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 23rd Apr 2026 Shift 1
Subject Name :	Chemical Engineering
Creation Date :	2026-04-23 15:16:23
Duration :	180
Total Marks :	200
Display Marks:	No
Change Font Color :	No
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Chemical Engineering

Group Number :	1
Group Id :	77951856
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 :	779518217
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	50

Number of Questions to be attempted :	50
Section Marks :	50
Section Negative Marks :	0
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	779518233
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 77951811009 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In the matrix $A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 4 & 9 \end{bmatrix}$, the minor M_{23} of the a_{23} is

Options :

1. ✖ 10

2. ✔ -10

3. ✖ -6

4. ✖ 6

Question Number : 2 Question Id : 77951811010 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If $\begin{vmatrix} 2x & 5 \\ 8 & x \end{vmatrix} = \begin{vmatrix} 6 & -2 \\ 7 & 3 \end{vmatrix}$ then the value of x is

Options :

1. ✖ 3

2. ✔ ± 6

3. ✖ -3

4. ✖

± 2

Question Number : 3 Question Id : 77951811011 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If A is a square matrix of order 3 and $|A| = 5$, then the value of $|2A^T|$ is

Options :

1. ✖ -10

2. ✖ 10

3. ✔ 40

4. ✖ -40

Question Number : 4 Question Id : 77951811012 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which of the following systems has non trivial solution ?

Options :

1. ✖ $AX = 0\ ,\ |A| = 4$

2. ✖ $AX = 0\ ,\ |A| = -4$

3. ✔ $AX = 0\ ,\ |A| = 0$

4. ✖ $AX = B\ ,\ |B| = 5$

Question Number : 5 Question Id : 77951811013 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If $\begin{bmatrix} x+y & 2 \\ 1 & x-y \end{bmatrix} = \begin{bmatrix} 4 & 2 \\ 1 & 2 \end{bmatrix}$, then the values of x and y are:

Options :

1. ✔ $x = 3, y = 1$

2. ✖ $x = 1, y = 3$

3. ✖ $x = 2, y = 3$

4. ✖ $x = 1, y = 1$

Question Number : 6 Question Id : 77951811014 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If $\frac{x+4}{(x+2)^2(x+3)} = \frac{A}{(x+2)^2} + \frac{B}{(x+2)} + \frac{C}{(x+3)}$ then A + B +C =

Options :

1. ✔ 2

2. ✖ 1

3. ✖ -1

4. ✖ 3

Question Number : 7 Question Id : 77951811015 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If $\frac{x}{(x-1)^2(x+2)} = \frac{A}{(x-1)^2} + \frac{2}{9(x-1)} + \frac{B}{(x+2)}$ then A + B =

Options :

1. ✖ 1/3

2. ✔

1/9

3. ✖ -1/3

4. ✖ 2/3

Question Number : 8 Question Id : 77951811016 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If $tan\,A = \frac{1}{2}$ and $\tan B = \frac{1}{3}$, then A + B =

Options :

1. ✖ 30^o

2. ✔ 45^o

3. ✖ 60^o

4. ✖ 90^o

Question Number : 9 Question Id : 77951811017 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If $2sin^{-1}x = sin^{-1}k$ then k =

Options :

1. ✔ $2x\sqrt{1-x^2}$

2. ✖ $2x$

3. ✖ x^2

4. ✖ $1-2x^2$

Question Number : 10 Question Id : 77951811018 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If $sin^{-1}\frac{5}{x} + sin^{-1}\frac{12}{x} = \frac{\pi}{2}$, then x =

Options :

1. ✖ 12

2. ✖ 7

3. ✔ 13

4. ✖ 15

Question Number : 11 Question Id : 77951811019 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The number of solutions of the equation sin 2x - cos 2x = 2 - sin 2x lying in the interval $[0, \pi]$ is

Options :

1. ✖ 0

2. ✖ 1

3. ✔ 2

4. ✖ 3

Question Number : 12 Question Id : 77951811020 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If $\tan\theta + \sec\theta = \sqrt{3}$ then the principal value of θ in $[0, 2\pi]$ is

Options :

1. ✖ $\pi/4$

2. ✔ $\pi/6$

3. ✖ $\pi/2$

4. ✖ $2\pi/3$

Question Number : 13 Question Id : 77951811021 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

$\frac{\tan x-1+\sec x}{\tan x-\sec x+1} =$

Options :

1. ✖ $\frac{1-\sin x}{\cos x}$

2. ✔ $\frac{1+\sin x}{\cos x}$

3. ✖ $\frac{1+\cos x}{\sin x}$

4. ✖ $\frac{1-\cos x}{\sin x}$

Question Number : 14 Question Id : 77951811022 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

$tan9^o - tan\ 27^o - tan\ 63^o + tan\ 81^o =$

Options :

1. ✖ 2

2. ✖ 1

3. ✔ 4

4. ✖ 3

Question Number : 15 Question Id : 77951811023 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If $\cos\theta = \frac{1}{2}\left(a + \frac{1}{a}\right)$, then $4cos^3\theta - 3\cos\theta =$

Options :

1. ✖ $a^3 + \frac{1}{a^3}$

2. ✔ $\frac{1}{2}(a^3 + \frac{1}{a^3})$

3. ✖ $\frac{1}{4}(a^3 + \frac{1}{a^3})$

4. ✖ $\frac{1}{3}(a^3 + \frac{1}{a^3})$

Question Number : 16 Question Id : 77951811024 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

$cos6^o\ sin\ 24^o cos\ 72^o =$

Options :

1. ✖ 1/4

2. ✖ -1/8

3. ✖ -1/4

4. ✔ 1/8

Question Number : 17 Question Id : 77951811025 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

$tan^{-1}1 + tan^{-1}2 + tan^{-1}3 =$

Options :

1. ✖ $3\pi/4$

2. ✖ $\pi/2$

3. ✔ π

4. ✖ 2π

Question Number : 18 Question Id : 77951811026 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If $z_1 = 4i^{40} - 5i^{35} + 6i^{17} + 2,\ z_2 = -1 + i$ then $|z_1 + z_2| =$

Options :

1. ✔ 13

2. ✖ 5

3. ✖ 15

4. ✖ 12

Question Number : 19 Question Id : 77951811027 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The conjugate of $(1 + i)^3$ is

Options :

1. ✖ $1 + 2i$

2. ✖ $-2 + 2i$

3. ✔ $-2-2i$

4. ✖ $1-2i$

Question Number : 20 Question Id : 77951811028 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The equation of a circle whose Centre is (-3, 2) and area is 176 units is

Options :

1. ✖ $x^2+y^2+6x-4y-36=0$

2. ✔ $x^2+y^2+6x-4y-43=0$

3. ✖ $x^2+y^2-6x+4y-36=0$

4. ✖ $x^2+y^2-6x+4y-43=0$

Question Number : 21 Question Id : 77951811029 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The equation of a circle whose Centre is (2, -1) and which passes through the point (3,6) is

Options :

1. ✖ $x^2+y^2+4x+2y-45=0$

2. ✖ $x^2+y^2-2x+2y-50=0$

3. ✖ $x^2+y^2+2x+2y-50=0$

4. ✔ $x^2+y^2-4x+2y-45=0$

Question Number : 22 Question Id : 77951811030 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If the parabola $y^2 = 4ax$ passes through the point $(3, 2)$ then the length of its latus rectum is:

Options :

1. ✔ $4/3$

2. ✖ 4

3. ✖ $2/3$

4. ✖ $1/3$

Question Number : 23 Question Id : 77951811031 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The line $y = mx + 2$ is a tangent to the parabola $y^2 = 8x$ if

Options :

1. ✔ $m = 1$

2. ✖ $m = 2$

3. ✖ $m = 3$

4. ✖ $m = 4$

Question Number : 24 Question Id : 77951811032 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The length of the latusrectum and eccentricity of the Hyperbola $9x^2 - 16y^2 = 144$ are

Options :

1. ✖ $(\frac{9}{4}, \frac{5}{4})$

2. ✔ $(\frac{9}{2}, \frac{5}{4})$

3. ✖ $(\frac{9}{2}, \frac{5}{2})$

4. ✖ $(9, \frac{5}{2})$

Question Number : 25 Question Id : 77951811033 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The equation of the ellipse with foci at $(\pm 3, 0)$ and the eccentricity as 1/3 is :

Options :

1. ✔ $\frac{x^2}{81} + \frac{y^2}{72} = 1$

2. ✖ $\frac{x^2}{9} + \frac{y^2}{8} = 1$

3. ✖ $\frac{x^2}{8} + \frac{y^2}{9} = 1$

4. ✖ $\frac{x^2}{3} + \frac{y^2}{2} = 1$

Question Number : 26 Question Id : 77951811034 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

$\lim_{x \to \infty} \left(1 + \frac{1}{x}\right)^x =$

Options :

1. ✖ 0

2. ✖ 1

3. ✔ e

4. ✖ ∞

Question Number : 27 Question Id : 77951811035 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

$\lim_{x\to 0} \frac{\sqrt{1+x}-1}{x} =$

Options :

1. ✖ 0

2. ✔ $1/2$

3. ✖ 1

4. ✖ ∞

Question Number : 28 Question Id : 77951811036 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

$If\ \ y = \frac{(a\cos x + b\sin x + C)}{\sin x} \quad \text{then } \frac{dy}{dx} =$

Options :

1. ✔ $-a\,cosec^2 x - c\ cosec\ x \cot x$

2. ✖ $-a$

3. ✖ $-a\,cosec^2 x + b\sec^2 x + c\ cosec\ x \cot x$

4. ✖ $acosec^2x - c\ cosec\ x \cot x$

Question Number : 29 Question Id : 77951811037 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✖ $\frac{1}{2y}$

2. ✖ $\frac{1}{1-2y}$

3. ✖ $\frac{1}{2(1-2y)}$

4. ✔ $\frac{-1}{1-2y}$

Question Number : 30 Question Id : 77951811038 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Slope of the tangent to the curve $y = 9x^2 + 7x^4 + 5$ *at the point* $x = 1$ is

Options :

1. ✖ 28

2. ✖ 16

3. ✔ 46

4. ✖ 1/46

Question Number : 31 Question Id : 77951811039 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

If $f(x) = \begin{cases} 4(5^x) & x < 0 \\ 8k + x & x \geq 0 \end{cases}$ then $f'(-1) =$

Options :

1. ✖ $\frac{2}{5}\log 5$

2. ✔ $\frac{4}{5}\log 5$

3. ✖ $\frac{3}{5}\log 5$

4. ✖ $20 \log 5$

Question Number : 32 Question Id : 77951811040 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

$If\ 2^x + 2^y = 2^{x+y}$, then $\frac{dy}{dx} =$

Options :

1. ✔ $1 - 2^y$

2. ✖ $1 - \frac{1}{2^y}$

3. ✖ $1 + 2^{-y}$

4. ✖ $1 + 2^y$

Question Number : 33 Question Id : 77951811041 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If $y + sin^{-1}(1 - x^2) = e^x$, then $\frac{dy}{dx} =$

Options :

1. ✖ $e^x - \frac{2}{\sqrt{2-x^2}}$

2. ✖ $e^x - \frac{2}{\sqrt{2+x^2}}$

3. ✔ $e^x + \frac{2}{\sqrt{2-x^2}}$

4. ✖ $e^x + \frac{2}{\sqrt{2+x^2}}$

Question Number : 34 Question Id : 77951811042 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If $y(x) = x^x$, $x > 0$, then $y''(2) - 2y'(2) =$

Options :

1. ✖ $4\log_e 2 - 2$

2. ✖ $4\log_e 2 + 2$

3. ✖ $4(\log_e 2)^2 + 2$

4. ✔ $4(\log_e 2)^2 - 2$

Question Number : 35 Question Id : 77951811043 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If $z = x^2y^3 + e^y \sin x$, then $\frac{\partial^2 z}{\partial x \partial y} =$

Options :

1. ✔ $6xy^2 + e^y \cos x$

2. ✖ $3x^2y^2 + e^y \sin x$

3. ✖ $3x^2y^2 + e^y \cos x$

4. ✖ $6xy^2 + e^y \sin x$

Question Number : 36 Question Id : 77951811044 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

$$\int \frac{dx}{sin^2x\ cos^2x} =$$

Options :

1. ✖ $tanx + \cot x + c$

2. ✔ $tanx - \cot x + c$

3. ✖ $tanx \cot x + c$

4. ✖ $tanx + \sec x + c$

Question Number : 37 Question Id : 77951811045 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

$$\int \frac{dx}{\sqrt{x+1} + \sqrt{x}} =$$

Options :

1. ✔ $\frac{2}{3}[(x+1)^{\frac{3}{2}} - (x)^{\frac{3}{2}}] + c$

2. ✖ $\frac{2}{3}[(x+1)^{\frac{3}{2}} + (x)^{\frac{3}{2}}] + c$

3. ✖ $\frac{3}{2}[(x+1)^{\frac{3}{2}} - (x)^{\frac{3}{2}}] + c$

4. ✖ $\frac{3}{2}[\,(x+1)^{\frac{3}{2}} + (x)^{\frac{3}{2}}\,] + c$

Question Number : 38 Question Id : 77951811046 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If $\int \frac{sin^3 x + cos^3 x}{sin^2 x\ cos^2 x}\, dx = A\ sec\ x + B\ cosec\ x + c$, then (A , B) are

Options :

1. ✖ $(1, 1)$

2. ✖ $(-1, -1)$

3. ✔ $(1, -1)$

4. ✖ $(-1, 1)$

Question Number : 39 Question Id : 77951811047 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The integral of $f(x) = 1 + x^2 + x^4$ with respect to $x^2$is

Options :

1. ✖ $x + \frac{x^3}{3} + \frac{x^5}{5} + C$

2. ✖ $\frac{x^3}{3} + \frac{x^5}{5} + C$

3. ✖ $x^2 + \frac{x^4}{4} + \frac{x^6}{6} + C$

4. ✔ $x^2 + \frac{x^4}{2} + \frac{x^6}{3} + C$

Question Number : 40 Question Id : 77951811048 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

$$\int_0^{\frac{\pi}{2}} \frac{sin^{100}x}{sin^{100}x+cos^{100}x}\,dx\ =$$

Options :

1. ✖ $\pi/2$

2. ✔ $\pi/4$

3. ✖ 100

4. ✖ 50

Question Number : 41 Question Id : 77951811049 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

$$\int_0^1 x\sqrt{x^2+4}\,dx\ =$$

Options :

1. ✖ $\frac{1}{3}[5\sqrt{5}-4]$

2. ✖ $\frac{1}{2}[5\sqrt{5}-8]$

3. ✔ $\frac{1}{3}[5\sqrt{5}-8]$

4. ✖ $\frac{1}{3}[5\sqrt{5}+4]$

Question Number : 42 Question Id : 77951811050 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

$$\int_{-\pi/6}^{\pi/6} \frac{sin^5x\ cos^3x}{x^4}\,dx\ =$$

Options :

1. ✖ $\pi/2$

2. ✖ $\pi/4$

3. ✔ 0

4. ✖ 1

Question Number : 43 Question Id : 77951811051 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

$$\int \frac{dx}{\sqrt{16-25x^2}} =$$

Options :

1. ✔ $\frac{1}{5}sin^{-1}\left(\frac{5x}{4}\right)+c$

2. ✖ $sin^{-1}\left(\frac{5x}{4}\right)+c$

3. ✖ $\frac{1}{5}sin^{-1}\left(\frac{x}{4}\right)+c$

4. ✖ $\frac{1}{5}sin^{-1}\left(\frac{4x}{5}\right)+c$

Question Number : 44 Question Id : 77951811052 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The solution of the differential equation $x\frac{dy}{dx}+y=0$ passing through the point (1,1) is y =

Options :

1. ✖ x^2

2. ✔ x^{-1}

3. ✖ x^{-2}

4. ✖ x

Question Number : 45 Question Id : 77951811053 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Degree of the differential equation $y = x\frac{dy}{dx} + a\sqrt{1 + (\frac{dy}{dx})^2}$ is

Options :

1. ✖ 4

2. ✖ 3

3. ✔ 2

4. ✖ 1

Question Number : 46 Question Id : 77951811054 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The order of the differential equation of all circles passing through the origin and having their centers on the x – axis is

Options :

1. ✖ 4

2. ✖ 3

3. ✖ 2

4. ✔ 1

Question Number : 47 Question Id : 77951811055 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If a and b are arbitrary constants, then the differential equation representing the family of curves $y = a\sin(x+b)$ is

Options :

1. ✖ $\frac{d^2y}{dx^2} - y = 0$

2. ✔ $\frac{d^2y}{dx^2} + y = 0$

3. ✖ $\frac{d^2y}{dx^2} - y^2 = 0$

4. ✖ $\frac{dy}{dx} - y = 0$

Question Number : 48 Question Id : 77951811056 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The differential equation is $\frac{dy}{dx} + \frac{y}{x} = 0$ and $y(1) = 2$. Then the value of $y(3) =$

Options :

1. ✖ 2

2. ✖ 3

3. ✔ 2/3

4. ✖ 1

Question Number : 49 Question Id : 77951811057 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✖ $e^{-y} = e^{x} + \frac{x^3}{3} + c$

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

3. ✖ $e^{y} = e^{x} + x^3 + c$

4. ✖ $e^{y} = e^{x} + c$

Question Number : 50 Question Id : 77951811058 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The differential equation is $\frac{dy}{dx} + y\tan x = \sec x$ and $y(0) = 1$. Then the value of $y\left(\frac{\pi}{4}\right) =$

Options :

1. ✖ 0

2. ✔ $\sqrt{2}$

3. ✖ 1

4. ✖ -1

Physics

Section Id :	779518218
Section Number :	2
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	25
Number of Questions to be attempted :	25
Section Marks :	25
Section Negative Marks :	0
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	779518234
Question Shuffling Allowed :	Yes

Question Number : 51 Question Id : 77951811059 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If P = F. v Sin βt where **F** is force and **v** is velocity then the dimensions of P and β are

Options :

1. ✔ ML^2T^{-3}, T^{-1}

2. ✖ $ML\,T^{-2}, T^{-2}$

3. ✖ ML^2T^{-1}, T^{-1}

4. ✖ ML^2T^3, T^{-2}

Question Number : 52 Question Id : 77951811060 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If velocity V, energy E and time T are chosen as fundamental quantities then dimensional representation of surface tension in this system will be

Options :

1. ✔ $E^1V^{-2}T^{-2}$

2. ✖ $E^1V^{-1}T^{-2}$

3. ✖ $E^{-2} V^{-1} T^{-3}$

4. ✖ $E^{1} V^{-2} T^{-1}$

Question Number : 53 Question Id : 77951811061 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If $|\mathbf{A} + \mathbf{B}| = |\mathbf{A} - \mathbf{B}|$, then the angle between the two vectors **A** and **B** is

Options :

1. ✖ $0°$

2. ✖ $180°$

3. ✖ $120°$

4. ✔ $90°$

Question Number : 54 Question Id : 77951811062 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

An aeroplane is moving in a circular path with a speed of 450 Kmph. What is the change in velocity in half revolution?

Options :

1. ✖ 0 Kmph

2. ✖ 450 Kmph

3. ✖ 250 Kmph

4. ✔ 900 Kmph

Question Number : 55 Question Id : 77951811063 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The ratio between maximum and minimum values of two vectors $\vec{A}$ and $\vec{B}$ $(\vec{A} > \vec{B})$ is 1:4. Then the ratio between the magnitudes of two vectors is

Options :

1. ✖ 3:2

2. ✔ 5:3

3. ✖ 2:3

4. ✖ 3:5

Question Number : 56 Question Id : 77951811064 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The magnitudes of three vectors $\vec{A}, \vec{B}$ and $\vec{C}$ are 12, 5 and 13 units respectively and $\vec{A} + \vec{B} = \vec{C}$. The angle between $\vec{A}$ and $\vec{B}$ is

Options :

1. ✖ $0°$

2. ✖ $120°$

3. ✔ $90°$

4. ✖ $45°$

Question Number : 57 Question Id : 77951811065 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A body falling from height 'H' takes time 'T' seconds to reach the ground. The time taken to cover the second half of height is

Options :

1. ✖ $\frac{T}{\sqrt{2}}$

2. ✖ $\sqrt{2}\,T$

3. ✔ $\left(\frac{\sqrt{2}-1}{\sqrt{2}}\right)$ T

4. ✖ $\left(\frac{1}{\sqrt{2}-1}\right)$ T

Question Number : 58 Question Id : 77951811066 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

With what speed a body be thrown upwards so that the distances covered in the 5^{th} second and 6^{th} second are equal?

Options :

1. ✖ 75 m/s

2. ✖ $\sqrt{98}$ m/s

3. ✔ 49 m/s

4. ✖ 19.8 m/s

Question Number : 59 Question Id : 77951811067 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A body of mass 1 kg starts moving from rest under the action of a force which varies with

displacement as $F = 2x + 5$ (in newtons). The work done by this force to displace the body from $x = 0$ to $x = 2$ m is:

Options :

1. ✖ 8 J

2. ✖ 10 J

3. ✖

12 J

4. ✔ 14 J

Question Number : 60 Question Id : 77951811068 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The potential energy of a particle is given by $U(x) = 20 + (x-2)^2$, where U is in joules and x in meters. The minimum potential energy and the position where it occurs are:

Options :

1. ✔ 20 J at $x = 2$

2. ✖ 2 J at $x = 20$ m

3. ✖ 22 J at $x = 2$ m

4. ✖ 0 J at $x = 2$ m

Question Number : 61 Question Id : 77951811069 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Power supplied to a particle of mass 2 kg varies with time as $P = 3t^2/2$ watt, where t is in seconds. If velocity at $t = 0$ is zero, the velocity at $t = 2$ s is:

Options :

1. ✖ 1 m/s

2. ✔ 2 m/s

3. ✖ $\sqrt{2}$ m/s

4. ✖

4 m/s

Question Number : 62 Question Id : 77951811070 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A pump is used to deliver water at a certain rate from a given pipe. To obtain **twice** the volume of water from the same pipe in the same time, by what factor must the power of the motor pump be increased? (Assume ideal conditions, $g = 10\ ms^{-2}$)

Options :

1. ✖ 4

2. ✔ 8

3. ✖ 16

4. ✖ 32

Question Number : 63 Question Id : 77951811071 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Two identical piano wires, when tuned to a fundamental frequency of 400 Hz, produce no beats. One wire is then slightly tightened, and the beat frequency heard is 2 Hz. What is the new fundamental frequency of the tightened wire?

Options :

1. ✖ 398 Hz

2. ✔ 402 Hz

3. ✖ 404 Hz

4. ✖ 396 Hz

Question Number : 64 Question Id : 77951811072 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A source of sound of frequency 500Hz is moving towards an observer with velocity 30m/s. The speed of sound is 330m/s. The frequency heard by the observer will be:

Options :

1. ✖ 450 Hz

2. ✔ 550 Hz

3. ✖ 600 Hz

4. ✖ 500 Hz

Question Number : 65 Question Id : 77951811073 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In Acoustics, 'Noise' is generally characterized by:

Options :

1. ✔ Irregular and non-periodic vibrations.

2. ✖ A constant pitch and frequency

3. ✖ Vibrations that follow a harmonic series

4. ✖ Regular and periodic vibrations

Question Number : 66 Question Id : 77951811074 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If the volume of a room is doubled and the total absorption is halved, the reverberation time will:

Options :

1. ✖ Remain unchanged

2. ✖ Be doubled

3. ✔ Become four times

4. ✖ Be halved

Question Number : 67 Question Id : 77951811075 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

. In a closed hall of volume 5000 m^3, the total absorption of the interior surfaces is 200 metric sabin . The reverberation time is:

Options :

1. ✖ 1 s

2. ✖ 2 s

3. ✖ 3 s

4. ✔ 4 s

Question Number : 68 Question Id : 77951811076 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In an Isothermal process

Options :

1. ✖ Internal energy of the system never remains constant

2. ✖ Total heat energy of the system remains constant

3. ✖ Volume of the system remains constant

4. ✔ Temperature of the system remains constant

Question Number : 69 Question Id : 77951811077 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If the pressure of an ideal gas is doubled and its absolute temperature is halved; the volume will become:

Options :

1. ✔ 1/4 of initial volume

2. ✖ 1/2 initial volume

3. ✖ Same as initial volume

4. ✖ 2 times of initial volume

Question Number : 70 Question Id : 77951811078 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

At constant temperature, the product PV is plotted against pressure P for an ideal gas. The graph obtained is:

Options :

1. ✔ Straight line parallel to P-axis

2. ✖ Straight line with positive slope

3. ✖ Straight line through origin

4. ✖ Parabola

Question Number : 71 Question Id : 77951811079 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A bubble of an ideal gas rises from the bottom of a lake to the surface. At the bottom, the pressure is 3 Atm. and the temperature is 7 °C. At the surface, the pressure is 1 atm. and the temperature is 27°C. If the initial volume of the bubble was V_0 what is its volume V_f at the surface?

Options :

1. ✖ $3\ V_0$

2. ✔ $3.21\ V_0$

3. ✖ $0.9\ V_0$

4. ✖ $5.4\ V_0$

Question Number : 72 Question Id : 77951811080 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The R.M.S. speed of oxygen molecules at 27°C is v. At 927°C, the rms speed will be:

Options :

1. ✖ v

2. ✖ v/2

3. ✔ 2v

4. ✖ 4v

Question Number : 73 Question Id : 77951811081 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In a photoelectric experiment, the stopping potential for incident light of wavelength 4000 Å is 2 V. If the wavelength is changed to 3000 Å, the new stopping potential will be approximately:

(Use $h = 4.14 \times 10^{-15}$ eV · s, $c = 3 \times 10^{8}$ m/s)

Options :

1. ✖ 2 V

2. ✔ 3.03 V

3. ✖ 4.14 V

4. ✖ 1.5 V

Question Number : 74 Question Id : 77951811082 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In Optical Fiber communication, the signal is transmitted in the form of:

Options :

1. ✖ Electrical pulses

2. ✔ Light pulses

3. ✖ Radio waves

4. ✖ Sound waves

Question Number : 75 Question Id : 77951811083 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In a superconducting ring, a persistent current has been flowing without decay for years. This is possible because:

Options :

1. ✔ Resistance is exactly zero and flux is quantized

2. ✖ Resistance is very small but finite

3. ✖ The ring is at absolute zero temperature

4. ✖ Magnetic field lines are expelled

Chemistry

Section Id :	779518219
Section Number :	3
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	25
Number of Questions to be attempted :	25
Section Marks :	25
Section Negative Marks :	0
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	779518235
Question Shuffling Allowed :	Yes

Question Number : 76 Question Id : 77951811084 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The pair of orbitals with electron density maximum along the axes is

Options :

1. ✖ d_{xy}, d_{yz}

2. ✔ d_{z^2} , $d_{x^2-y^2}$

3. ✖ d_{xz}, d_{z^2}

4. ✖

d_{xz}, P_z

Question Number : 77 Question Id : 77951811085 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The angular momentum of an electron in an orbit $\underline{X}$ of hydrogen atom is $^{2h}/_{\pi}$.

Maximum number of orbitals possible in X is

Options :

1. ✖ 4

2. ✖ 9

3. ✔ 16

4. ✖ 25

Question Number : 78 Question Id : 77951811086 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The four quantum numbers for the electron in the outermost orbital of potassium (Z=19) are

Options :

1. ✖ n=4, l=2, m= -1, s= +1/2

2. ✔ n=4, l=0, m=0, s= +1/2

3. ✖ n=3, l=0, m=1, s= + 1/2

4. ✖ n=4, l=3, m= -2, s=-1/2

Question Number : 79 Question Id : 77951811087 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In which of the following, the number of bonding electrons and non-bonding electrons are in 3:2 ratio?

Options :

1. ✔ N_2

2. ✖ O_2

3. ✖ HCl

4. ✖ F_2

Question Number : 80 Question Id : 77951811088 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which one of the following statements is not correct?

Options :

1. ✖ Ionic bond is non directional bond

2. ✖ The maximum number of bond pairs between two atoms is 3

3. ✔ Covalent compounds conduct electricity in fused state

4. ✖ Ionic compounds are generally soluble in water

Question Number : 81 Question Id : 77951811089 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

12.6 g of oxalic acid, $H_2C_2O_4.2H_2O$ (M.wt 126) is present in 1500 mL of solution. The normality of that solution is

Options :

1. ✖ 0.266 N

2. ✔ 0.133 N

3. ✖ 0.399 N

4. ✖ 0.430 N

Question Number : 82 Question Id : 77951811090 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which of the following has highest equivalent weight?
(Given: At.wt H=1, C=12, O=16, S=32, Na=23, Ca=40)

Options :

1. ✖ Sulphuric acid

2. ✖ Sodium carbonate

3. ✔ Sodium sulphate

4. ✖ Calcium carbonate

Question Number : 83 Question Id : 77951811091 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Identify the pair of gases which have same number of molecules at S.T.P ?

Options :

1. ✖ 11 g of CO_2 and 14 g of N_2

2. ✖ 16 g of O_3 and 16 g of CH_4

3. ✔ 5 g of H_2 and 40 g of CH_4

4. ✖ 28 g of N_2 and 22 g of CO_2

Question Number : 84 Question Id : 77951811092 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

100 mL of 0.1M HCl and 100 mL of 0.05 M H_2SO_4 are mixed and the solution is diluted to 2.0 L by adding water. The pH of the resulting solution is

Options :

1. ✖ 1

2. ✖ 3

3. ✔ 2

4. ✖ 4

Question Number : 85 Question Id : 77951811093 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

According to Arrhenius theory of acids and bases, which of the following is an example of Arrhenius base?

Options :

1. ✖ H_2SO_4

2. ✖ NH_3

3. ✔ NaOH

4. ✖ CaO

Question Number : 86 Question Id : 77951811094 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Electrolysis of an aqueous solution of Na_2SO_4 between Pt electrodes liberate a gas $\underline{X}$ at anode and gas $\underline{Y}$ at cathode. X and Y respectively are

Options :

1. ✖ H_2, O_2

2. ✔ O_2, H_2

3. ✖ SO_2, H_2

4. ✖ H_2, SO_2

Question Number : 87 Question Id : 77951811095 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The wrong statement regarding Galvanic cell is

Options :

1. ✖ In this spontaneous redox reaction occurs

2. ✖ Salt bridge maintains electrical neutrality between the two solutions

3. ✔ Anode is represented by (+) and cathode by (-)

4. ✖ At anode oxidation occurs

Question Number : 88 Question Id : 77951811096 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which of the following is a weak electrolyte?

Options :

1. ✔ H_2CO_3

2. ✖ H_2SO_4

3. ✖ NaCl

4. ✖ NaOH

Question Number : 89 Question Id : 77951811097 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The exhausted anion-exchange resin is regenerated with

Options :

1. ✔ dilute NaOH solution

2. ✖ dilute NaCl solution

3. ✖ dilute HCl solution

4. ✖ dilute Na_2SO_4 solution

Question Number : 90 Question Id : 77951811098 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A sample of water is known to contain Mg $(HCO_3)_2$ =7.3 mg/L, Ca $(HCO_3)_2$= 8.1 mg/L and 27.2 mg/L of $CaSO_4$.

The total hardness associated with water sample (in ppm) in equivalents of $CaCO_3$ is
(At.wt H=1, C=12, O=16, Mg = 24, Ca=40, S=32)

Options :

1. ✖ 20

2. ✖

25

3. ✔ 30

4. ✖ 40

Question Number : 91 Question Id : 77951811099 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The type of functional group associated with cation exchange resin is

Options :

1. ✖ - OH

2. ✔ - SO_3H

3. ✖ - NH_2

4. ✖ - CHO

Question Number : 92 Question Id : 77951811100 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Identify the incorrect statement about the corrosion

Options :

1. ✖ In the composition type of galvanic cell, metal with lower standard reduction potential undergoes corrosion

2. ✖ In stress cell type of galvanic cell, corrosion occurs at the stressed area of the metal

3. ✔ The rate of corrosion is more, when the area of cathode is smaller

4. ✖ In concentration cell type of galvanic cell, the metal below the water level undergoes corrosion readily

Question Number : 93 Question Id : 77951811101 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In galvanised iron

Options :

1. ✔ Zn acts as anode and Fe acts as cathode

2. ✖ Zn acts as cathode and Fe acts as anode

3. ✖ Sn acts as anode and Fe acts as cathode

4. ✖ Sn acts as cathode and Fe acts as anode

Question Number : 94 Question Id : 77951811102 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

During Vulcanization of raw rubber, the chemical added to it is

Options :

1. ✔ Sulphur

2. ✖ Phosphorus

3. ✖ Iodine

4. ✖ Sodium

Question Number : 95 Question Id : 77951811103 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which of the following is a natural polymer?

Options :

1. ✔ Cellulose

2. ✖ Teflon

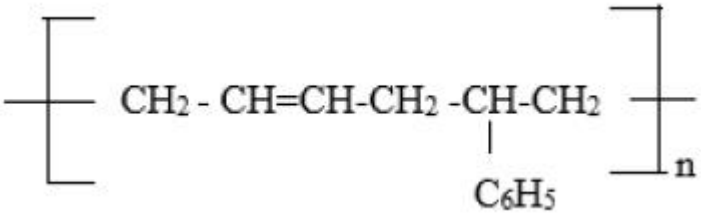
3. ✖ Polyvinylchloride

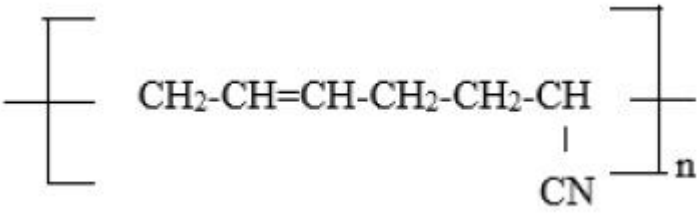
4. ✖ Neoprene rubber

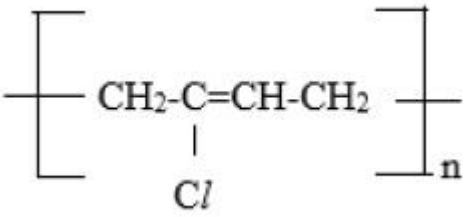
Question Number : 96 Question Id : 77951811104 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

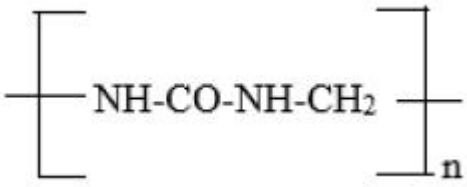
The structure of Buna –S polymer is

Options :

1. ✔ 

2. ✖ 

3. ✖ 

4. ✖ 

Question Number : 97 Question Id : 77951811105 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The polymer used in making gaskets and nono-stick coating utensils is

Options :

1. ✖ Polyvinyl chloride

2. ✖ Polystyrene

3. ✔ Polytetrafluoroethylene

4. ✖ Polythene

Question Number : 98 Question Id : 77951811106 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which of the following in not to be considered as a primary fuel ?

Options :

1. ✖ Wood

2. ✖ Petroleum

3. ✔ Coke

4. ✖ Coal

Question Number : 99 Question Id : 77951811107 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The oxide of nitrogen responsible for depletion of ozone layer is

Options :

1. ✖ N_2O

2. ✖ NO_2

3. ✔ NO

4. ✖ N_2O_3

Question Number : 100 Question Id : 77951811108 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The BOD of highly polluted water is

Options :

1. ✔ 17 ppm

2. ✖ 10 ppm

3. ✖ 8 ppm

4. ✖ 12 ppm

Chemical Engineering

Section Id : 779518220
Section Number : 4
Section type : Online

Mandatory or Optional :	Mandatory
Number of Questions :	100
Number of Questions to be attempted :	100
Section Marks :	100
Section Negative Marks :	0
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	779518236
Question Shuffling Allowed :	Yes

Question Number : 101 Question Id : 77951811109 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which mechanical property of a metal represents its ability to resist permanent deformation?

Options :

1. ✖ Elasticity

2. ✖ Plasticity

3. ✔ Hardness

4. ✖ Toughness

Question Number : 102 Question Id : 77951811110 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The area under the stress–strain curve up to the fracture point represents:

Options :

1. ✖ Resilience

2. ✔ Toughness

3. ✖ Ductility

4. ✖

Brittleness

Question Number : 103 Question Id : 77951811111 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The Brinell hardness test measures hardness by:

Options :

1. ✖ Depth of penetration of a cone

2. ✔ Size of indentation made by a steel ball

3. ✖ Scratch resistance

4. ✖ Rebound height of a hammer

Question Number : 104 Question Id : 77951811112 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In a thermal equilibrium (phase) diagram of iron–carbon system, eutectoid point occurs at:

Options :

1. ✔ 0.8% C and 723°C

2. ✖ 0.2% C and 910°C

3. ✖ 2.1% C and 1147°C

4. ✖ 4.3% C and 1147°C

Question Number : 105 Question Id : 77951811113 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Pig iron is produced in a:

Options :

1. ✖ Cupola furnace

2. ✖ Electric furnace

3. ✔ Blast furnace

4. ✖ Open hearth furnace

Question Number : 106 Question Id : 77951811114 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Plain carbon steels mainly differ from each other in terms of:

Options :

1. ✖ Alloying elements

2. ✔ Carbon content

3. ✖ Heat treatment method

4. ✖ Manufacturing process

Question Number : 107 Question Id : 77951811115 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Molarity of a solution is defined as:

Options :

1. ✖ Number of moles of solute per kilogram of solvent

2. ✖ Number of gram equivalents of solute per liter of solution

3. ✔ Number of moles of solute per liter of solution

4. ✖ Number of grams of solute per liter of solvent

Question Number : 108 Question Id : 77951811116 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Molality is preferred over molarity in calculations involving temperature changes because:

Options :

1. ✖ It depends on volume

2. ✔ It is independent of temperature

3. ✖ It depends on pressure

4. ✖ It changes with density

Question Number : 109 Question Id : 77951811117 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In gas analysis, when composition is expressed on a dry basis, it means:

Options :

1. ✖ All gases are removed

2. ✖ Water vapor is included

3. ✔ Water vapor is excluded

4. ✖ Oxygen is excluded

Question Number : 110 Question Id : 77951811118 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

According to Dalton's law of partial pressures, the total pressure of a gas mixture is equal to:

Options :

1. ✖ Average pressure of all gases

2. ✔ Sum of partial pressures of individual gases

3. ✖ Product of mole fractions and pressure

4. ✖ Pressure of the heaviest gas

Question Number : 111 Question Id : 77951811119 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which of the following represents the ideal gas equation of state?

Options :

1. ✔ $PV = nRT$

2. ✖ $P = \rho RT$

3. ✖ $PV = RT$

4. ✖ $PVT = \text{constant}$

Question Number : 112 Question Id : 77951811120 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Elevation of boiling point and depression of freezing point are examples of:

Options :

1. ✖ Chemical properties

2. ✔ Colligative properties

3. ✖ Thermal properties

4. ✖ Physical constants

Question Number : 113 Question Id : 77951811121 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Recycling and bypassing of streams in a process plant are mainly used to:

Options :

1. ✖ Increase raw material cost

2. ✖ Reduce product purity

3. ✔ Improve conversion and process control

4. ✖ Increase waste generation

Question Number : 114 Question Id : 77951811122 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The reactant that is completely consumed first in a chemical reaction is called:

Options :

1. ✖ Excess reactant

2. ✖ Catalyst

3. ✔ Limiting reactant

4. ✖ Inert reactant

Question Number : 115 Question Id : 77951811123 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The amount of air actually supplied divided by the theoretical air required, expressed as a percentage above theoretical air, is known as:

Options :

1. ✖ Percentage conversion

2. ✔ Excess air

3. ✖ Degree of completion

4. ✖ Calorific value

Question Number : 116 Question Id : 77951811124 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The main purpose of coking of coal is to produce:

Options :

1. ✖ Coal gas

2. ✔ Coke

3. ✖ Coal tar

4. ✖ Ammoniacal liquor

Question Number : 117 Question Id : 77951811125 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which fraction obtained from coal tar distillation is mainly used for road surfacing?

Options :

1. ✖ Light oil

2. ✖ Middle oil

3. ✖ Anthracene oil

4. ✔ Pitch

Question Number : 118 Question Id : 77951811126 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In petroleum refining, atmospheric distillation is primarily used to:

Options :

1. ✖ Crack heavy hydrocarbons

2. ✔ Separate crude oil into boiling-range fractions

3. ✖ Remove sulfur compounds

4. ✖ Increase octane number

Question Number : 119 Question Id : 77951811127 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Vacuum distillation of petroleum is carried out to:

Options :

1. ✖ Distill light fractions at high pressure

2. ✔ Avoid thermal cracking of heavy residues

3. ✖ Improve gasoline quality

4. ✖ Remove dissolved gases

Question Number : 120 Question Id : 77951811128 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Fluid catalytic cracking (FCC) mainly converts:

Options :

1. ✖ Light naphtha into aromatics

2. ✔ Heavy gas oil into gasoline and LPG

3. ✖ Natural gas into olefins

4. ✖ Residual oil into lubricants

Question Number : 121 Question Id : 77951811129 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The major petrochemical produced directly from methane is:

Options :

1. ✖ Ethylene

2. ✔ Methanol

3. ✖ Benzene

4. ✖ Propylene

Question Number : 122 Question Id : 77951811130 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In the pulp and paper industry, the Kraft process uses which chemical for pulping?

Options :

1. ✖ Calcium bisulfite

2. ✔ Sodium hydroxide and sodium sulfide

3. ✖ Sulfuric acid

4. ✖ Ammonium hydroxide

Question Number : 123 Question Id : 77951811131 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The basic chemical reaction involved in soap manufacture is:

Options :

1. ✖ Esterification

2. ✖ Polymerization

3. ✔ Saponification

4. ✖

Hydrogenation

Question Number : 124 Question Id : 77951811132 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which of the following is the main source of hardness in natural water?

Options :

1. ✖ Dissolved oxygen

2. ✖ Sodium salts

3. ✔ Calcium and magnesium salts

4. ✖ Suspended solids

Question Number : 125 Question Id : 77951811133 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In the ion-exchange process for water treatment, hard water is softened by:

Options :

1. ✖ Precipitation of salts

2. ✔ Exchange of Ca^{2+} and Mg^{2+} ions with Na^{+} or H^{+} ions

3. ✖ Removal of suspended particles

4. ✖ Boiling the water

Question Number : 126 Question Id : 77951811134 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Reverse Osmosis (RO) is based on the principle of:

Options :

1. ✖ Filtration under gravity

2. ✖ Diffusion through porous media

3. ✔ Application of pressure greater than osmotic pressure

4. ✖ Chemical precipitation

Question Number : 127 Question Id : 77951811135 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Soda ash is industrially manufactured by the:

Options :

1. ✖ Contact process

2. ✖ Haber process

3. ✔ Solvay process

4. ✖ Ostwald process

Question Number : 128 Question Id : 77951811136 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

$N_2+3H_2 \rightleftharpoons 2NH_3$, Favours the following conditions

Options :

1. ✖ Low Pressure, High Temperature

2. ✔ High Pressure, Low Temperature

3. ✖ Low Pressure, Low Temperature

4. ✖ High Pressure, High Temperature

Question Number : 129 Question Id : 77951811137 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The major raw materials used in the manufacture of sulphuric acid by the contact process are:

Options :

1. ✔ Sulphur, air and water

2. ✖ Sulphur dioxide, nitric acid and water

3. ✖ Pyrite, limestone and water

4. ✖ Sulphuric acid and oleum

Question Number : 130 Question Id : 77951811138 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Silicon carbide (SiC) is commonly manufactured in an electric furnace by reacting:

Options :

1. ✖ Silica with limestone

2. ✔ Silica with coke

3. ✖ Alumina with coke

4. ✖ Lime with graphite

Question Number : 131 Question Id : 77951811139 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The primary binding compound responsible for strength development in cement is:

Options :

1. ✖ Tricalcium aluminate

2. ✖ Dicalcium silicate

3. ✔ Tricalcium silicate

4. ✖ Calcium sulfate

Question Number : 132 Question Id : 77951811140 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

An incompressible fluid is one in which:

Options :

1. ✖ Density changes with pressure

2. ✔ Density remains constant with pressure

3. ✖ Volume increases with temperature only

4. ✖ Viscosity is zero

Question Number : 133 Question Id : 77951811141 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A Newtonian fluid is defined as one in which the shear stress is:

Options :

1. ✖ Independent of rate of shear

2. ✔ Directly proportional to rate of shear

3. ✖ Inversely proportional to viscosity

4. ✖ Proportional to pressure

Question Number : 134 Question Id : 77951811142 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The SI unit of dynamic viscosity is:

Options :

1. ✖ Poise

2. ✖ Centipoise

3. ✔ $N \cdot s/m^2$

4. ✖ m^2/s

Question Number : 135 Question Id : 77951811143 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

According to Bernoulli's theorem, for an ideal fluid the sum of pressure energy, kinetic energy and potential energy is:

Options :

1. ✖ Variable along a streamline

2. ✖ Zero everywhere

3. ✔ Constant along a streamline

4. ✖ Maximum at the inlet

Question Number : 136 Question Id : 77951811144 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Head loss due to friction in a pipe carrying fluid is directly proportional to

Options :

1. ✖ Diameter of the pipe

2. ✔ Square of velocity of flow

3. ✖ Density of the pipe material

4. ✖ Area of the pipe only

Question Number : 137 Question Id : 77951811145 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which of the following flow meters works on the principle of pressure difference?

Options :

1. ✖ Rotameter

2. ✔ Venturimeter

3. ✖ Pitot tube

4. ✖ Positive displacement meter

Question Number : 138 Question Id : 77951811146 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A centrifugal pump is most suitable for handling:

Options :

1. ✖ Low flow rate at very high head

2. ✖ Highly viscous fluids

3. ✔ Large quantities of fluid at moderate head

4. ✖ Solid–liquid mixtures only

Question Number : 139 Question Id : 77951811147 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The drag force experienced by a body moving through a fluid is mainly due to:

Options :

1. ✖ Buoyancy only

2. ✔ Pressure difference and viscous effects

3. ✖ Gravitational force

4. ✖ Surface tension

Question Number : 140 Question Id : 77951811148 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Minimum fluidization velocity in a fluidized bed corresponds to the condition when:

Options :

1. ✖ Particles start to dissolve

2. ✔ Pressure drop equals weight of particles per unit area

3. ✖ Flow becomes turbulent

4. ✖ Bed height becomes zero

Question Number : 141 Question Id : 77951811149 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Fourier's law of heat conduction states that the rate of heat transfer is proportional to the:

Options :

1. ✖ Temperature difference only

2. ✖ Thermal conductivity only

3. ✔ Area and temperature gradient

4. ✖ Density and viscosity

Question Number : 142 Question Id : 77951811150 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In steady-state heat conduction through a plane wall, which of the following remains constant?

Options :

1. ✖ Temperature

2. ✔ Heat flux

3. ✖ Thermal conductivity

4. ✖ Wall thickness

Question Number : 143 Question Id : 77951811151 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

When thermal resistances are arranged in series, the overall thermal resistance is equal to

Options :

1. ✖ Product of individual resistances

2. ✖ Average of individual resistances

3. ✔ Sum of individual resistances

4. ✖ Difference of individual resistances

Question Number : 144 Question Id : 77951811152 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

For heat conduction through a hollow cylinder, the heat transfer rate depends on:

Options :

1. ✖ Difference in surface areas only

2. ✖ Logarithmic mean radius

3. ✖ Logarithmic mean temperature difference

4. ✔ Logarithmic ratio of radii

Question Number : 145 Question Id : 77951811153 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The convective heat transfer coefficient mainly depends on:

Options :

1. ✔ Fluid velocity and properties

2. ✖ Surface roughness only

3. ✖ Temperature difference only

4. ✖ Thermal conductivity of solid

Question Number : 146 Question Id : 77951811154 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The log mean temperature difference (LMTD) method is used in heat exchangers to account for:

Options :

1. ✖ Average fluid velocity

2. ✔ Variation of temperature difference along the length

3. ✖ Heat losses to surroundings

4. ✖ Fouling resistance

Question Number : 147 Question Id : 77951811155 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Fouling factor in heat exchangers represents:

Options :

1. ✖ Heat loss due to radiation

2. ✖ Increase in heat transfer coefficient

3. ✔ Additional thermal resistance due to deposits

4. ✖ Pressure drop in fluids

Question Number : 148 Question Id : 77951811156 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which of the following statements is TRUE for counter-current heat exchangers when compared to parallel-flow exchangers?

Options :

1. ✖ Lower heat transfer rate

2. ✖ Lower LMTD

3. ✔ Higher temperature approach possible

4. ✖ Fluids enter at the same end

Question Number : 149 Question Id : 77951811157 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

According to Stefan–Boltzmann law, the radiant energy emitted by a black body is proportional to:

Options :

1. ✖ Absolute temperature

2. ✖ Square of absolute temperature

3. ✖ Cube of absolute temperature

4. ✔ Fourth power of absolute temperature

Question Number : 150 Question Id : 77951811158 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Evaporator economy is defined as:

Options :

1. ✖ Kg of steam used per kg of solvent evaporated

2. ✔ Kg of solvent evaporated per kg of steam used

3. ✖ Heat transferred per unit area

4. ✖ Rate of heat loss to surroundings

Question Number : 151 Question Id : 77951811159 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which law of size reduction is applicable when the surface area of particles is more important than size?

Options :

1. ✖ Kick's law

2. ✔ Rittinger's law

3. ✖ Bond's law

4. ✖ Newton's law

Question Number : 152 Question Id : 77951811160 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A jaw crusher is mainly used for:

Options :

1. ✖ Fine grinding

2. ✖ Ultra-fine grinding

3. ✔ Coarse crushing of hard materials

4. ✖ Mixing of solids

Question Number : 153 Question Id : 77951811161 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which equipment is most suitable for mixing dry powders with similar particle sizes and densities?

Options :

1. ✔ Ribbon blender

2. ✖ Ball mill

3. ✖ Jaw crusher

4. ✖ Cyclone separator

Question Number : 154 Question Id : 77951811162 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In screen analysis, cumulative oversize refers to:

Options :

1. ✖ Material retained on one screen

2. ✖ Total material passing a screen

3. ✔ Total material retained on a given screen and all coarser screens

4. ✖ Difference between feed and product

Question Number : 155 Question Id : 77951811163 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Screen effectiveness is defined as the ratio of

Options :

1. ✔ Actual separation achieved to the ideal separation

2. ✖ Oversize to undersize

3. ✖ Feed rate to product rate

4. ✖ Screen area to particle size

Question Number : 156 Question Id : 77951811164 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which device separates dust particles from gas by centrifugal force?

Options :

1. ✖ Scrubber

2. ✖ Electrostatic precipitator

3. ✔ Cyclone separator

4. ✖ Bag filter

Question Number : 157 Question Id : 77951811165 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Froth flotation is primarily based on differences in:

Options :

1. ✖ Particle size

2. ✖ Electrical conductivity

3. ✔ Surface wettability

4. ✖ Density of particles

Question Number : 158 Question Id : 77951811166 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Sedimentation is the process of separation of particles from a fluid by

Options :

1. ✖ Filtration through a medium

2. ✖ Application of centrifugal force

3. ✔ Settling under gravitational force

4. ✖ Electrical attraction

Question Number : 159 Question Id : 77951811167 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The first law of thermodynamics is a statement of conservation of:

Options :

1. ✖ Momentum

2. ✖ Mass

3. ✔ Energy

4. ✖ Entropy

Question Number : 160 Question Id : 77951811168 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The second law of thermodynamics states that:

Options :

1. ✖ Energy is always conserved

2. ✖ Heat can be completely converted into work

3. ✔ Entropy of an isolated system always increases

4. ✖ Pressure is proportional to temperature

Question Number : 161 Question Id : 77951811169 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The coefficient of performance (COP) of a refrigerator is defined as:

Options :

1. ✖ Work done / heat removed

2. ✔ Heat removed from cold body / work supplied

3. ✖ Heat supplied / work output

4. ✖ Heat rejected / heat absorbed

Question Number : 162 Question Id : 77951811170 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The equilibrium constant of a reaction depends on:

Options :

1. ✖ Pressure only

2. ✔ Temperature only

3. ✖ Concentration of reactants

4. ✖ Initial composition

Question Number : 163 Question Id : 77951811171 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Increase in temperature favours the equilibrium conversion of:

Options :

1. ✖

All reactions

2. ✖ Exothermic reactions

3. ✔ Endothermic reactions

4. ✖ Reversible reactions only

Question Number : 164 Question Id : 77951811172 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The Arrhenius equation relates the rate constant of a reaction to:

Options :

1. ✖ Pressure and temperature

2. ✖ Concentration and temperature

3. ✔ Temperature and activation energy

4. ✖ Conversion and equilibrium constant

Question Number : 165 Question Id : 77951811173 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which reactor operates under unsteady-state conditions?

Options :

1. ✖ Continuous stirred tank reactor

2. ✖ Plug flow reactor

3. ✔ Batch reactor

4. ✖ Tubular reactor

Question Number : 166 Question Id : 77951811174 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In an ideal plug flow reactor, the concentration of reactants:

Options :

1. ✖ Remains constant throughout the reactor

2. ✖ Changes only with time

3. ✔ Changes only along the length of the reactor

4. ✖ Is the same as in CSTR

Question Number : 167 Question Id : 77951811175 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A catalyst primarily functions by:

Options :

1. ✖ Shifting equilibrium position

2. ✖ Increasing reaction temperature

3. ✔ Lowering activation energy

4. ✖ Increasing heat of reaction

Question Number : 168 Question Id : 77951811176 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Fick's first law of diffusion states that the rate of mass transfer is proportional to the:

Options :

1. ✖ Concentration

2. ✖ Pressure difference

3. ✔ Concentration gradient

4. ✖ Temperature gradient

Question Number : 169 Question Id : 77951811177 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Molecular diffusion in gases is fastest when the:

Options :

1. ✖ Temperature is low

2. ✖ Pressure is high

3. ✖ Molecular weight is high

4. ✔ Temperature is high

Question Number : 170 Question Id : 77951811178 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Interphase mass transfer resistance is usually considered to exist in the:

Options :

1. ✖

Bulk phases only

2. ✖ Interface only

3. ✔ Thin films on either side of the interface

4. ✖ Solid surface only

Question Number : 171 Question Id : 77951811179 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In distillation, separation of components is primarily based on differences in:

Options :

1. ✖ Density

2. ✖ Solubility

3. ✔ Volatility

4. ✖ Molecular weight

Question Number : 172 Question Id : 77951811180 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Absorption differs from adsorption in that absorption involves:

Options :

1. ✖ Accumulation on surface only

2. ✔ Penetration of solute into bulk of another phase

3. ✖ Chemical reaction only

4. ✖ Crystallization of solute

Question Number : 173 Question Id : 77951811181 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which operation is mainly used to control humidity of air?

Options :

1. ✖ Crystallization

2. ✖ Distillation

3. ✔ Humidification

4. ✖ Extraction

Question Number : 174 Question Id : 77951811182 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Membrane separation processes are driven mainly by:

Options :

1. ✖ Temperature difference

2. ✔ Concentration or pressure difference

3. ✖ Density difference

4. ✖ Surface tension difference

Question Number : 175 Question Id : 77951811183 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Leaching is a process of

Options :

1. ✖ Separating liquids by volatility

2. ✔ Removing solute from a solid using a solvent

3. ✖ Drying solids by hot air

4. ✖ Separation of crystals from solution

Question Number : 176 Question Id : 77951811184 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Drying of solids involves simultaneous transfer of

Options :

1. ✖ Heat only

2. ✖ Mass only

3. ✖ Momentum only

4. ✔ Heat and mass

Question Number : 177 Question Id : 77951811185 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Crystallization is primarily used to:

Options :

1. ✖ Increase reaction rate

2. ✖ Separate solids based on density

3. ✔ Purify solids from solution

4. ✖ Reduce particle size

Question Number : 178 Question Id : 77951811186 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The ability of an instrument to give the same output for repeated measurements under identical conditions is called:

Options :

1. ✖ Accuracy

2. ✔ Precision

3. ✖ Sensitivity

4. ✖ Linearity

Question Number : 179 Question Id : 77951811187 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The response of a first-order instrument to a step input is:

Options :

1. ✖ Instantaneous

2. ✖ Linear with time

3. ✔ Exponential with time

4. ✖ Sinusoidal

Question Number : 180 Question Id : 77951811188 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which input is commonly used to study the frequency response of an instrument?

Options :

1. ✖ Step input

2. ✖ Ramp input

3. ✔ Sinusoidal input

4. ✖ Pulse input

Question Number : 181 Question Id : 77951811189 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A thermocouple measures temperature based on the principle of:

Options :

1. ✖ Change in resistance

2. ✔ Seebeck effect

3. ✖ Thermal expansion

4. ✖ Radiation

Question Number : 182 Question Id : 77951811190 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Vacuum pressure is usually measured using:

Options :

1. ✖ Bourdon gauge

2. ✖ U-tube manometer

3. ✔ McLeod gauge

4. ✖ Diaphragm gauge

Question Number : 183 Question Id : 77951811191 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A PID controller combines the actions of

Options :

1. ✖ Proportional and integral only

2. ✖ Proportional and derivative only

3. ✖ Integral and derivative only

4. ✔ Proportional, integral and derivative

Question Number : 184 Question Id : 77951811192 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The main function of a Distributed Control System (DCS) is to:

Options :

1. ✖ Control a single loop only

2. ✖

Provide centralized control of a plant

3. ✔ Control processes in a distributed manner with central supervision

4. ✖ Replace field instruments

Question Number : 185 Question Id : 77951811193 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A Programmable Logic Controller (PLC) is best suited for

Options :

1. ✖ Continuous process control

2. ✖ Batch reaction kinetics

3. ✔ Discrete and sequential control operations

4. ✖ Heat exchanger design

Question Number : 186 Question Id : 77951811194 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The main objective of environmental studies is to

Options :

1. ✖ Increase industrial production

2. ✖ Understand environmental laws only

3. ✔ Protect and improve environmental quality

4. ✖

Promote urbanization

Question Number : 187 Question Id : 77951811195 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which of the following is NOT a segment of the environment?

Options :

1. ✖ Lithosphere

2. ✖ Hydrosphere

3. ✖ Atmosphere

4. ✔ Biosensor

Question Number : 188 Question Id : 77951811196 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Biodiversity refers to

Options :

1. ✖ Only plant diversity

2. ✖ Only animal diversity

3. ✔ Variety of life forms at genetic, species, and ecosystem levels

4. ✖ Population growth in ecosystems

Question Number : 189 Question Id : 77951811197 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Biological Oxygen Demand (BOD) is a measure of

Options :

1. ✖ Total oxygen present in water

2. ✖ Oxygen required for chemical oxidation

3. ✔ Oxygen required by microorganisms to decompose organic matter

4. ✖ Dissolved oxygen content

Question Number : 190 Question Id : 77951811198 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which of the following devices is commonly used to control particulate air pollution?

Options :

1. ✖ Extractor

2. ✖ Distillation column

3. ✖ Dry scrubber

4. ✔ Wet scrubber

Question Number : 191 Question Id : 77951811199 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Municipal solid waste mainly consists of:

Options :

1. ✖ Industrial hazardous waste

2. ✖

Agricultural residues

3. ✔ Domestic and commercial refuse

4. ✖ Radioactive waste

Question Number : 192 Question Id : 77951811200 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Spent wash is a major pollution problem in which industry?

Options :

1. ✖ Fertilizer industry

2. ✖ Petroleum refinery

3. ✔ Sugar industry

4. ✖ Cement industry

Question Number : 193 Question Id : 77951811201 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The Environment (Protection) Act in India was enacted in the year

Options :

1. ✖ 1972

2. ✖ 1981

3. ✔ 1986

4. ✖ 1991

Question Number : 194 Question Id : 77951811202 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which of the following is a solid fuel?

Options :

1. ✖ Diesel

2. ✖ Natural gas

3. ✔ Coal

4. ✖ Kerosene

Question Number : 195 Question Id : 77951811203 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Complete combustion of a fuel occurs when

Options :

1. ✖ Fuel burns without air

2. ✖ Excess Nitrogen is supplied

3. ✔ Exactly theoretical air is supplied

4. ✖ Fuel burns at low temperature

Question Number : 196 Question Id : 77951811204 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Refractories used in furnaces are required to have

Options :

1. ✖ High electrical conductivity

2. ✖ Low melting point

3. ✔ Resistance to high temperature and chemical attack

4. ✖ High thermal expansion

Question Number : 197 Question Id : 77951811205 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The primary function of a blast furnace is to

Options :

1. ✖ Produce steel directly

2. ✖ Convert pig iron to steel

3. ✔ Reduce iron ore to molten iron

4. ✖ Remove carbon from iron

Question Number : 198 Question Id : 77951811206 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which energy source is considered non-renewable?

Options :

1. ✖ Solar energy

2. ✖ Wind energy

3. ✔ Nuclear energy

4. ✖ Bio-energy

Question Number : 199 Question Id : 77951811207 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Energy conservation in industries mainly aims to

Options :

1. ✖ Increase fuel consumption

2. ✔ Reduce energy wastage

3. ✖ Increase production cost

4. ✖ Replace skilled labor

Question Number : 200 Question Id : 77951811208 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The most appropriate first aid for a minor burn is to

Options :

1. ✖ Apply grease or oil

2. ✖ Break the blister

3. ✔ Cool the burn with clean cold water

4. ✖ Apply cotton dressing immediately