options :

1. ✖ $\int_2^4 f(6+x) dx$

2. ✖ $\int_2^4 f(4-x) dx$

3. ✖ $\int_2^4 f(2-x) dx$

4. ✔ $\int_2^4 f(6-x) dx$

Question Number : 28 Question Id : 5069615243 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$$\int_{-1}^1 \sin \pi x dx =$$

Options :

1. ✖ $\frac{1}{\pi}$

2. ✖ $\frac{2}{\pi}$

3. ✓ 0

4. ✗ $-\frac{2}{\pi}$

Question Number : 29 Question Id : 5069615244 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

$$\lim_{n \rightarrow \infty} \left[\frac{1}{n} + \frac{n^2}{(n+1)^3} + \frac{n^2}{(n+2)^3} + \dots + \frac{1}{8n} \right] =$$

Options :

1. ✗ $\frac{1}{8}$

2. ✗ $\frac{1}{4}$

3. ✓ $\frac{3}{8}$

4. ✗ $\frac{1}{2}$

Question Number : 30 Question Id : 5069615245 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The area of the region bounded by the lines $x = 1, x = 4, y = 4x$ and $y = x^2$ is

Options :

1. ✗ 2

2. ✖ 6

3. ✖ 16

4. ✔ 9

Question Number : 31 Question Id : 5069615246 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

According to Simpson's $\frac{1}{3}$ rule, the value of the integral $\int_1^3 \frac{1}{x} dx$ with $h = \frac{1}{2}$, is

Options :

1. ✖ 1.5

2. ✖ 0.5

3. ✔ 1.1

4. ✖ 2

Question Number : 32 Question Id : 5069615247 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The differential equation whose general solution is $y = Ax^2 + Bx$, where A and B are arbitrary constants is

Options :

1. ✖ $x^2 y'' + 2xy' - 2y = 0$

2. ✓ $x^2 y'' - 2xy' + 2y = 0$

3. ✗ $y'' - 2y' + 2y = 0$

4. ✗ $x^2 y'' - 2xy' - 2y = 0$

Question Number : 33 Question Id : 5069615248 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The general solution of the differential equation
 $(e^x + 1)y \, dy + (y + 1) \, dx = 0$ is

Options :

1. ✗ $e^{x-y} = c(y + 1)(1 - e^x)$

2. ✓ $e^{x+y} = c(y + 1)(1 + e^x)$

3. ✗ $e^{2x-y} = c(y + 1)(1 - e^x)$

4. ✗ $e^{x+y} = cy(1 + e^x)$

Question Number : 34 Question Id : 5069615249 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

If the differential equation $(x^2 + y^2)dx + kxy \, dy = 0$ is exact, then k =

Options :

1. ✓ 2

2. ✖ 1

3. ✖ -1

4. ✖ -2

Question Number : 35 Question Id : 5069615250 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✖ $y \cot x = \tan x + c$

2. ✖ $y \sec x = x \sin x + c$

3. ✖ $x \sec x = \sin x + c$

4. ✔ $y \sec x = \sin x + c$

Question Number : 36 Question Id : 5069615251 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✖ $2x$

2. ✖ $x^2 + 2$

3. ✔ $x^2 + 1$

4. ✖ $x^2 - 1$

Question Number : 37 Question Id : 5069615252 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The general solution of the differential equation $6y'' - 5y' - 6y = 0$ is

Options :

1. ✖ $y = ae^{9x} + be^{4x}$

2. ✖ $y = ae^{-9x} + be^{-4x}$

3. ✔ $y = ae^{\frac{3x}{2}} + be^{\frac{-2x}{3}}$

4. ✖ $y = ae^{\frac{-3x}{2}} + be^{\frac{-2x}{3}}$

Question Number : 38 Question Id : 5069615253 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A particular integral of the differential equation $(4D^2 + 4D - 3)y = e^{3x}$ is

(Here $D \equiv \frac{d}{dx}$)

Options :

1. ✖ $\frac{1}{11}e^{3x}$

2. ✓ $\frac{1}{45} e^{3x}$

3. ✗ $\frac{1}{5} e^{3x}$

4. ✗ $\frac{1}{3} e^{3x}$

Question Number : 39 Question Id : 5069615254 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A particular integral of the differential equation

$$(D^2 + 4)y = 5(\cos 3x + \sin 3x) \text{ is}$$

$$\left(\text{Here } D \equiv \frac{d}{dx} \right)$$

Options :

1. ✗ $\cos 3x + \sin 3x$

2. ✗ $\cos 3x - \sin 3x$

3. ✓ $-\cos 3x - \sin 3x$

4. ✗ $\sin 3x - \cos 3x$

Question Number : 40 Question Id : 5069615255 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $L\left\{\int_0^t \cosh 3u \, du\right\} = f(s)$, then $f(4) =$

Options :

1. ✓ $\frac{1}{7}$

2. ✗ $\frac{1}{32}$

3. ✗ 0

4. ✗ $\frac{7}{32}$

Question Number : 41 Question Id : 5069615256 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Let $F(t) = \begin{cases} e^{t-1}, & t > 1 \\ 0, & t < 1 \end{cases}$. If $s > 1$ then $L\{F(t)\} =$

Options :

1. ✗ $\frac{1}{s-1}$

2. ✗ $\frac{e^{-1}}{s-1}$

3. ✓ $\frac{e^{-s}}{s-1}$

4. ✗

$$\frac{e^s}{s-1}$$

Question Number : 42 Question Id : 5069615257 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$$\int_0^{\infty} t e^{-t} \sin t \, dt =$$

Options :

1. ✖ -1

2. ✔ $\frac{1}{2}$

3. ✖ 0

4. ✖ 2

Question Number : 43 Question Id : 5069615258 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$$L^{-1} \left\{ \frac{1}{s(s-1)} \right\} =$$

Options :

1. ✖ $1 - e^t$

2. ✖ $e^t + 1$

3. ✖

$$e^{-t} - 1$$

4. ✓ $e^t - 1$

Question Number : 44 Question Id : 5069615259 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

If $L^{-1} \left\{ \frac{s+1}{s^2+2s+2} \right\} = e^{at} \cos bt$, then $a^2 + b^2 =$

Options :

1. ✓ 2

2. ✗ 4

3. ✗ 0

4. ✗ 8

Question Number : 45 Question Id : 5069615260 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The convolution of the functions 1 and $\sin t$ is

Options :

1. ✓ $1 - \cos t$

2. ✗ $1 - \sin t$

3. ✗

$\cos t$

4. ✖ $1 + \cos t$

Question Number : 46 Question Id : 5069615261 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The Laplace transform of the solution of the initial value problem

$y'' + 9y = 9u(t - 3), y(0) = 0, y'(0) = 0$ (Here $u(t - 3)$ is the unit step function) is

Options :

1. ✖ $\frac{9e^{3s}}{s(s^2 - 9)}$

2. ✖ $\frac{e^{-3s}}{s^2(s^2 + 9)}$

3. ✖ $\frac{9e^{-3s}}{(s^2 + 9)^2}$

4. ✔ $\frac{9e^{-3s}}{s(s^2 + 9)}$

Question Number : 47 Question Id : 5069615262 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

$$\int_{-\frac{\pi}{2}}^{\frac{3\pi}{2}} \cos^2 4x \, dx =$$

Options :

1. ✓ π

2. ✗ 3π

3. ✗ 2π

4. ✗ $\frac{\pi}{2}$

Question Number : 48 Question Id : 5069615263 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The value of a_3 in the Fourier series expansion of the function

$$f(x) = \begin{cases} 0, & -\pi < x \leq 0 \\ x, & 0 < x \leq \pi \end{cases}$$

Options :

1. ✗ $\frac{-2}{\pi}$

2. ✗ $\frac{-2}{3\pi}$

3. ✗ $\frac{-2}{5\pi}$

4. ✓ $\frac{-2}{9\pi}$

Question Number : 49 Question Id : 5069615264 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The value of b_1 in the Fourier series expansion of $f(x) = x \sin x$ in $0 \leq x \leq 2\pi$ is

Options :

1. ✓ π

2. ✗ 2π

3. ✗ 3π

4. ✗ 4π

Question Number : 50 Question Id : 5069615265 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The period of the function $f(x) = \sin\left(\frac{\pi x}{3}\right)$ is

Options :

1. ✗ π

2. ✗ $\frac{\pi}{3}$

3. ✖ $\frac{\pi}{6}$

4. ✔ 6

Physics

Section Id :	506961103
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 :	506961124
Question Shuffling Allowed :	Yes

Question Number : 51 Question Id : 5069615266 Question Type : MCQ Option Shuffling : Yes
 Display Question Number : Yes
 Correct Marks : 1 Wrong Marks : 0

Velocity (v) of water waves depends on their Wavelength (λ), Density of Water (ρ) and acceleration due to gravity (g). By the method of dimensional analysis, the relation between these quantities is given by

Options :

1. ✖ v^2 is proportional to $(\rho\lambda g)$

2. ✖ v is proportional to $\lambda g/\sqrt{\rho}$

3. ✔ v^2 is proportional to (λg)

v is proportional to $(\rho\lambda g)$

4. ✖

Question Number : 52 Question Id : 5069615267 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The Force $\vec{F} = 2\hat{i} + 3\hat{j} + 7\hat{k}$ newtons (N), acting on an object causes a displacement $\vec{S} = 2\hat{i} + 3\hat{j} + 5\hat{k}$ meters (m). Then the work done is

Options :

1. ✖ 30 Nm

2. ✖ 40 Nm

3. ✔ 48 Nm

4. ✖ 25 Nm

Question Number : 53 Question Id : 5069615268 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$\vec{A} = \hat{i} + 2\hat{j} + 3\hat{k}$ and $\vec{B} = 3\hat{i} + 2\hat{j} + \hat{k}$ are the adjacent sides of a parallelogram respectively. The area of the Parallelogram is

Options :

1. ✖ $8\sqrt{2}$

2. ✔ $8\sqrt{3}$

3. ✖ $3\sqrt{8}$

4. ✖ $\sqrt{8}$

Question Number : 54 Question Id : 5069615269 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A block is placed on a rough floor and a horizontal force 'F' is applied on it. The force of friction 'f' by the floor on the block is measured for different values of 'F'. The graph between the 'f' and 'F' would be

Options :

1. ✖ The graph is a straight line of slope 45° for all 'F'
2. ✖ The graph is a straight line parallel to 'F' axis for all 'F'
3. ✔ The graph is a straight line of slope 45° for small values of 'F' and straight line parallel to 'F' axis for large 'F'
4. ✖ The graph is exponential with values of 'F'

Question Number : 55 Question Id : 5069615270 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Throughout the flight of a particle in projectile motion

Options :

1. ✔ The horizontal component of velocity is constant
2. ✖ The vertical component of velocity is constant
3. ✖ The horizontal component of velocity decreases

The horizontal component of velocity is zero

4. ✖

Question Number : 56 Question Id : 5069615271 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A motor cyclist driving with a speed of 0.6 km/minute goes over a turn of radius of curvature 10 m. His slope with vertical in degrees (take $g = 10 \text{ m/sec}^2$).

Options :

1. ✖ 0°

2. ✖ 30°

3. ✔ 45°

4. ✖ 60°

Question Number : 57 Question Id : 5069615272 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Two wires of lengths in the ratio 2:3 taken from same material and having the same mass are stretched by same force. Then their elongations are in the ratio of

Options :

1. ✖ 2:3

2. ✖ 3:2

3. ✖ 1:2

4. ✔

4:9

Question Number : 58 Question Id : 5069615273 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following statements is wrong?

Options :

1. ✖ Surface Tension of a liquid decreases with increase of temperature
2. ✖ Surface Tension of a liquid increases or decreases depending on the type of impurities added to the liquid
3. ✔ Angle of Contact depends on the inclination of the solid rod placed in the liquid
4. ✖ A drop of oil placed on the surface of water will spread as a thin layer

Question Number : 59 Question Id : 5069615274 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A streamline flow is maintained across the two capillary tubes A and B connected in series. The length of B is twice that of A and the radius of B is half that of A. The pressure across A is P. The pressure across B is

Options :

1. ✖ 4P
2. ✖ 16P
3. ✔ 32P

4. ✖ P/32

Question Number : 60 Question Id : 5069615275 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A body of mass 0.1 kg is thrown vertically upward. At a certain point above the ground, the Potential energy and Kinetic energy of the body are 3.7 J and 6.3 J. The maximum height it reaches is ($g=10\text{m/s}^2$)

Options :

1. ✔ 10 m
2. ✖ 4 m
3. ✖ 100 m
4. ✖ 0.7 m

Question Number : 61 Question Id : 5069615276 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Two containers of volumes 20m^3 and 30m^3 have gases at Pressures of 40 MPa and 50 MPa. The two containers are connected by a very narrow pipe of negligible volume and the gases are allowed to intermingle. If the temperature remains constant, the final pressure in MPa is

Options :

1. ✔ 46
2. ✖ 40
3. ✖ 50
4. ✖

Question Number : 62 Question Id : 5069615277 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

During an adiabatic process, a mono atomic gas at 27°C is compressed suddenly to $1/8$ of its original volume. Then the Final temperature in $^{\circ}\text{C}$ is (The ratio of the two specific heats of gases = $5/3$)

Options :

1. ✖ 1160

2. ✖ 887

3. ✔ 927

4. ✖ 88

Question Number : 63 Question Id : 5069615278 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The time period of a simple pendulum is 3 sec. Its length is made 4 times. Then its time period is

Options :

1. ✖ 3 sec

2. ✖ 4 sec

3. ✔ 6 sec

4. ✖ 1.5 sec

Question Number : 64 Question Id : 5069615279 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A particle executes Simple Harmonic Motion with an amplitude of 5 cm. When the particle is at 4 cm from the mean position, the magnitude of its velocity in SI units is equal to that of its acceleration. Then, its periodic time in seconds is

Options :

1. ✓ $8\pi/3$

2. ✗ $4\pi/3$

3. ✗ $3\pi/8$

4. ✗ $7\pi/3$

Question Number : 65 Question Id : 5069615280 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The two equations of Simple Harmonic Motions are $Y_1 = 12 \sin(50t + \pi/2)$ and $Y_2 = 12 \sin(50t + \pi/3)$. The phase difference between two motions is

Options :

1. ✗ $\pi/2$

2. ✗ $\pi/3$

3. ✓ $\pi/6$

4. ✗ $\pi/8$

Question Number : 66 Question Id : 5069615281 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Multiple reflections leading to persistence of sound in an auditorium are

Options :

1. ✖ beats
2. ✖ echo
3. ✔ reverberation
4. ✖ stationary waves

Question Number : 67 Question Id : 5069615282 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Two sources S_1 and S_2 are moving with certain velocities. The apparent frequencies observed by a stationary observer are double and half of their original frequencies respectively. If the velocity of sound is v and velocity of wind is zero, then the velocities of two sources respectively are

Options :

1. ✖ $v/2$ and $2v$
2. ✖ v and $v/2$
3. ✖ $3v/2$ and $2v$
4. ✔ $v/2$ and v

Question Number : 68 Question Id : 5069615283 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The Moment of couple acting on a bar magnet kept at an angle 30° to the direction of uniform magnetic field of induction 2 Tesla is equal to

Options :

1. ✖ Pole Strength of the Magnet
2. ✖ Length of the Magnet
3. ✖ Magnetic Flux
4. ✔ Magnetic Moment of the Magnet

Question Number : 69 Question Id : 5069615284 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In a Meter Bridge, R_1 and R_2 are the resistances connected in the left and right gaps respectively. The bridge is balanced at the balancing point of 60 cm from left. When a resistance of $30\ \Omega$ is connected in parallel to R_2 , the balancing point shifted to 90 cm. The values of R_1 and R_2 respectively are (in Ω)

Options :

1. ✖ 30 and 50
2. ✖ 200 and 350
3. ✔ 225 and 150
4. ✖ 100 and 75

Question Number : 70 Question Id : 5069615285 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

When 220 V AC is applied across a step-up transformer, it draws a current of 3A in the secondary. If the number of turns in the primary coil of the transformer is 100 and that of secondary coil is 2000. The output power of the transformer is

Options :

1. ✖ 8800 W
2. ✔ 13200 W
3. ✖ 4400 W
4. ✖ 2200 W

Question Number : 71 Question Id : 5069615286 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A photon of frequency ν is incident on a photosensitive metal surface whose threshold frequency is ν_0 . The kinetic energy of emitted photo electron is

Options :

1. ✖ $h \cdot \nu$
2. ✖ $h \cdot \nu_0$
3. ✔ $h \cdot (\nu - \nu_0)$
4. ✖ $h \cdot (\nu + \nu_0)$

Question Number : 72 Question Id : 5069615287 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In LASER, the condition of Population Inversion mean

Options :

1. ✘ The number of atoms in the lower energy state are more than the higher energy state
2. ✔ The number of atoms in the higher energy state are more than the lower energy state
3. ✘ The number of atoms in the lower and higher energy states are same
4. ✘ The number of atoms in higher energy state are zero

Question Number : 73 Question Id : 5069615288 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In a Graded Index Optical Fibre

Options :

1. ✘ The Refractive Index of the core remains constant and will be greater than that of the cladding
2. ✘ The Refractive Index of the core remains constant and will be less than that of the cladding
3. ✘ The Refractive Indices of both core and cladding remain constant and are equal
4. ✔ The Refractive Index of the core varies with maximum at the centre and decreases as the radial distance increases from the axis of the core

Question Number : 74 Question Id : 5069615289 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following statements is correct, if n_e and n_h are the concentrations of the Electrons and Holes respectively

Options :

1. ✓ In an intrinsic semiconductor, $n_e = n_h$ and both these charge carriers contribute to current equally
2. ✗ In p-type semiconductor, $n_e > n_h$ and the current due to electrons is more than that of holes
3. ✗ In n-type semiconductor, $n_p > n_e$ and current due to holes is more than that of electrons
4. ✗ In an extrinsic semiconductor, $n_e = n_h$ and both these charge carriers contribute to current equally

Question Number : 75 Question Id : 5069615290 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The semiconductors used for fabrication of visible LEDs have band gap

Options :

1. ✗ Close to 1.5 eV
2. ✗ Close to 1.1 eV
3. ✗ About 1.0 eV to 1.6 eV
4. ✓ About 1.8 eV to 3 eV

Chemistry

Section Id :	506961104
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 :	506961125
Question Shuffling Allowed :	Yes

Question Number : 76 Question Id : 5069615291 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

According to Aufbau principle, which orbital is filled immediately after each of the 3p, 4p, 4f and 5d?

Options :

1. ✖ 3d, 5s, 5d, 6p
2. ✖ 3d, 4d, 5d, 6p
3. ✔ 4s, 5s, 5d, 6p
4. ✖ 4s, 5s, 5d, 7s

Question Number : 77 Question Id : 5069615292 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which one of the following properties is not due to hydrogen bonding.

Options :

1. ✖

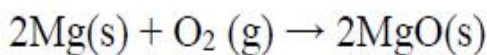
High boiling point of water

- 2. ✖ High viscosity of glycerol
- 3. ✖ Solubility of ammonia in water
- 4. ✔ Polar nature of halogen acid

Question Number : 78 Question Id : 5069615293 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0



In above reaction equation, the oxidation state of magnesium is changed from

Options :

- 1. ✔ 0 to +2
- 2. ✖ 0 to -2
- 3. ✖ +2 to -1
- 4. ✖ +2 to 0

Question Number : 79 Question Id : 5069615294 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

100 mL of ethanol, whose density is 1.2 g.mL^{-1} is diluted to 1.0 L by addition of distilled water. Molarity of the resultant solution is

Options :

1. ✖ 1.60

2. ✔ 2.60

3. ✖ 0.46

4. ✖ 2.90

Question Number : 80 Question Id : 5069615295 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Among the below options, which is not a characteristic of a colloid

Options :

Particle size between $10 \text{ \AA} - 1000 \text{ \AA}$

1. ✖

Heterogeneous

2. ✖

Can be separable by filtration

3. ✔

Diffuse slowly

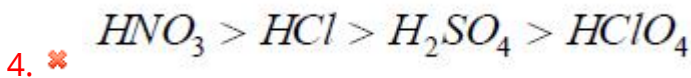
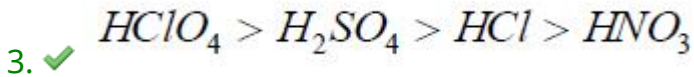
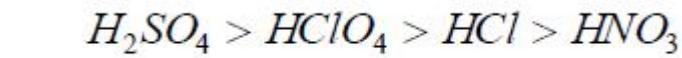
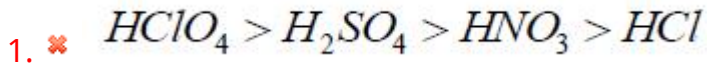
4. ✖

Question Number : 81 Question Id : 5069615296 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The correct order of decreasing strength of acids is

Options :



Question Number : 82 Question Id : 5069615297 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The solution which can resist change in its pH on the addition of an acid or a base is known as

Options :

1. ✖ Isotonic solution

2. ✖ Colloidal solution

3. ✖ Neutral solution

4. ✔ Buffer solution

Question Number : 83 Question Id : 5069615298 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The minimum level of a pollutant above which a healthy individual worker is adversely affected on exposure to it for eight hours in a day is called

Options :

1. ✖ Critical Limit Value
2. ✖ Toxic Limit Value
3. ✔ Threshold Limit Value
4. ✖ Dangerous Limit Value

Question Number : 84 Question Id : 5069615299 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The consequences of global warming are:

- (A) Increase in average temperature of the earth
- (B) Melting of Himalayan glaciers
- (C) Increased Biochemical Oxygen Demand of natural water
- (D) Eutrophication of water bodies

Choose the correct option.

Options :

1. ✖ A, D
2. ✖ A, C
3. ✔ A, B
4. ✖ A, B, C

Question Number : 85 Question Id : 5069615300 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The chemicals used for defluoridation of water by Nalgonda Technique are

Options :

1. ✖ CaO and CaOCl_2
2. ✔ Alum, CaO and CaOCl_2
3. ✖ CaH_2 , NaOCl and Alum
4. ✖ NaOCl, NaH and Alum

Question Number : 86 Question Id : 5069615301 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The process which removes non-ionic, ionic, colloidal and organic matter in water is

Options :

1. ✖ Ion exchange process
2. ✖ Lime soda process
3. ✔ Reverse osmosis process
4. ✖ Zeolite process

Question Number : 87 Question Id : 5069615302 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The set of products that are formed during electrolysis of aqueous solution of KCl between platinum electrodes is

Options :

1. ✖ HCl and KOH
2. ✖ KOH and Cl₂
3. ✔ KOH, Cl₂ and H₂
4. ✖ K and Cl₂

Question Number : 88 Question Id : 5069615303 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

When same quantity of electricity is passed through aqueous AgNO₃ and H₂SO₄ solutions connected in series, 5.04×10^{-2} g of H₂ is liberated. What is the mass of silver (in grams) deposited?
(Eq. Wt. of hydrogen and silver is 1.008 and 108 respectively)

Options :

1. ✖ 54
2. ✖ 0.54
3. ✔ 5.4
4. ✖ 10.8

Question Number : 89 Question Id : 5069615304 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Choose the correct option that differentiates metals from non-metals

Options :

Metals form acidic oxides, whereas non-metals form basic oxides.

1. ✖

Metals have a tendency to gain electrons, whereas non-metals have a tendency to lose electrons.

2. ✖

Metals are generally good conductors of electricity, whereas non-metals are insulators.

3. ✔

All metals exist in a solid state at room temperature.

4. ✖

Question Number : 90 Question Id : 5069615305 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Nichrome is commonly used in heating elements because

Options :

It has high electrical conductivity

1. ✖

It has a high melting point and corrosion resistance

2. ✔

It is lightweight

3. ✖

It is brittle and hard

4. ✖

Question Number : 91 Question Id : 5069615306 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

_____ combinations is used for prevention of corrosion.

Options :

1. ✓ ☒ Phosphorous or Antimony
2. ✗ ☐ Phosphorous or Chlorine
3. ✗ ☐ Antimony or Nitrogen
4. ✗ ☐ Antimony or Sodium

Question Number : 92 Question Id : 5069615307 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The process of coating zinc metal over iron to improve corrosion resistance of iron is called

Options :

1. ✗ ☐ Electroplating
2. ✗ ☐ Annealing
3. ✓ ☒ Galvanizing
4. ✗ ☐ Tinning

Question Number : 93 Question Id : 5069615308 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

_____ is a cross linked polymer.

Options :

1. ✓ Bakelite
2. ✗ LDPE
3. ✗ Polystyrene
4. ✗ PVC

Question Number : 94 Question Id : 5069615309 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Identify the Biodegradable polymers from the following and choose the correct option.

(I) PVC (II) PHBV (III) Polypropylene (IV) Nylon-2-nylon-6

Options :

1. ✗ I and II
2. ✓ II and IV
3. ✗ I and IV
4. ✗ I, II and III

Question Number : 95 Question Id : 5069615310 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Calculate the amount of oxygen required for the complete combustion of 1 mole of Methane (CH_4).

Options :

1. ✖ 1 mole
2. ✔ 2 moles
3. ✖ 3 moles
4. ✖ 4 moles

Question Number : 96 Question Id : 5069615311 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

_____ represents the composition of water gas

Options :

1. ✔ $\text{CO} + \text{H}_2$
2. ✖ $\text{CO}_2 + \text{H}_2$
3. ✖ $\text{CO} + \text{CH}_4$
4. ✖ $\text{CO}_2 + \text{CH}_4$

Question Number : 97 Question Id : 5069615312 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Match the following and choose the correct option.

List – I

List – II

- | | |
|--------------------------------|--|
| a) Hydrogen electrode | (i) $\text{Pt} \mid \text{Fe}^{3+}, \text{Fe}^{2+}$ |
| b) Standard hydrogen electrode | (ii) $\text{Fe} \mid \text{Fe}^{2+}$ |
| c) Metal-metal ion electrode | (iii) pH measurement |
| d) Glass electrode | (iv) $\text{Pt}, \text{H}_2 (2 \text{ bar}) \mid \text{H}^+ (0.1\text{M})$ |
| | (v) $\text{Pt}, \text{H}_2 (1 \text{ bar}) \mid \text{H}^+ (1.0\text{M})$ |
| | (vi) Oxidation electrode |

Options :

1. ✖ a – iii, b – v, c – i, d – vi

2. ✖ a – v, b – iv, c – ii, d – iii

3. ✖ a – v, b – iii, c – i, d – vi

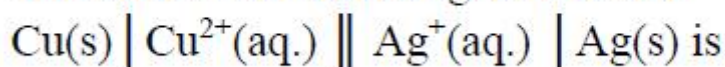
4. ✔ a – iv, b – v, c – ii, d – iii

Question Number : 98 Question Id : 5069615313 Question Type : MCQ Option Shuffling : Yes

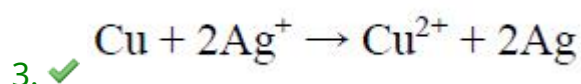
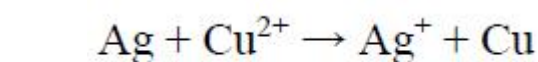
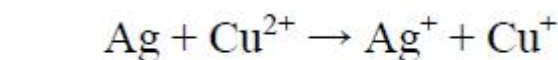
Display Question Number : Yes

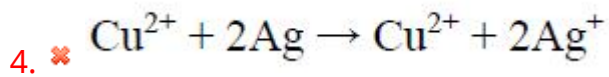
Correct Marks : 1 Wrong Marks : 0

The cell reaction of the galvanic cell



Options :





Question Number : 99 Question Id : 5069615314 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

_____ is used to reduce water pollution.

Options :

1. ✖ Neem
2. ✖ Watermelon
3. ✔ Water hyacinth
4. ✖ People

Question Number : 100 Question Id : 5069615315 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following can cause soil pollution

Options :

1. ✔ DDT
2. ✖ CO_2
3. ✖ NO_2
4. ✖ Nitrogen

CHEMICAL ENGINEERING

Section Id :	506961105
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 :	506961126
Question Shuffling Allowed :	Yes

Question Number : 101 Question Id : 5069615316 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Monel is an alloy of

Options :

1. ✖ Cu-Al
2. ✖ Cu-Zn
3. ✔ Ni-Cu
4. ✖ Cu-Sn

Question Number : 102 Question Id : 5069615317 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The type of corrosion which is difficult to monitor and dangerous for metal is

Options :

1. ✖ Crevice corrosion
2. ✔

Pitting corrosion

3. ✖ Galvanic corrosion

4. ✖ Stress corrosion

Question Number : 103 Question Id : 5069615318 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following has least percentage of carbon

Options :

1. ✔ Wrought iron

2. ✖ Stainless steel

3. ✖ Pig iron

4. ✖ Malleable iron

Question Number : 104 Question Id : 5069615319 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The ability of materials to develop a characteristic behaviour under repeated loading is

Options :

1. ✖ hardness

2. ✔ fatigue

3. ✖ fracture

4. ✖ resilience

Question Number : 105 Question Id : 5069615320 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Tetrafluoroethylene is also known as

Options :

1. ✖ Bakelite

2. ✖ Fluoroethyl propylene

3. ✔ Teflon

4. ✖ Tetrafluoride

Question Number : 106 Question Id : 5069615321 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Galena is the primary ore of

Options :

1. ✖ Iron

2. ✖ Copper

3. ✔ Lead

4. ✖ Nickel

Question Number : 107 Question Id : 5069615322 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Ebonite is

Options :

1. ✖ Synthetic rubber
2. ✔ Highly vulcanized rubber
3. ✖ Polropene
4. ✖ Natural rubber

Question Number : 108 Question Id : 5069615323 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Glass is a mixture of

Options :

1. ✖ Non-metallic silicates
2. ✖ Non-metallic acetates
3. ✖ Metallic acetates
4. ✔ Metallic silicates

Question Number : 109 Question Id : 5069615324 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The number of gram equivalents of solute dissolved in one litre of solution is defined as

Options :

1. ✖ Solubility
2. ✖

Molarity

3. ✓ Normality

4. ✗ Molality

Question Number : 110 Question Id : 5069615325 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

For gases, volume percent is equal to

Options :

1. ✗ weight percent

2. ✓ mole percent

3. ✗ mass percent

4. ✗ specific gravity

Question Number : 111 Question Id : 5069615326 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Kopp's rule deals with

Options :

1. ✓ heat capacities

2. ✗ thermal conductivities

3. ✗ viscosities

4. ✗ diffusivities

Question Number : 112 Question Id : 5069615327 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Inputs are equal to outputs is valid only for the system

Options :

1. ✖ without chemical reaction
2. ✖ with chemical reaction
3. ✔ at steady state without chemical reaction and losses
4. ✖ at steady state with chemical reaction

Question Number : 113 Question Id : 5069615328 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

1° Brix is equivalent to a sugar solution containing

Options :

1. ✖ 10 % sugar
2. ✔ 1 % sugar
3. ✖ 0.1 % sugar
4. ✖ 0.01 % sugar

Question Number : 114 Question Id : 5069615329 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

An ideal solution is the one which obeys

Options :

1. ✓ Raoult's law
2. ✗ Charle's law
3. ✗ Dalton's law
4. ✗ Amagat's law

Question Number : 115 Question Id : 5069615330 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

A bypass stream for a process is useful because

Options :

1. ✗ it improves conversion
2. ✗ it enhances the product yield
3. ✓ it ensures better control over the process
4. ✗ it prevents undesirable reaction

Question Number : 116 Question Id : 5069615331 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The difference in net and gross calorific value of a solid fuel is due to

Options :

1. ✓ moisture content of the fuel
2. ✗ difference in rate of heating
3. ✗ mineral matter of the fuel
4. ✗ volatile matter of the fuel

Question Number : 117 Question Id : 5069615332 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The one that decides the conversion in the reaction is _____

Options :

1. ✖ Excess reactant
2. ✔ Limiting reactant
3. ✖ Recycle stream
4. ✖ Purge stream

Question Number : 118 Question Id : 5069615333 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

According to Hess's law, heat of reaction depends on

Options :

1. ✖ initial conditions of the reactants
2. ✖ final conditions of the reactants
3. ✖ initial and final conditions of the reactants
4. ✔ intermediate path of the reaction

Question Number : 119 Question Id : 5069615334 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Soap preparation involves

Options :

1. ✖ hydrogenation
2. ✖ hydrolysis
3. ✔ esterification
4. ✖ sulfonation

Question Number : 120 Question Id : 5069615335 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The catalyst used in hydrogenation of oils is

Options :

1. ✖ silver
2. ✖ copper
3. ✖ iron
4. ✔ nickel

Question Number : 121 Question Id : 5069615336 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In the sulphate pulp process, the digester conditions are

Options :

1. ✖ 75°C - 80°C and 10 atm
2. ✖ 120°C - 130°C and 5 atm
3. ✔ 175°C - 180°C and 10 atm

4. ✖ $120^{\circ}\text{C} - 130^{\circ}\text{C}$ and 1 atm

Question Number : 122 Question Id : 5069615337 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Natural rubber mainly contains

Options :

1. ✖ polystyrene

2. ✖ polybutadiene

3. ✔ polyisoprene

4. ✖ polychloroprene

Question Number : 123 Question Id : 5069615338 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Ethanol from molasses is produced by

Options :

1. ✖ distillation

2. ✔ fermentation

3. ✖ dehydration

4. ✖ dehydrogenation

Question Number : 124 Question Id : 5069615339 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which one of the following is added to LPG to get odour

Options :

1. ✖ Phenol
2. ✖ Ethyl lead
3. ✔ Ethyl mercaptan
4. ✖ Amyl nitrate

Question Number : 125 Question Id : 5069615340 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The catalyst used in catalytic reforming of naphtha is

Options :

1. ✖ Fe
2. ✖ V_2O_5
3. ✖ Ni
4. ✔ Pt

Question Number : 126 Question Id : 5069615341 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Octane number is important test for

Options :

1. ✖ Kerosene

- 2. ✓ Gasoline
- 3. ✗ Diesel oil
- 4. ✗ LPG

Question Number : 127 Question Id : 5069615342 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Zeolite softening process removes

Options :

- 1. ✗ only temporary hardness of water
- 2. ✗ only permanent hardness of water
- 3. ✓ both temporary and permanent hardness of water
- 4. ✗ the dissolved gases in permanent hard water

Question Number : 128 Question Id : 5069615343 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Ion-free water coming out from the exchanger is known as

Options :

- 1. ✗ potable water
- 2. ✗ disinfected water
- 3. ✗ coagulated water

4. ✓ demineralized water

Question Number : 129 Question Id : 5069615344 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In the reverse osmosis process, the hydrostatic pressure is

Options :

- 1. ✗ equal to osmotic pressure
- 2. ✗ less than osmotic pressure
- 3. ✓ greater than osmotic pressure
- 4. ✗ equal to vapour pressure

Question Number : 130 Question Id : 5069615345 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The principal raw materials for the manufacture of soda ash by Solvay process are

Options :

- 1. ✗ limestone and potassium chloride
- 2. ✗ dolomite and sodium hydroxide
- 3. ✓ limestone, brine and ammonia
- 4. ✗ ammonia and caustic soda

Question Number : 131 Question Id : 5069615346 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The catalyst used in the manufacture of sulphuric acid by contact process is

Options :

1. ✖ iron
2. ✖ aluminium oxide
3. ✖ nickel
4. ✔ vanadium pentoxide

Question Number : 132 Question Id : 5069615347 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Producer gas is obtained by

Options :

1. ✖ thermal cracking of naphtha
2. ✔ passing steam and air through red hot coke
3. ✖ passing air through red hot coke
4. ✖ passing steam through red hot coke

Question Number : 133 Question Id : 5069615348 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Urea is

Options :

1. ✖ potassic fertilizer

- 2. ✓ nitrogenous fertilizer
- 3. ✗ phosphatic fertilizer
- 4. ✗ super phosphatic fertilizer

Question Number : 134 Question Id : 5069615349 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The chemical name of bleaching powder is

Options :

- 1. ✗ calcium chloro hypochlorite
- 2. ✓ calcium hypochlorite
- 3. ✗ calcium chlorate
- 4. ✗ calcium perchlorate

Question Number : 135 Question Id : 5069615350 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Poise is the unit of viscosity; one poise is equal to

Options :

- 1. ✓ 1 g/cm s
- 2. ✗ 1 Ns/m^2
- 3. ✗ 1 kg/m s

4. ✖ $1 \text{ g/cm}^2 \text{ s}$

Question Number : 136 Question Id : 5069615351 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The device used for measuring small pressure differences is

Options :

1. ✖ U-tube manometer

2. ✖ Hydrometer

3. ✔ Inclined manometer

4. ✖ Barometer

Question Number : 137 Question Id : 5069615352 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The Froude number is the ratio of inertial forces to

Options :

1. ✖ Pressure forces

2. ✖ Elastic forces

3. ✖ Viscous forces

4. ✔ Gravity forces

Question Number : 138 Question Id : 5069615353 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Pitot tube is used for measuring

Options :

1. ✖ Flow rate of fluid
2. ✖ Viscosity of fluid
3. ✔ Point velocity of the flow of fluid
4. ✖ Pressure of fluid

Question Number : 139 Question Id : 5069615354 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

For an ideal fluid, the Reynolds number is

Options :

1. ✖ one
2. ✖ 2100
3. ✖ zero
4. ✔ infinity

Question Number : 140 Question Id : 5069615355 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

For laminar flow in a pipe, the value of kinetic energy correction factor is

Options :

1. ✖ 2.5

2. ✖ 1

3. ✔ 2

4. ✖ 1.33

Question Number : 141 Question Id : 5069615356 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Cavitation in centrifugal pumps is caused by

Options :

1. ✖ High suction pressure

2. ✖ High barometric pressure

3. ✖ High fluid velocity at suction

4. ✔ Low suction pressure

Question Number : 142 Question Id : 5069615357 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

An example of dilatent fluid is

Options :

1. ✖ Rubber latex

2. ✔ Quicksand

3. ✖ Non-colloidal solution

4. ✖ Sewage sludge

Question Number : 143 Question Id : 5069615358 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

For large Reynolds numbers, the equation applicable for flow of fluid through packed bed is

Options :

- 1. ✖ Kozney-Carman equation
- 2. ✔ Blake-Plummer equation
- 3. ✖ Fanning equation
- 4. ✖ Kremser equation

Question Number : 144 Question Id : 5069615359 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In a Rota meter

Options :

- 1. ✖ The pressure drop varies linearly with flow rate
- 2. ✖ The area through which fluid flows is constant
- 3. ✖ The pressure drop varies as square root of flow rate
- 4. ✔ The pressure drop is constant

Question Number : 145 Question Id : 5069615360 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

For compressing & moving gases, the pressure difference produced is maximum for

Options :

1. ✘ blowers
2. ✘ fans
3. ✔ compressors
4. ✘ pumps

Question Number : 146 Question Id : 5069615361 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

For motion of spherical particles in a stationary fluid, the drag coefficient in the Stoke's law range is given by

Options :

1. ✔ $24/N_{Re,p}$
2. ✘ $6/N_{Re,p}$
3. ✘ $16/N_{Re,p}$
4. ✘ $64/N_{Re,p}$

Question Number : 147 Question Id : 5069615362 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Fourier's law is applicable to heat transfer by

Options :

1. ✖ convection
2. ✔ conduction
3. ✖ radiation
4. ✖ forced convection

Question Number : 148 Question Id : 5069615363 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The condition applicable for an insulator is

Options :

1. ✔ Low thermal conductivity
2. ✖ High thermal conductivity
3. ✖ A porous structure
4. ✖ Less resistance to heat flow

Question Number : 149 Question Id : 5069615364 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In forced convection, fluid moves under the influence of

Options :

1. ✖ buoyant forces arising from changes in density
2. ✔ changes in fluid pressure produced by external work

3. ✖ elastic forces
4. ✖ surface tension forces

Question Number : 150 Question Id : 5069615365 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Heat transfer by radiation is described by

Options :

1. ✖ Fourier's law
2. ✖ Newton's law
3. ✖ Fick's law
4. ✔ Stefan-Boltzmann law

Question Number : 151 Question Id : 5069615366 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

A body is called gray body if the monochromatic emissivity of the body is

Options :

1. ✔ same for all wave lengths
2. ✖ different for all wave lengths
3. ✖ one
4. ✖ zero

Question Number : 152 Question Id : 5069615367 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

2-4 shell and tube heat exchanger means

Options :

1. ✓ 2 shell side passes and 4 tube side passes
2. ✗ 4 shell side passes and 2 tube side passes
3. ✗ 4 tubes per pass
4. ✗ 4 shells per pass

Question Number : 153 Question Id : 5069615368 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Baffles used on shell side of a heat exchanger will

Options :

1. ✗ decrease heat transfer rate
2. ✓ increase heat transfer rate
3. ✗ not affect heat transfer rate
4. ✗ decrease pressure drop on shell side

Question Number : 154 Question Id : 5069615369 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✖ greatly increases the rate of condensation
2. ✔ seriously reduces the rate of condensation
3. ✖ does not affect the rate of condensation
4. ✖ increases the condensing film coefficient

Question Number : 155 Question Id : 5069615370 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The heat flux in the nucleate boiling regime is proportional to the

Options :

1. ✖ square root of ΔT (excess temperature)
2. ✖ square of ΔT (excess temperature)
3. ✔ cube of ΔT (excess temperature)
4. ✖ fourth power of ΔT (excess temperature)

Question Number : 156 Question Id : 5069615371 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The value of LMTD correction factor

Options :

1. ✖ increases with increase in number of shell passes
2. ✔ decreases with increase in number of shell passes

- 3. ✖ remains unaffected with change in number of shell passes
- 4. ✖ is always unity for multi pass exchangers

Question Number : 157 Question Id : 5069615372 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Economy of an evaporator is defined as the number of

Options :

- 1. ✖ kilograms of steam consumed per hour
- 2. ✖ kilograms of steam consumed per kilogram of solvent vaporized
- 3. ✖ kilograms of solvent vaporized per hour
- 4. ✔ kilograms of solvent vaporized per kilogram of steam fed to the evaporator

Question Number : 158 Question Id : 5069615373 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

In a multiple effect evaporator with forward feed, the _____

Options :

- 1. ✖ Feed is introduced in the last effect
- 2. ✔ Feed flows from higher pressure to lower pressure
- 3. ✖ Pumps are required between successive effects
- 4. ✖ Feed is introduced in each effect

Question Number : 159 Question Id : 5069615374 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The angle formed by pouring a powder as a heap on a flat surface is known as

Options :

1. ✘ angle of nip
2. ✔ angle of repose
3. ✘ contact angle
4. ✘ critical angle

Question Number : 160 Question Id : 5069615375 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In fluid energy mill, most of the reduction is caused by

Options :

1. ✘ impact
2. ✘ compression
3. ✘ cutting
4. ✔ interparticle attrition

Question Number : 161 Question Id : 5069615376 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A filter aid is added to the slurry before filtration to

Options :

1. ✓ increase the porosity of the cake
2. ✗ decrease the porosity of the cake
3. ✗ decrease the compressibility coefficient of the cake
4. ✗ increase the compressibility coefficient of the cake

Question Number : 162 Question Id : 5069615377 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The dimensions of specific cake resistance is

Options :

1. ✓ $M^{-1} L$
2. ✗ $M^{-1} L^{-1}$
3. ✗ ML^{-1}
4. ✗ L^{-1}

Question Number : 163 Question Id : 5069615378 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The operating speed of a ball mill is

Options :

1. ✗ Equal to the critical speed
2. ✓ Less than critical speed

- 3. ✖ More than critical speed
- 4. ✖ Independent of critical speed

Question Number : 164 Question Id : 5069615379 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

A plot of filtrate volume versus time for a constant pressure filtration is a

Options :

- 1. ✔ parabola
- 2. ✖ straight line
- 3. ✖ hyperbola
- 4. ✖ curve

Question Number : 165 Question Id : 5069615380 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

For crushed coal particles, the sphericity is

Options :

- 1. ✖ equal to one
- 2. ✔ less than one
- 3. ✖ greater than one
- 4. ✖ infinity

Question Number : 166 Question Id : 5069615381 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The devices that separate particles of differing densities is

Options :

1. ✖ thickeners
2. ✖ filters
3. ✖ cyclones
4. ✔ sorting classifiers

Question Number : 167 Question Id : 5069615382 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Heat absorbed is equal to internal energy for

Options :

1. ✖ constant pressure process
2. ✔ constant volume process
3. ✖ adiabatic process
4. ✖ polytropic process

Question Number : 168 Question Id : 5069615383 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following is an extensive property?

Options :

1. ✖ Temperature

2. ✖ Pressure
3. ✔ Volume
4. ✖ Specific Volume

Question Number : 169 Question Id : 5069615384 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If α is coefficient of thermal expansion and β is compressibility coefficient then $C_p - C_v$ is

Options :

1. ✖ $\frac{\beta \alpha^2}{TV}$

2. ✔ $\frac{\alpha^2 TV}{\beta}$

3. ✖ $\frac{\alpha^2 \beta V}{T}$

4. ✖ $\frac{\alpha^2 T \beta}{V}$

Question Number : 170 Question Id : 5069615385 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Entropy of an ideal gas is

Options :

1. ✖

a function of temperature only

- 2. ✖ a function of pressure only
- 3. ✔ a function of temperature as well as pressure
- 4. ✖ independent of temperature and pressure

Question Number : 171 Question Id : 5069615386 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Gibbs free energy of mixing at constant temperature and pressure must always be

Options :

- 1. ✖ zero
- 2. ✔ negative
- 3. ✖ positive
- 4. ✖ infinity

Question Number : 172 Question Id : 5069615387 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

For an exothermic reaction, the equilibrium constant

Options :

- 1. ✖ remains unaffected with change in temperature
- 2. ✔ decreases with increase in temperature
- 3. ✖

increases with increase in temperature

4. ✖ increases and then decreases with temperature

Question Number : 173 Question Id : 5069615388 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The Gibbs free energy change (ΔG°) and equilibrium constant (K) for a chemical reaction are related by

Options :

1. ✖ $\Delta G^\circ = RT \ln K$

2. ✖ $\Delta G^\circ = T \ln K$

3. ✔ $\Delta G^\circ = -RT \ln K$

4. ✖ $\Delta G^\circ = -RTK$

Question Number : 174 Question Id : 5069615389 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The dimensions of the rate constant for n^{th} order homogenous reaction are

Options :

1. ✖ (time) $^{-n}$

2. ✔ (time) $^{-1}$ (concentration) $^{1-n}$

3. ✖ (time) $^{-n}$ (concentration) $^{n-1}$

4. ✖

(time) (concentration)ⁿ⁻¹

Question Number : 175 Question Id : 5069615390 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In a reaction, the threshold energy is equal to

Options :

1. ✖ activation energy
2. ✔ activation energy + average kinetic energy of reactants
3. ✖ average kinetic energy of reactants
4. ✖ activation energy – average kinetic energy of reactants

Question Number : 176 Question Id : 5069615391 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Back-mixing is most predominant in a

Options :

1. ✖ well stirred batch reactor
2. ✖ plug flow reactor
3. ✔ single CSTR
4. ✖ packed bed reactor

Question Number : 177 Question Id : 5069615392 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Space time equals the mean residence time

Options :

1. ✓ when the density of the reaction mixture is constant
2. ✗ for large diameter tubular reactor
3. ✗ for narrow diameter tubular reactor
4. ✗ for continuous stirred tank reactor (CSTR)

Question Number : 178 Question Id : 5069615393 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✗ a catalytic reaction
2. ✓ an autocatalytic reaction
3. ✗ a photochemical reaction
4. ✗ a biochemical reaction

Question Number : 179 Question Id : 5069615394 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The Rayleigh's equation is applicable to

Options :

Molecular distillation

1. ✖

Flash distillation

2. ✖

3. ✔ Differential distillation

Diffusion distillation

4. ✖

Question Number : 180 Question Id : 5069615395 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Schmidt number is the ratio of

Options :

1. ✖ mass diffusivity to momentum diffusivity

2. ✔ momentum diffusivity to mass diffusivity

3. ✖ thermal diffusivity to mass diffusivity

4. ✖ momentum diffusivity to thermal diffusivity

Question Number : 181 Question Id : 5069615396 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The binary diffusivity in gases is

Options :

1. ✔ inversely proportional to pressure

2. ✖ directly proportional to pressure

3. ✖ inversely proportional to square root of pressure
4. ✖ directly proportional to square root of pressure

Question Number : 182 Question Id : 5069615397 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The steady state temperature reached by a small amount of liquid evaporating into a large amount of unsaturated vapor gas mixture is called

Options :

1. ✖ dew point
2. ✖ bubble point
3. ✖ dry bulb temperature
4. ✔ wet bulb temperature

Question Number : 183 Question Id : 5069615398 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Preparation of tea is an example of

Options :

1. ✖ condensation
2. ✖ drying
3. ✖ distillation

4. ✓ leaching

Question Number : 184 Question Id : 5069615399 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

When a batch of material is dried under constant drying conditions, the rate of drying during the constant rate period is

Options :

1. ✗ inversely proportional to the solid thickness
2. ✓ independent of solid thickness
3. ✗ directly proportional to the square of solid thickness
4. ✗ directly proportional to the solid thickness

Question Number : 185 Question Id : 5069615400 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In absorption, binary gases mixture separation in the liquid solvent depends upon their differences in

Options :

1. ✗ viscosity
2. ✗ kinematic viscosity
3. ✓ solubility
4. ✗ density

Question Number : 186 Question Id : 5069615401 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If the feed to a distillation column is a saturated liquid, then the slope of the feed line is

Options :

1. ✖ zero
2. ✔ infinite
3. ✖ >1
4. ✖ <1

Question Number : 187 Question Id : 5069615402 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

For liquid-liquid extraction operation, the selectivity of solvent must be

Options :

1. ✖ equal to one
2. ✖ less than one
3. ✔ more than one
4. ✖ less than or equal to one

Question Number : 188 Question Id : 5069615403 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Supersaturation of a solution cannot be achieved by

Options :

1. ✖ Cooling
2. ✖ Evaporation
3. ✔ Dilution
4. ✖ Adding suitable third component

Question Number : 189 Question Id : 5069615404 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following is correct if Lewis number =1,

Options :

1. ✖ Prandtl number = Reynolds number
2. ✔ Prandtl number = Schmidt number
3. ✖ Schmidt number = Reynolds number
4. ✖ Nusselt number = Sherwood number

Question Number : 190 Question Id : 5069615405 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following dimensionless number of heat transfer is analogous Sherwood number in mass transfer?

Options :

1. ✖ Grashof number

2. ✖ Graetz number

3. ✖ Prandtl number

4. ✔ Nusselt number

Question Number : 191 Question Id : 5069615406 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Thermocouple in a temperature recorder is an example of

Options :

1. ✔ primary element

2. ✖ secondary element

3. ✖ manipulating element

4. ✖ functioning element

Question Number : 192 Question Id : 5069615407 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The most suitable instrument for measuring the temperature of a furnace is

Options :

1. ✖ thermocouple

2. ✔ optical pyrometer

3. ✖ bimetallic thermometer

4. ✖ resistance thermometer

Question Number : 193 Question Id : 5069615408 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Bourdon gauges are used for measurement of

Options :

1. ✖ absolute pressure
2. ✔ gauge pressure
3. ✖ local atmospheric pressure
4. ✖ standard atmospheric pressure

Question Number : 194 Question Id : 5069615409 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

What is the order of the thermometer when it is surrounded by a cover?

Options :

1. ✖ Zero
2. ✖ First
3. ✔ Second
4. ✖ Third

Question Number : 195 Question Id : 5069615410 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If two first-order systems are cascaded with unequal time constants, the response is

Options :

1. ✖ under damped
2. ✖ critically damped
3. ✔ over damped
4. ✖ zero damped

Question Number : 196 Question Id : 5069615411 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

An example for non-linear behaviour

Options :

1. ✖ Proportional controller
2. ✖ P-D Controller
3. ✖ PID Controller
4. ✔ On-off controller

Question Number : 197 Question Id : 5069615412 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In process control, servo problem means

Options :

1. ✖ load changing
2. ✔ setpoint changing
3. ✖ process gain changing
4. ✖ process order changing

Question Number : 198 Question Id : 5069615413 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The controller in which the amplitude and phase behaviour are just the inverse of the First-order system?

Options :

1. ✖ Proportional Controller
2. ✖ Proportional Integral Controller
3. ✔ Proportional Derivative Controller
4. ✖ Proportional Integral Derivative Controller

Question Number : 199 Question Id : 5069615414 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

An example of first order system is

Options :

1. ✖ Pressure gauge

- 2. ✓ Bare thermometer
- 3. ✗ Thermometer with thermal well
- 4. ✗ Manometer

Question Number : 200 Question Id : 5069615415 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following correctly represents the input $x(t) = Au(t)$?

Options :

- 1. ✗ Sine
- 2. ✗ Cosine
- 3. ✓ Step
- 4. ✗ Ramp