Telangana State Council 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 :	Mining Engineering 3rd Aug 2021 Shift2
Subject Name :	Mining Engineering
Creation Date :	2021-08-03 18:35:33
Duration :	180
Total Marks :	200
Display Marks:	No
Calculator :	None
Magnifying Glass Required? :	No
Ruler Required? :	No
Eraser Required? :	No
Scratch Pad Required? :	No
Rough Sketch/Notepad Required? :	No
Protractor Required? :	No
Show Watermark on Console? :	Yes
Highlighter :	No
Auto Save on Console? :	Yes

Mining Engineering

Group Number :	1
Group Id :	800894117
Group Maximum Duration :	0

Group Minimum Duration :	180
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	200
Is this Group for Examiner? :	No

Mathematics

Section Id :	800894454
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	50
Number of Questions to be attempted :	50
Section Marks :	50
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Sub-Section Number :	1
Sub-Section Id :	800894520
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 80089423256 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$$\text{If } \begin{pmatrix} x+y & z+y \\ z-y & x-2y \end{pmatrix} = \begin{pmatrix} 12 & 9 \\ -1 & -3 \end{pmatrix} \text{ then } \begin{pmatrix} x & y \\ z & 2z \end{pmatrix} =$$

Options :

1. ✖ $\begin{pmatrix} 5 & 7 \\ 4 & 8 \end{pmatrix}$

2. ✔ $\begin{pmatrix} 7 & 5 \\ 4 & 8 \end{pmatrix}$

3. ✖ $\begin{pmatrix} 6 & 7 \\ 3 & 6 \end{pmatrix}$

4. ✖ $\begin{pmatrix} 3 & 6 \\ 6 & 7 \end{pmatrix}$

Question Number : 2 Question Id : 80089423257 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If $A = \begin{pmatrix} x & y & z \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{pmatrix}$ and $B = \begin{pmatrix} x & 2 & 3 \\ y & 5 & 6 \\ z & 8 & 9 \end{pmatrix}$ then

Options :

1. ✔ $\det(A - B) = \det A - \det B$

2. ✖ $\det A - \det B = 1$

3. ✖ $\det A + \det B = x + y + z$

4. ✖ $\det A = -\det B$

Question Number : 3 Question Id : 80089423258 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If $\begin{pmatrix} -a^2 & ab & ac \\ ab & -b^2 & bc \\ ac & bc & -c^2 \end{pmatrix} = Ka^2b^2c^2$ then $K =$

Options :

1. ✔ 4

2. ✖ 6

3. ✖ 8

4. ✖ 2

Question Number : 4 Question Id : 80089423259 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If the system of equations $x + 2y - 3z = 0, 3x - 2y + z = 0, kx - 14y + 15z = 0$ has nonzero solutions, then $k^2 - 2k - 3 =$

Options :

1. ✔ 12

2. ✖ 18

3. ✖ 5

4. ✖ 0

Question Number : 5 Question Id : 80089423260 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The partial fractions of $\frac{x^2+5x+10}{x+2} - \frac{2+6x+x^2}{x+3} =$

Options :

1. ✔ $\frac{4}{x+2} + \frac{7}{x+3}$

2. ✖ $\frac{4}{x+2} - \frac{7}{x+3}$

3. ✖ $\frac{7}{x+2} - \frac{4}{x+3}$

4. ✖ $\frac{4}{x+3} + \frac{7}{x+2}$

Question Number : 6 Question Id : 80089423261 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If $4^{\log_9 3} + 9^{\log_2 4} = 5^{\log_x 83}$, then

Options :

1. ✖ $x^3 + 4x^2 - 4x - 5 = 0$

2. ✖ $x^3 - 4x^2 - 4x + 5 = 0$

3. ✖ $x^3 - 4x^2 + 4x - 5 = 0$

4. ✔ $x^3 - 4x^2 - 4x - 5 = 0$

Question Number : 7 Question Id : 80089423262 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

$\log_e x + \log_e(1+x) = 0 \Rightarrow x =$

Options :

1. ✖ $\frac{-1-\sqrt{5}}{2}$

2. ✖ 1

3. ✔ $\frac{-1+\sqrt{5}}{2}$

4. ✖ -2

Question Number : 8 Question Id : 80089423263 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If $\alpha + \beta = \frac{\pi}{2}$ and $\beta + \gamma = \alpha$, then $tan\,\alpha =$

Options :

1. ✖ $2(tan\,\beta + tan\,\gamma)$

2. ✖ $tan\,\beta + tan\,\gamma$

3. ✖ $2\tan\beta+\tan\gamma$

4. ✔ $\tan\beta+2\tan\gamma$

Question Number : 9 Question Id : 80089423264 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In a triangle ABC , $a^2\cos 2B+b^2\cos 2A+2ab\cos(A-B)=$

Options :

1. ✖ a^2

2. ✖ b^2

3. ✔ c^2

4. ✖ $(a+b+c)^2$

Question Number : 10 Question Id : 80089423265 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

$f(x)=Sin^{-1}x+\cos^{-1}x+Tan^{-1}\frac{1}{x}+Tan^{-1}x$ then the area (in square units) bounded by y = f(x), y-axis and the line $2y=\pi(x+1)$ is

Options :

1. ✔ $\frac{\pi}{4}$

2. ✖ $\frac{\pi}{2}$

3. ✖ $\frac{\pi}{3}$

4. ✖ π

Question Number : 11 Question Id : 80089423266 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

$\left(\frac{1+i}{\sqrt{2}}\right)^8+\left(\frac{1-i}{\sqrt{2}}\right)^8=$

Options :

1. ✖ 16

2. ✖ 8

3. ✖ 4

4. ✔ 2

Question Number : 12 Question Id : 80089423267 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The maximum value of $|z|$ satisfying the equation $\frac{1}{12}(z+\bar{z})^2=1-\frac{1}{3}|z|^2$ is

Options :

1. ✖ $\sqrt{2}$

2. ✔ $\sqrt{3}$

3. ✖ 4

4. ✖ 6

Question Number : 13 Question Id : 80089423268 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If n is a positive integer, then $(-i)^{4n+3} =$

Options :

1. ✖ $2i$

2. ✖ $-i$

3. ✔ i

4. ✖ $4i$

Question Number : 14 Question Id : 80089423269 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The equation of the line passing through the point $(4, 0)$ and having intercepts in the ratio is $a: b$ is

Options :

1. ✖ $bx + ay = a$

2. ✔ $bx + ay = 4b$

3. ✖ $bx + ay = b$

4. ✖ $bx + ay = 4a$

Question Number : 15 Question Id : 80089423270 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If L_1, L_2 are the angular bisectors of the acute and obtuse angles between the lines $x-y+2=0$ and $7x+y+1=0$ then angle between L_1 and L_2 is

Options :

1. ✖ π

2. ✖ $\frac{\pi}{3}$

3. ✖ $\frac{\pi}{6}$

4. ✔ $\frac{\pi}{2}$

Question Number : 16 Question Id : 80089423271 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The equation of the line parallel to the line $x-2y+5=0$ and passing through the point P(3,5) is

Options :

1. ✖ $x-2y+15=0$

2. ✖ $x-2y+6=0$

3. ✖ $x-2y+8=0$

4. ✔ $x-2y+7=0$

Question Number : 17 Question Id : 80089423272 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The equation of the circle which touches the coordinate axes is

Options :

1. ✖ $x^2+y^2+2gx+2fy+c=0$

2. ✖ $x^2+y^2+2ax+2ay+a^2=0$

3. ✖ $x^2+y^2\pm 2gx\pm 2fy+c=0$

4. ✔ $x^2+y^2\pm 2ax\pm 2ay+a^2=0$

Question Number : 18 Question Id : 80089423273 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If $\alpha,\beta(\alpha>\beta)$ are roots of the quadratic equation $4x^2-4x-3=0$, then the equation of the circle with center $\left(\frac{\alpha}{\beta}+\frac{\beta}{\alpha},\frac{\alpha}{\beta}-\frac{\beta}{\alpha}\right)$ and radius $\alpha^2-\beta^2$ is

Options :

1. ✔ $9x^2 + 9y^2 + 60x + 48y + 128 = 0$

2. ✖ $9x^2 + 9y^2 + 60x - 48y - 128 = 0$

3. ✖ $9x^2 + 9y^2 - 60x - 48y + 128 = 0$

4. ✖ $9x^2 + 9y^2 - 60x + 48y - 128 = 0$

Question Number : 19 Question Id : 80089423274 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The equation of the tangent to the circle $x^2 + y^2 = 25$ at the point $P(3,4)$ is

Options :

1. ✖ $4x+3y-25=0$

2. ✖ $4x+3y+25=0$

3. ✔ $3x+4y-25=0$

4. ✖ $3x+4y-5=0$

Question Number : 20 Question Id : 80089423275 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

For $x^2 - 9 \neq 0$, if $y = \log\left(e^{x/2}\left(\frac{x-3}{x+3}\right)^{4/5}\right)$, then $\frac{dy}{dx}$ at $x = 1$ is equal to

Options :

1. ✖ $\frac{7}{10}$

2. ✖ $\frac{2}{5}$

3. ✔ $\frac{-1}{10}$

4. ✖ $\frac{-1}{5}$

Question Number : 21 Question Id : 80089423276 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

For $f(x) = |x^2 - 3x + 2|$, then sum of the values of $\frac{df}{dx}$ at x= 1.5 and at x = 2.5 is

Options :

1. ✔ 2

2. ✖ 6

3. ✖ 4

4. ✖ 8

Question Number : 22 Question Id : 80089423277 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

$$\frac{d^2}{dx^2}\left(\frac{1}{5x+3}\right)=$$

Options :

1. ✖ $\frac{25}{(5x+3)^3}$

2. ✔ $\frac{50}{(5x+3)^3}$

3. ✖ $\frac{125}{(5x+3)^3}$

4. ✖ $\frac{100}{(5x+3)^3}$

Question Number : 23 Question Id : 80089423278 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The curve represented by $x = t^5 - 5t^3 - 20t + 7, y = 4t^3 - 3t^2 - 18t + 3$ is increasing for all t in the interval

Options :

1. ✖ $(-2,2)$

2. ✔ $\left(-1,\frac{3}{2}\right)$

3. ✖ $\left(\frac{3}{2},2\right)$

4. ✖ (-1,2)

Question Number : 24 Question Id : 80089423279 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The equation of tangent to the curve $y^2 = 4x + 5$ at P(-1,1) is

Options :

1. ✖ $2x - y + 9 = 0$

2. ✖ $2x + y - 7 = 0$

3. ✔ $2x - y + 3 = 0$

4. ✖ $x + 2y + 9 = 0$

Question Number : 25 Question Id : 80089423280 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If at X = a, the maximum value of $(X^5)(16 - X)^{11}$ is K. Then $\frac{K}{a} =$

Options :

1. ✔ $11^{11}5^4$

2. ✖ $6^4 10^{11}$

3. ✖ $11^4 5^{11}$

4. ✖ $10^4 6^{11}$

Question Number : 26 Question Id : 80089423281 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If $u(x,y)=\text{Sin}^{-1}\left(\frac{x+y}{\sqrt{x}+\sqrt{y}}\right)$ then $x\frac{\partial u}{\partial x}+y\frac{\partial u}{\partial y}=$

Options :

1. ✖ $\frac{1}{8}\tan u$

2. ✔ $\frac{1}{2}\tan u$

3. ✖ $\frac{1}{4}\tan u$

4. ✖ $\frac{1}{3}\tan u$

Question Number : 27 Question Id : 80089423282 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If $\int \frac{2x^{18}+7x^{13}}{(x^7+x^5+1)^3}dx=\frac{x^p}{m(x^7+x^5+1)^n}+c$, then $2p-(m+n)^2=$

Options :

1. ✖ 0

2. ✖ 3

3. ✔ 12

4. ✖ 20

Question Number : 28 Question Id : 80089423283 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If $\int \frac{Sin\,2x}{Sin\,5x\,Sin\,3x}dx = A\,log\,Sin\,3\,x + Blog\,Sin\,5\,x + C$, then A + B=

Options :

1. ✖ 2/7

2. ✖ 1/3

3. ✖ -2/5

4. ✔ 2/15

Question Number : 29 Question Id : 80089423284 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

$$\int \frac{1}{9x^2 - 4}dx =$$

Options :

1. ✖

$\frac{1}{3}\log\left|\frac{3x-2}{3x+2}\right|$

2. ✖ $\frac{1}{12}\log\left|\frac{x-2}{x+2}\right|$

3. ✔ $\frac{1}{12}\log\left|\frac{3x-2}{3x+2}\right|$

4. ✖ $\frac{1}{2}\log\left|\frac{3x-2}{3x+2}\right|$

Question Number : 30 Question Id : 80089423285 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If $I_1 = \int_0^1 a^x dx$, $I_2 = \int_0^1 a^{x^2} dx$ and $I_3 = \int_0^1 a^{x^3} dx$ then

Options :

1. ✔ $I_1 > I_2 > I_3$ when a > 1

2. ✖ $I_1 < I_2 < I_3$, when a > 1

3. ✖ $I_1 > I_2 > I_3$, when 0 < a < 1

4. ✖ $I_1 < I_2 < I_3$ for any a > 0

Question Number : 31 Question Id : 80089423286 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The area (in square units) bounded by the curve $x^2 = 4y$, the x-axis and the line $x = 2$ is

Options :

1. ✖ $\frac{1}{3}$

2. ✔ $\frac{2}{3}$

3. ✖ $\frac{5}{3}$

4. ✖ $\frac{7}{3}$

Question Number : 32 Question Id : 80089423287 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$\lim_{n\to\infty}\left(\frac{1}{n}+\frac{1}{n+1}+\frac{1}{n+2}+\ldots..\frac{1}{2n}\right) =$

Options :

1. ✖ 0

2. ✖ ½

3. ✖ e^2

4. ✔ $log2$

Question Number : 33 Question Id : 80089423288 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Using Trapezoidal rule with $h=\frac{1}{2}$, the value of the integral $\int_0^1 \frac{1}{3+2x}dx=$

Options :

1. ✖ $\frac{11}{120}$

2. ✖ $\frac{21}{120}$

3. ✔ $\frac{31}{120}$

4. ✖ $\frac{41}{120}$

Question Number : 34 Question Id : 80089423289 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The differential equation representing the family of curves $y^2 = 2c(x+\sqrt{c})$ (c is a positive arbitrary Constant) is of

Options :

1. ✖ degree 1

2. ✖ order 2

3. ✔ degree 3

4. ✖ degree 2

Question Number : 35 Question Id : 80089423290 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The general solution of $\frac{dy}{dx} = \frac{x^2+4x-9}{x+2}$ is

Options :

1. ✔ $y = \frac{(x+2)^2}{2} - 13\,log|x+2| + c$

2. ✖ $y = (x+2)^2 - 5\,log|x+2| + c$

3. ✖ $y = \frac{x^2}{2} + 2x + 13\,log|x+2| + c$

4. ✖ $y = \frac{x^2}{2} + 2x - 5\,log|x+2| + c$

Question Number : 36 Question Id : 80089423291 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✖

$e^{\frac{x}{y}} = \log|cx|$

2. ✔ $e^{\frac{y}{x}} = \log|cx|$

3. ✖ $e^{\frac{x^2}{y}} = \log|cx|$

4. ✖ $e^{\frac{x}{y^2}} = \log|cx|$

Question Number : 37 Question Id : 80089423292 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

$\frac{dy}{dx} = \frac{f(x,y)}{g(x,y)}$ is a homogeneous differential equation. The substitution y = Vx (V is a function of x) reduces the given differential equation to $\frac{dV}{dx} = \frac{1}{x}G(V)$. Then G(V)=

Options :

1. ✔ $\frac{f(1,V)}{g(1,V)} - V$

2. ✖ $\frac{f(V)}{g(V)} - V$

3. ✖ $\frac{f(1,V)}{g(1,V)} + V$

4. ✖ $\frac{f(V)}{g(V)} + V$

Question Number : 38 Question Id : 80089423293 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✖ $y = e^{-x}(A + Bx) + \frac{e^{-x}Sin\ x}{5}$

2. ✔ $y = e^{-x}(A + Bx - sinx)$

3. ✖ $y = e^{-x}(A + Bx) + \frac{e^{-x}cos\ x}{5}$

4. ✖ $y = e^{-x}(A + Blogx) + \frac{e^{-x}Sin\ x}{5}$

Question Number : 39 Question Id : 80089423294 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The particular integral of the differential equation $\frac{d^2y}{dx^2} - 2\frac{dy}{dx} + y = xe^x \sin x$ is

Options :

1. ✔ $-e^x(x\sin x + 2\cos x)$

2. ✖ $-e^x(x\cos x + 2\sin x)$

3. ✖ $e^x(x\sin x - 2\cos x)$

4. ✖ $e^x(x\cos x - 2\sin x)$

Question Number : 40 Question Id : 80089423295 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If $L\{t^2e^{-2t}\} = f(s)$, then $f(4) =$

Options :

1. ✖ $\frac{1}{54}$

2. ✖ $\frac{1}{27}$

3. ✔ $\frac{1}{108}$

4. ✖ $\frac{1}{216}$

Question Number : 41 Question Id : 80089423296 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If $L[f(t)] = \frac{9s^2-12s+15}{(s-1)^3}$, then $L\left[f\left(\frac{t}{3}\right)\right] =$

Options :

1. ✔ $9\left[\frac{27s^2-36s+5}{(3s-1)^3}\right]$

2. ✖ $9\left[\frac{s^2-4s+15}{(s-3)^3}\right]$

3. ✖ $3\left[\frac{27s^2-12s+5}{(3s-1)^3}\right]$

4. ✖ $27\left[\frac{s^2-4s+15}{(s-3)^3}\right]$

Question Number : 42 Question Id : 80089423297 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

$$\int_0^\infty \frac{e^{-5t}-e^{-8t}}{t}dt =$$

Options :

1. ✖ $\log\left(\frac{4}{5}\right)$

2. ✖ $\log\left(\frac{2}{5}\right)$

3. ✔ $\log\left(\frac{8}{5}\right)$

4. ✖ $\log\left(\frac{7}{5}\right)$

Question Number : 43 Question Id : 80089423298 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If $F_a(s) = L(\sin at)$ then, $L\left(\frac{e^{-3t}\sin 2t}{t}\right) =$

Options :

1. ✖ $\int_s^\infty F_2(s)ds$

2. ✔ $\int_s^\infty F_2(s+3)ds$

3. ✖ $\int_s^\infty \frac{d}{ds}(F_2(s))ds$

4. ✖ $-\int_s^\infty \frac{d}{ds}(F_2(s-3))ds$

Question Number : 44 Question Id : 80089423299 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

$$L^{-1}\left\{\frac{6s}{s^2+2s-8}\right\}$$

Options :

1. ✖ $4e^{-4t}+2e^{-2t}$

2. ✖ $4e^{4t}+2e^{-2t}$

3. ✖ $4e^{4t}+2e^{2t}$

4. ✔ $4e^{-4t}+2e^{2t}$

Question Number : 45 Question Id : 80089423300 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If L(f(t)) =F(S), L(g(t)) = G(s), then $L^{-1}(F(s)\,G(s))$=

Options :

1. ✔ $\int_0^t f(p)g(t-p)\,dp$

2. ✖ $\int_0^t f(t)g(t)\,dt$

3. ✖ $\int_0^t f(t)g(t-p)\,dp$

4. ✖ $\int_0^t f(tp)g(t/p)\,dt$

Question Number : 46 Question Id : 80089423301 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $y = y(t)$ satisfies the differential equation $\frac{d^2y}{dt^2} - 2\frac{dy}{dt} + y = e^t$ together with the conditions $y(0) = 2, \frac{dy}{dt} = -1$ at $t = 0$, then $y(t) =$

Options :

1. ✖ $e^t\left(2 + 3t + \frac{1}{2}t^2\right)$

2. ✔ $e^t\left(2 - 3t + \frac{1}{2}t^2\right)$

3. ✖ $e^t\left(2 - 3t - \frac{1}{2}t^2\right)$

4. ✖ $e^t\left(2 + 3t - \frac{1}{2}t^2\right)$

Question Number : 47 Question Id : 80089423302 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$$\int_0^{2\pi} \cos^2(5x)dx =$$

Options :

1. ✔ π

2. ✖ 2π

3. ✖ 4π

4. ✖ 5π

Question Number : 48 Question Id : 80089423303 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The Fourier series of $x-x^2$ in the interval $(-\pi, \pi)$ contains

Options :

1. ✖ only sine terms

2. ✖ onlycosine terms

3. ✔ both sine and cosine terms

4. ✖ negative integral powers of x, but not trigonometric functions

Question Number : 49 Question Id : 80089423304 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If $f(x) = x^3$ when $0 \le x \le 4, f(x+4) = f(x), \forall x$ and its Fourier series is $f(x) = \sum_{n=0}^{\infty}(a_n \cos\frac{n\pi x}{2} + b_n \sin\frac{n\pi x}{2})$, then $b_1 =$

Options :

1. ✖ $\frac{128}{\pi^2} + \frac{192}{\pi^4}$

2. ✖ $\frac{128}{\pi^2}$

3. ✖ $\frac{192}{\pi^2} + \frac{192}{\pi^4}$

4. ✔ $\frac{96}{\pi^3} - \frac{128}{\pi}$

Question Number : 50 Question Id : 80089423305 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If $f(x) = \begin{cases} 0, & -2 \le x < 0 \\ 1, & 0 \le x < 2 \end{cases}$, $f(x+4) = f(x)\ \forall x$ and $f(x) = \sum_{n=0}^{\infty}(a_n \cos\frac{n\pi x}{2} + b_n \sin\frac{n\pi x}{2})$, then $b_2 =$

Options :

1. ✖ $\frac{2}{\pi}$

2. ✖ $\frac{4}{\pi}$

3. ✖ $\frac{3}{\pi}$

4. ✔ 0

Physics

Section Id :	800894455
Section Number :	2
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	25
Number of Questions to be attempted :	25
Section Marks :	25
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Sub-Section Number :	1
Sub-Section Id :	800894521
Question Shuffling Allowed :	Yes

Question Number : 51 Question Id : 80089423306 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The Dimensional formula of potential energy is

Options :

1. ✖ MLT^{-2}

2. ✔ ML^2T^{-2}

3. ✖ ML^2T^{-1}

4. ✖ MLT^{-1}

Question Number : 52 Question Id : 80089423307 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In case of a superconductor one among the following statement is incorrect

Options :

1. ✖ The resistivity drops suddenly at transition temperature

2. ✔ It is paramagnetic below it's transition temperature

3. ✖ Specific heat discontinuity occurs at transition temperature

4. ✖ It will become diamagnetic below it's transition temperature

Question Number : 53 Question Id : 80089423308 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following statements is true regarding super conductors?

Options :

1. ✖ super conductors have high resistance at very low temperatures, and they are perfectly diamagnetic

2. ✖ super conductors have high resistance at very low temperatures, and they are perfectly ferro magnetic

3. ✖ super conductors have zero resistance at very low temperatures, and they are perfectly para magnetic

4. ✔ super conductors have zero resistance at very low temperatures, and they are perfectly dia magnetic

Question Number : 54 Question Id : 80089423309 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If the temperature remains constant the volume of the gas will

Options :

1. ✔ Increase with decrease in pressure

2. ✖ Decrease with decrease in pressure

3. ✖ Not change with change in pressure

4. ✖ Increase with increase in pressure

Question Number : 55 Question Id : 80089423310 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A gas at a pressure of 150 Nm^{-2} is compressed to half its original volume. If the expansion is isothermal, the final pressure will be

Options :

1. ✖

100 Nm^{-2}

2. ✖ 150 Nm^{-2}

3. ✖ 200 Nm^{-2}

4. ✔ 300 Nm^{-2}

Question Number : 56 Question Id : 80089423311 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The first law of thermodynamics is the law of

Options :

1. ✖ Conservation of mass

2. ✖ Conservation of momentum

3. ✔ Conservation of energy

4. ✖ Conservation of temperature

Question Number : 57 Question Id : 80089423312 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Two equal vectors have a resultant equal to either. The angle between them will be

Options :

1. ✖ 30°

2. ✖ 90°

3. ✔ 120°

4. ✖ 180°

Question Number : 58 Question Id : 80089423313 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The vectors $\vec{A}$ *and* $\vec{B}$ are such that if $|\vec{A}+\vec{B}|=|\vec{A}-\vec{B}|$ then the angle between $\vec{A}$ *and* $\vec{B}$ will be

Options :

1. ✔ 90°

2. ✖ 0°

3. ✖ 180°

4. ✖ $\text{Cos}\theta$

Question Number : 59 Question Id : 80089423314 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The value of λ for which the two vectors:

$3\hat{\imath}-\hat{\jmath}+\hat{k}$ and $2\hat{\imath}+\lambda\hat{\jmath}+2\hat{k}$ are perpendicular is

Options :

1. ✖ -8

2. ✔ 8

3. ✖ 4

4. ✖ 2

Question Number : 60 Question Id : 80089423315 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In case of an oblique projection, which statement is true with regard to its velocity components?

Options :

1. ✖ Vertical and horizontal components change

2. ✖ Vertical and horizontal components do not change

3. ✔ Vertical component changes but horizontal component remains constant

4. ✖ Vertical component remains constant but horizontal component changes

Question Number : 61 Question Id : 80089423316 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

An insect can jump a maximum horizontal distance of 20 cm. If it spends negligible time on the ground, with what speed can it travel along the road.

Options :

1. ✖ 0.1 m/s

2. ✔ 1.0 m/s

3. ✖ 0.14 m/s

4. ✖ 1.4 m/s

Question Number : 62 Question Id : 80089423317 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A person holds a book weighing 1 kg between his hands and keeps it from falling by pressing his hands together. If the minimum force exerted by each hand horizontally is 49 N, what will be the coefficient of friction between the book and his hands

Options :

1. ✖ 1

2. ✖ 10

3. ✔ 0.1

4. ✖ 0.01

Question Number : 63 Question Id : 80089423318 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A ball rolled on ice with a velocity of 8 ms^{-1} comes to rest after travelling 40 m. If the value of g = 9.8 ms^{-2}, the coefficient of friction is

Options :

1. ✖ 0.328

2. ✔ 0.0816

3. ✖ 0.0416

4. ✖ 0.258

Question Number : 64 Question Id : 80089423319 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which one of the following is not the unit of energy?

Options :

1. ✔ Kilowatt

2. ✖ Kilowatt hour

3. ✖ Joule

4. ✖ Newton meter

Question Number : 65 Question Id : 80089423320 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The principle of conservation of energy states that

Options :

1. ✔ Sum of all types of energies is conserved

2. ✖ Total mechanical energy is conserved

3. ✖ Total kinetic energy is conserved

4. ✖ Total potential energy is conserved

Question Number : 66 Question Id : 80089423321 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

For a body moving with simple harmonic motion, the number of cycles per second, is known as its

Options :

1. ✖ Oscillation

2. ✖ Amplitude

3. ✖ Periodic time

4. ✔ Frequency

Question Number : 67 Question Id : 80089423322 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The acceleration of particle executing S.H.M. when it is at mean position is

Options :

1. ✖ Infinite

2. ✔ Zero

3. ✖ Maximum

4. ✖ Unity

Question Number : 68 Question Id : 80089423323 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If the length of a simple pendulum executing simple harmonic motion is increased by 69% then the percentage increases in the time period of the simple pendulum of increased length will be

Options :

1. ✔ 30 %

2. ✖ 330 %

3. ✖ 3.0 %

4. ✖ 33 %

Question Number : 69 Question Id : 80089423324 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The longitudinal waves can not

Options :

1. ✖ Have a unique wave velocity

2. ✔ Be polarized

3. ✖ Have a unique wavelength

4. ✖ Transmit energy

Question Number : 70 Question Id : 80089423325 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A cinema hall has a volume of 2800 m^3 and total surface absorption is 225 O.W.U. The reverberation time will be

Options :

1. ✖ 1.90 s

2. ✔ 1.99 s

3. ✖ 2.25 s

4. ✖ 2.40 s

Question Number : 71 Question Id : 80089423326 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Stress is

Options :

1. ✖ External force

2. ✔ Internal resistive force

3. ✖ Axial force

4. ✖ Radial force

Question Number : 72 Question Id : 80089423327 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following statements is false?

Options :

1. ✔ Viscosity is independent of the surface area of liquid layers in contact

2. ✖ Viscosity of a fluid changes with temperature

3. ✖ The dimensions of viscosity is same as that of the product of pressure and time

4. ✖ The viscous force is directed opposite to the direction of motion of liquid

Question Number : 73 Question Id : 80089423328 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A wire having uniform diameter (d) and length (l) has a resistance R. Another wire having same material but having diameter 2d and length 4l, then it's resistance will be

Options :

1. ✔ R

2. ✖ R/2

3. ✖ R/4

4. ✖ 2R

Question Number : 74 Question Id : 80089423329 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In a meter bridge experiment, the ratio of the left gap resistance to right gap resistance is 2:3. The balance point from left is

Options :

1. ✔ 40 cm

2. ✖ 45 cm

3. ✖ 60 cm

4. ✖ 65 cm

Question Number : 75 Question Id : 80089423330 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A magnet when placed at right angles to the earth's horizontal magnetic induction 2×10^{-5} Wb/m^2 experiences a couple of 2×10^{-5} Nm. Then, the magnetic moment of magnet is

Options :

1. ✔ $1\ Am^2$

2. ✖ $1.5\ Am^2$

3. ✖ $5\ Am^2$

4. ✖ $7.5\ Am^2$

Chemistry

Section Id :	800894456
Section Number :	3
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	25
Number of Questions to be attempted :	25
Section Marks :	25
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Sub-Section Number :	1
Sub-Section Id :	800894522
Question Shuffling Allowed :	Yes

Question Number : 76 Question Id : 80089423331 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

When an electron drops from 4s orbital to 2s orbital in an hydrogen atom, the frequency of radiation emitted belong to which region (Rydberg constant = $1.097 \times 10^{7}\ m^{-1}$)

Options :

1. ✖ Ultraviolet region

2. ✔ Visible region

3. ✖ Infrared region

4. ✖ Microwave region

Question Number : 77 Question Id : 80089423332 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is true about ionic compounds?

Options :

1. ✖ Ionic compounds conduct electricity when dissolved in water

2. ✖ Ionic compounds are not soluble in water.

3. ✖ Ionic compounds are crystalline solids.

4. ✔ Ionic compounds conduct electricity when dissolved in water & Ionic compounds are crystalline solids.

Question Number : 78 Question Id : 80089423333 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Oxidation state of Fe in Fe_3O_4 is

Options :

1. ✔ 8/3

2. ✖ 3/8

3. ✖ 3/2

4. ✖ – 3/8

Question Number : 79 Question Id : 80089423334 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a sample of salt water, NaCl would be considered as?

Options :

1. ✖ Solution

2. ✔ Solute

3. ✖ Solvent

4. ✖ Solvation

Question Number : 80 Question Id : 80089423335 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

30 mL of 0.1 m Mohr's salt solution is titrated in acid medium against 0.1M $K_2Cr_2O_7$ solution taken in the burette. The volume of $K_2Cr_2O_7$ solution required at the end point after the addition of suitable indicator is

Options :

1. ✖ 30 mL

2. ✔ 5 mL

3. ✖ 10 mL

4. ✖ 15 mL

Question Number : 81 Question Id : 80089423336 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What volume of 12.6 M HCl must be added to enough water to prepare 5.00 liters of 3.00M HCl?

Options :

1. ✖ 21.0 L

2. ✖ 0.840 L

3. ✔ 1.19 L

4. ✖ 7.56 L

Question Number : 82 Question Id : 80089423337 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Choose the correct statement from given options below for the equilibrium reaction

$HClO_4 + H_2O \leftrightarrow H_3O^+ + ClO_4^-$

Options :

1. ✖ $HClO_4$ is the conjugate acid of H_2O

2. ✖ H_3O^+ is the conjugate base of H_2O

3. ✖ H_2O is the conjugate acid of H_3O^+

4. ✔ ClO_4^- is the conjugate base of $HClO_4$

Question Number : 83 Question Id : 80089423338 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Three unknown solutions are given with pH value of 6, 8 & 9.5 respectively. Which solution will contain the maximum OH^- ion?

Options :

1. ✖ Solution sample-1

2. ✖ Solution sample-2

3. ✔ Solution sample-3

4. ✖ Data are insufficient

Question Number : 84 Question Id : 80089423339 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

An example of acidic buffer solution is a mixture of

Options :

1. ✖ NH_4OH, NH_4Cl

2. ✖ HCl, NaCl

3. ✖ CH_3COOH, NH_4OH

4. ✔ CH_3COOH, CH_3COONa

Question Number : 85 Question Id : 80089423340 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A mineral is called an ore if?

Options :

1. ✖ Metal present in mineral is precious

2. ✔ Metal can be extracted profitably from mineral

3. ✖ Metal cannot be extracted

4. ✖ metal has good malleability

Question Number : 86 Question Id : 80089423341 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Concentration of sulphide ore will be done by

Options :

1. ✔ Froath floatation

2. ✖ Roasting

3. ✖ Sedimentation

4. ✖ Smelting

Question Number : 87 Question Id : 80089423342 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

One of the following will be occurred at the anode, during the electrolysis of fused NaCl.

Options :

1. ✖ Na^- gets reduced

2. ✔ Cl^- gets oxidized

3. ✖ Na^- gets oxidized

4. ✖ Na^+ gets oxidized

Question Number : 88 Question Id : 80089423343 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Electrolysis of dilute aqueous NaCl solution was carried out by passing 10 milliampere current. The time required to liberate 0.01 mol of H_2 gas at the cathode is?

Options :

1. ✖ 9.65×10^4 s

2. ✖ 28.95×10^4 s

3. ✔ 19.3×10^4 s

4. ✖ 38.6×10^4 s

Question Number : 89 Question Id : 80089423344 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Standard reduction potential value of saturated calomel electrode is

Options :

1. ✖ + 0.268

2. ✖ + 0.6994

3. ✖ + 0.0242

4. ✔ + 0.2415

Question Number : 90 Question Id : 80089423345 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In the protection of Iron structure by sacrificial anode method , the metal used as anode

Options :

1. ✖ Silver

2. ✖ Zinc

3. ✔ Magnesium

4. ✖ Lead

Question Number : 91 Question Id : 80089423346 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In electrolytic conductors, the conductance is due to

Options :

1. ✖ Free movement of electrons

2. ✖ Restricted movement of electrons

3. ✖ Restricted movement of ions

4. ✔ Free movement of ions

Question Number : 92 Question Id : 80089423347 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Choose the incorrect statement from the following options.

Options :

1. ✖ In hard water, the detergent values of soap are decreased

2. ✔ In the presence of dissolved hardness producing salts, the boiling point of water is decreased

3. ✖ The water which does not form lather with soap is called hard water

4. ✖ The hard water consists of calcium and magnesium salts in dissolved state

Question Number : 93 Question Id : 80089423348 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In high pressure boilers, scale formation can be avoided by adding

Options :

1. ✖ Na_2CO_3

2. ✔ Sodium phosphate

3. ✖ NaOH

4. ✖ Sodium meta Aluminate

Question Number : 94 Question Id : 80089423349 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The basis of reverse osmosis is

Options :

1. ✖ Osmotic pressure is greater than the hydrostatic pressure

2. ✖ Osmotic pressure is equal to the hydrostatic pressure

3. ✔ Hydrostatic pressure is greater than the osmotic pressure

4. ✖ Osmotic pressure does not exist

Question Number : 95 Question Id : 80089423350 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A thermoplastic is formed by the phenomenon of

Options :

1. ✔ Chain polymerization

2. ✖ Condensation polymerization

3. ✖ Chlorination

4. ✖ Nitration

Question Number : 96 Question Id : 80089423351 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Natural rubber is a polymer of?

Options :

1. ✖ 1, 1-Dimethylbutadiene

2. ✔ 2-Methyl-1, 3-butadiene

3. ✖ 2-Chlorobuta-1,3-diene

4. ✖ 2-Chlorobut-2-ene

Question Number : 97 Question Id : 80089423352 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Identify the correct statement from the following

Options :

1. ✖ A good fuel should undergo spontaneous combustion

2. ✖ A good fuel should have high moisture content

3. ✔ A good fuel should have high calorific value

4. ✖ A good fuel should have high content of non-combustible matter

Question Number : 98 Question Id : 80089423353 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Laboratory gas is obtained by cracking

Options :

1. ✖ Coal

2. ✖ Diesel oil

3. ✖ Petrol

4. ✔ Kerosene oil

Question Number : 99 Question Id : 80089423354 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In sewage when the concentration of decomposable organic matter is large, then

Options :

1. ✔ BOD value is high

2. ✔ COD value is high

3. ✖ BOD value is low

4. ✖ COD value is low

Note: For this question, ambiguity is found in question/answer. Candidate will get full marks for this question if any of the correct options are chosen.

Question Number : 100 Question Id : 80089423355 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

From the following options given below, what is the major non-renewable energy usage in India ?

Options :

1. ✔ Coal

2. ✖ Petroleum and other liquids

3. ✖ Natural gas

4. ✖ Nuclear

Mining Engineering

Section Id :	800894457
Section Number :	4
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	100
Number of Questions to be attempted :	100
Section Marks :	100
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Sub-Section Number :	1
Sub-Section Id :	800894523
Question Shuffling Allowed :	Yes

Question Number : 101 Question Id : 80089423356 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The coal seams are said to be contiguous if the partition between the seams is less than

Options :

1. ✖ 15 m

2. ✔ 9 m

3. ✖ 10 m

4. ✖ 12 m

Question Number : 102 Question Id : 80089423357 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A gallery which is driven along an apparent dip is called:

Options :

1. ✔ Cross Cut

2. ✖ Dip

3. ✖ Drift

4. ✖ Level

Question Number : 103 Question Id : 80089423358 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Select the correct order with respect to the core sizes:

Options :

1. ✖ AX>BX>EX>NX

2. ✔ NX>BX>AX>EX

3. ✖ AX>BX>NX>EX

4. ✖ EX>AX>BX>NX

Question Number : 104 Question Id : 80089423359 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The pressure acting on diamond drill bit and rate of advance of drill bit is controlled by

Options :

1. ✖ Gear mechanism

2. ✔ Feed mechanism

3. ✖ Control mechanism

4. ✖ Rotary mechanism

Question Number : 105 Question Id : 80089423360 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Bore hole survey means

Options :

1. ✔ Measurement of deviation of bore hole

2. ✖ Measurement of depth of bore hole

3. ✖ Measurement of time taken to drill hole

4. ✖ Identification of properties of bore hole

Question Number : 106 Question Id : 80089423361 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The depth of the hole is restricted to 50% - 60% of the width of the drift in which of the following cut?

Options :

1. ✖ Burn Cut

2. ✖ Drag Cut

3. ✔ Pyramid Cut

4. ✖ Fan Cut

Question Number : 107 Question Id : 80089423362 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Permitted explosives used in coal for solid blasting is

Options :

1. ✖ P3

2. ✔ P5

3. ✖ P2

4. ✖ P1

Question Number : 108 Question Id : 80089423363 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Relieving hole should be drilled at least how many meters away from the misfired hole in underground working?

Options :

1. ✔ 0.3

2. ✖ 0.2

3. ✖ 0.5

4. ✖ 1

Question Number : 109 Question Id : 80089423364 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The tool which is used for cleaning and detection of crack in a shot hole is ___

Options :

1. ✖ Crimper

2. ✔ Scraper

3. ✖ Pricker

4. ✖ Primer

Question Number : 110 Question Id : 80089423365 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In ANFO explosive the % of diesel oil should be mixed with AN for effective oxygen balance explosive is

Options :

1. ✔ 5 to 6% by Weight

2. ✖ 5 to 6% by Volume

3. ✖ 6 to 7% by Weight

4. ✖ 6 to 7% by Volume

Question Number : 111 Question Id : 80089423366 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The methane concentration should not exceed how much in percentage in the return of a ventilation district?

Options :

1. ✖ 0.25%

2. ✔ 0.75%

3. ✖ 0.45%

4. ✖ 1.25%

Question Number : 112 Question Id : 80089423367 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Ignition temperature of methane is:

Options :

1. ✖ 100-1250°C

2. ✔ 923-1023°C

3. ✖ 675-975°C

4. ✖ 423-1000°C

Question Number : 113 Question Id : 80089423368 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following range of methane-air mixture is necessary to cause explosion?

Options :

1. ✖ 4.4% to 8.4%

2. ✖ 7.4% to 8.8%

3. ✔ 5.4% to 14.8%

4. ✖ 10.4% to 16.8%

Question Number : 114 Question Id : 80089423369 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The method of shaft sinking adopted in strata having alternate tough and loose ground

Options :

1. ✖ Open Caisson

2. ✖ Pneumatic Caisson

3. ✔ Forced drop

4. ✖ Cementation

Question Number : 115 Question Id : 80089423370 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The device used to prevent undue swinging of bucket in shaft sinking is

Options :

1. ✖ Spider

2. ✖ Kibble

3. ✖ Scaffold

4. ✔ Rider

Question Number : 116 Question Id : 80089423371 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The age of the earth is about:

Options :

1. ✔ 4.6 billion years

2. ✖ 4.6 million years

3. ✖ 46 million years

4. ✖ 0.46 billion years

Question Number : 117 Question Id : 80089423372 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The point of origin of an earthquake below the earth's surface is called _____

Options :

1. ✖ Isocenter

2. ✖ Iso point

3. ✔ Focus

4. ✖ Epicenter

Question Number : 118 Question Id : 80089423373 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The hardness of quartz in Mohr's scale is:

Options :

1. ✖ 9

2. ✖ 6

3. ✖ 8

4. ✔ 7

Question Number : 119 Question Id : 80089423374 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following mineral has high specific gravity?

Options :

1. ✖ Quartz

2. ✔ Barites

3. ✖ Gypsum

4. ✖ Talc

Question Number : 120 Question Id : 80089423375 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Vesicular structure found in ---------

Options :

1. ✔ Igneous rocks

2. ✖ Sedimentary rocks

3. ✖ Metamorphic rocks

4. ✖ Clay mineral

Question Number : 121 Question Id : 80089423376 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The type of fault which gives an illusion of formation of two seams separated by distance is

Options :

1. ✖ Normal fault

2. ✖ Dip fault

3. ✖ Oblique fault

4. ✔ Reverse fault

Question Number : 122 Question Id : 80089423377 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The mineral deposit in solid rock is called as:

Options :

1. ✖ Ore

2. ✔ Lode

3. ✖ Gangue

4. ✖ Lithology

Question Number : 123 Question Id : 80089423378 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Wenner configuration is a part of ----------

Options :

1. ✖ Self potential method

2. ✔ Electrical resistivity method

3. ✖ Electromagnetic method

4. ✖ Equi-potential method

Question Number : 124 Question Id : 80089423379 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Brown coal is also known as ----------

Options :

1. ✖ Anthracite

2. ✖ Bituminous

3. ✖ Peat

4. ✔ Lignite

Question Number : 125 Question Id : 80089423380 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The oil can be trapped in which of the following:

Options :

1. ✖ Structure traps only

2. ✔ Both structure and stratigraphic traps

3. ✖ stratigraphic traps only

4. ✖ Movable traps

Question Number : 126 Question Id : 80089423381 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The sudden release of elastic strain energy stored in the pillars results violent burst of coal pillars is called:

Options :

1. ✖ Main fall

2. ✖ Air blast

3. ✔ Bumps

4. ✖ Rock burst

Question Number : 127 Question Id : 80089423382 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The local fall of roof is delayed and when the fall takes place it affects a large area and results in

Options :

1. ✖ Induced fall

2. ✖ Normal fall

3. ✖ Main fall

4. ✔ Air blast

Question Number : 128 Question Id : 80089423383 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In deciding the size of the panel, one of the factors to be considered is:

Options :

1. ✖ Depth of the seam

2. ✔ Incubation period

3. ✖ Output required

4. ✖ Thickness of the seam

Question Number : 129 Question Id : 80089423384 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The dimensions of coal pillar extracted by Bord and Pillar method are 25 m x 25 m center to center. The width of the road way driven is 3 m. The percentage of extraction of coal is

Options :

1. ✖ 30.5 %

2. ✖ 29.5 %

3. ✖ 25.5 %

4. ✔ 22.5 %

Question Number : 130 Question Id : 80089423385 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which method of extraction of pillars is preferable in case of Bord and Pillar Mining with stowing?

Options :

1. ✖ Diagonal line of extraction

2. ✔ Step diagonal line of extraction

3. ✖ Straight line of extraction

4. ✖ Knife edge method of extraction

Question Number : 131 Question Id : 80089423386 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

What is the maximum roof exposure allowed for caving during depillaring by Bord & Pillar method?

Options :

1. ✖ 120 to 150 Sq.m

2. ✖ 90 to 100 Sq.m

3. ✖ 30 to 50 Sq.m

4. ✔ 60 to 70 Sq.m

Question Number : 132 Question Id : 80089423387 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Generally Longwall method of working is adopted for

Options :

1. ✔ Thin and moderate seams

2. ✖ Moderate seams

3. ✖ Thick seams

4. ✖ Very thick seams

Question Number : 133 Question Id : 80089423388 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following machine is NOT generally used in Longwall mining?

Options :

1. ✖ Shearer

2. ✖ Armoured flexible conveyor

3. ✖ Stage loader

4. ✔ LHD

Question Number : 134 Question Id : 80089423389 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A longwall panel of length 100 m is extracted by Shearer. The thickness of the seam is 2.5m. The web or width of the face cut by the shearer is 0.8 m. Given the density of coal is 1.4 t / m^3. The cycles of operation of the shearer in a shift of 8 hours are 4. The amount coal produced per shift is

Options :

1. ✖ 1000 tons

2. ✖ 1100 tons

3. ✔ 1120 tons

4. ✖ 1150 tons

Question Number : 135 Question Id : 80089423390 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is related to longwall advancing?

Options :

1. ✖ Stook

2. ✔ Stable

3. ✖ Robbing

4. ✖ Splitting Gallery

Question Number : 136 Question Id : 80089423391 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Blasting Gallery Method is suitable, when the thickness of the seam is:

Options :

1. ✖ 2m to 3m

2. ✖ 3m to 5 m

3. ✖ 5.5m to 8 m

4. ✔ 8.5m to 11 m

Question Number : 137 Question Id : 80089423392 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The blast holes in Blasting Gallery method are inclined ___ degree from the vertical towards goaf

Options :

1. ✖ 20

2. ✔ 35

3. ✖ 45

4. ✖ 60

Question Number : 138 Question Id : 80089423393 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In Blasting Gallery method the supports are installed up to _____ m from the face

Options :

1. ✖ 30

2. ✖ 35

3. ✔ 40

4. ✖ 45

Question Number : 139 Question Id : 80089423394 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is being used / followed in Blasting Gallery Method for drilling and blasting?

Options :

1. ✖ Wedge cut pattern

2. ✖ Coromant cut pattern

3. ✔ Ring hole pattern

4. ✖ Burn cut pattern

Question Number : 140 Question Id : 80089423395 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The extent of subsidence in a given area is given by

Options :

1. ✖ Angle of break

2. ✔ Angle of draw

3. ✖ Seam inclination

4. ✖ Depth of the seam

Question Number : 141 Question Id : 80089423396 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following is not a thick seam method?

Options :

1. ✖ Blasting gallery

2. ✔ Long wall

3. ✖ Inclined slicing

4. ✖ Integral caving

Question Number : 142 Question Id : 80089423397 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

With reference to subsidence, which of the following is determined by angle of draw?

Options :

1. ✖ Effects of strains on surface

2. ✔ Size of area of influence

3. ✖ Depth of area of influence

4. ✖ Volume of coal extracted

Question Number : 143 Question Id : 80089423398 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Horizontal slicing applicable for seam of thickness more than

Options :

1. ✖ 5 meters

2. ✖ 10 meters

3. ✖ 12 meters

4. ✔ 15 meters

Question Number : 144 Question Id : 80089423399 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The thickness of coal seam suitable to Inclined slicing is

Options :

1. ✖ 6 meters

2. ✖ 7 meters

3. ✔ 8 meters

4. ✖ 10 meters

Question Number : 145 Question Id : 80089423400 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In hydraulic mining, which of the following parameter influence the breaking of coal?

Options :

1. ✖ Thickness of seam

2. ✖ Depth of seam

3. ✖ Inclination of the seam

4. ✔ Standoff distance of nozzle from face

Question Number : 146 Question Id : 80089423401 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which one of the following is not related to surface mining?

Options :

1. ✖ Box-cut

2. ✔ Winze

3. ✖ High wall

4. ✖ Crest

Question Number : 147 Question Id : 80089423402 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

To open a mine for deep seated, the cut used is:

Options :

1. ✖ External box cut

2. ✔ Internal box cut

3. ✖ Trench

4. ✖ Deep cut

Question Number : 148 Question Id : 80089423403 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The parameters of a blast pattern are given below

Burden – 2 m, Spacing – 2 m, Bench Height – 12 m.

Sub grade drilling = 10% Bench Height.

Number of holes in each row is 10.

The volume of the material blasted in each row of blasting is _____

Options :

1. ✖ 520 m^3

2. ✖ 525 m^3

3. ✔ 528 m^3

4. ✖ $530\ m^3$

Question Number : 149 Question Id : 80089423404 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Identify the merit of inclined drilling over vertical drilling in a blasting pattern

Options :

1. ✖ Reduces the consumption of explosive

2. ✖ Improves the performance of drilling machine

3. ✔ Reduces the formation of toe

4. ✖ Reduces ground vibrations

Question Number : 150 Question Id : 80089423405 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following prime characteristic the NONEL has?

Options :

1. ✖ It has greater shock to the surrounding

2. ✔ It is noiseless in character

3. ✖ It has tremendous effect on explosion column

4. ✖ It cannot be used in a place where there is chance of stray current

Question Number : 151 Question Id : 80089423406 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In open cast mines, deck charging is adopted in blast holes when the:

Options :

1. ✖ Strata is soft

2. ✖ Strata consists of watery zones

3. ✔ Strata consists of alternate band(s) of hard and soft rocks

4. ✖ Plaster shooting

Question Number : 152 Question Id : 80089423407 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following excavator is preferred to be used for a bench height of 30 m or more?

Options :

1. ✖ Bucket wheel excavator

2. ✖ Shovel

3. ✖ Front end loader

4. ✔ Dragline

Question Number : 153 Question Id : 80089423408 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following factor is considered for calculation of cycle time of any excavating machine such as shovel, dragline etc.?

Options :

1. ✖ Swell factor

2. ✖ Bucket factor

3. ✔ Swing factor

4. ✖ Drill factor

Question Number : 154 Question Id : 80089423409 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Maximum permissible gradient for the haul road in opencast mines is:

Options :

1. ✖ 12^0

2. ✖ 13^0

3. ✔ 14^0

4. ✖ 15^0

Question Number : 155 Question Id : 80089423410 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following component of environmental impact on the ecosystem comprises both flora and fauna?

Options :

1. ✔ Biota

2. ✖ Mill tailings

3. ✖ Mine tailings

4. ✖ Heavy metals

Question Number : 156 Question Id : 80089423411 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Given Young's Modulus (E) , Rigidity Modulus (G) , Bulk Modulus (K). The relation between three modulus of elasticity is

Options :

1. ✔ $E = 9\ KG/\ (3K + G)$

2. ✖ $K = 9\,EG / (3E + G)$

3. ✖ $G = 9\,KE / (3K + E)$

4. ✖ $E = 4\,KG / (2K + G)$

Question Number : 157 Question Id : 80089423412 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The elasticity of rock is given by which of the following law?

Options :

1. ✔ Hooke's law

2. ✖ Coloumb's law

3. ✖ Euler's law

4. ✖ Mohr's law

Question Number : 158 Question Id : 80089423413 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Plane strain loading means, normal strain in that direction is:

Options :

1. ✔ Zero

2. ✖ Always negative value

3. ✖ Always positive value

4. ✖ Sometimes negative and sometimes positive

Question Number : 159 Question Id : 80089423414 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In stress distribution around narrow opening of a deposit , the excess of pressure acting on the edges of opening

is known as

Options :

1. ✖ Overlying strata pressure

2. ✔ Abutment pressure

3. ✖ Immediate roof pressure

4. ✖ Main roof pressure

Question Number : 160 Question Id : 80089423415 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Formula to determine tensile strength of a specimen by Brazilian test is

Options :

1. ✖

P / Π D t

2. ✔ 2P / Π D t

3. ✖ P/ D

4. ✖ 2P / D

Question Number : 161 Question Id : 80089423416 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

When unconfined compressive strength of a rock specimen is determined, patterns of cracks developed will be:

Options :

1. ✖ Horizontal

2. ✖ Diagonal

3. ✔ Vertical

4. ✖ No specific direction / pattern

Question Number : 162 Question Id : 80089423417 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following method is used to measure internal stresses inside a rock mass?

Options :

1. ✔ Flat-jack method

2. ✖ Brazilian test

3. ✖ Shear test

4. ✖ Tri-axial test

Question Number : 163 Question Id : 80089423418 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The instrument used to measure the separation between the layers of overlying strata is

Options :

1. ✖ Flat Jack

2. ✖ Remote Convergence Recorder

3. ✖ Over Coring technique

4. ✔ Tell tale Bore hole extensometer

Question Number : 164 Question Id : 80089423419 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In a hydraulic prop, hydraulic oil is a combination of:

Options :

1. ✖ 25% oil emulsion and 75% of water

2. ✖ 50% oil emulsion and 50% of water

3. ✔ 5% oil emulsion and 95% of water

4. ✖ 1% oil emulsion and 99% of water

Question Number : 165 Question Id : 80089423420 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following is an advantage of steel support over timber support?

Options :

1. ✖ Easy to install

2. ✖ Prior indication of roof weighting

3. ✖ Less cost

4. ✔ Can be recovered and re-use

Question Number : 166 Question Id : 80089423421 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A mine plan is drawn to a scale of 1 cm = 20 m. The R.F of the plan is

Options :

1. ✔ 1 : 2000

2. ✖ 1 : 1000

3. ✖ 1 : 3000

4. ✖ 1 : 2500

Question Number : 167 Question Id : 80089423422 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

When the length of chain along a slope of θ is L, the correction for slope required is:

Options :

1. ✖ $L(1-\sin\theta)$

2. ✖ $L(1-\sin^2\theta)$

3. ✖ $L(1-\cos^2\theta)$

4. ✔ $L(1-\cos\theta)$

Question Number : 168 Question Id : 80089423423 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The Fore Bearing of a line is $60^0\ 30'20''$ and its Back bearing is 242^0 . The value of local attraction is

Options :

1. ✔ $1^0\ 29'\ 40''$

2. ✖ $1^0\ 30'\ 20''$

3. ✖ $0^0\ 29'\ 40''$

4. ✖ $2^0\ 20'\ 00''$

Question Number : 169 Question Id : 80089423424 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The method of leveling used to determine the level difference between two surveying station present on

the banks of a river is

Options :

1. ✖ Simple Leveling

2. ✖ Compound Leveling

3. ✖ Precise Leveling

4. ✔ Reciprocal Leveling

Question Number : 170 Question Id : 80089423425 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

By which rule, the total error in latitude and departure is distributed in proportion to the length

of the sides?

Options :

1. ✖ Centesimal rule

2. ✖ Reversal point rule

3. ✖ Transit rule

4. ✔ Bowditch rule

Question Number : 171 Question Id : 80089423426 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The distance between the midpoint of long chord and midpoint of curve is known as

Options :

1. ✖ Length of chord

2. ✖ Length of tangent

3. ✔ Raise

4. ✖ Apex distance

Question Number : 172 Question Id : 80089423427 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The Exact method of correlation survey is also known as

Options :

1. ✖ Weisbach Triangle method

2. ✖ Weis Quadrilateral method

3. ✖ Direct method of correlation

4. ✔ Co-planation method

Question Number : 173 Question Id : 80089423428 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Fixed hair and movable hair method are the classifications of which method of tachometry?

Options :

1. ✖ Inclined sights method

2. ✖ Tangential method

3. ✔ Stadia method

4. ✖ Scaling method

Question Number : 174 Question Id : 80089423429 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The angle made by rock bed with horizontal plane is known as:

Options :

1. ✔ True dip

2. ✖ Joint

3. ✖ Strike

4. ✖ Bed Plane

Question Number : 175 Question Id : 80089423430 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The EDM works based on the principle of

Options :

1. ✖ The reflected energy generated by the electromagnetic waves

2. ✖ Total time taken by electromagnetic waves in travelling the distance

3. ✖ The change in frequency of the electromagnetic waves

4. ✔ The Phase difference between the transmitted and the reflected electromagnetic waves

Question Number : 176 Question Id : 80089423431 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Identify the type of rope lay which offers more resistance to wear and tear

Options :

1. ✖ Ordinary Lay

2. ✔ Lang's Lay

3. ✖ Regular Lay

4. ✖ Normal Lay

Question Number : 177 Question Id : 80089423432 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The space factor for locked coil ropes is

Options :

1. ✖ 40 to 50 %

2. ✖ 50 to 60%

3. ✔ 75%

4. ✖ 80%

Question Number : 178 Question Id : 80089423433 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is used in endless rope haulage?

Options :

1. ✔ Clifton Pulley

2. ✖ Sheave

3. ✖ Two drums

4. ✖ Tail rope

Question Number : 179 Question Id : 80089423434 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Joining of two wire ropes is called:

Options :

1. ✔ Splicing

2. ✖ Interlocking

3. ✖ Gassing

4. ✖ Capping

Question Number : 180 Question Id : 80089423435 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a belt conveyor system "Pull Chord" is used for

Options :

1. ✖ To increase the angle of contact

2. ✖ Loading the material on to conveyor

3. ✔ To stop the conveyor from any point along the conveyor

4. ✖ To discharge the material on one side of conveyor

Question Number : 181 Question Id : 80089423436 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The reverse direction rotation of belt conveyor can be prevented by

Options :

1. ✔ Hold back

2. ✖ Back stay

3. ✖ Stop back

4. ✖ Reverse direction switch

Question Number : 182 Question Id : 80089423437 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The limiting gradient of Locomotive haulage system is

Options :

1. ✖ 1/10

2. ✖ 1/12

3. ✔ 1/15

4. ✖ 1/18

Question Number : 183 Question Id : 80089423438 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The safe distance for brakes in locomotive is:

Options :

1. ✖ 30 m

2. ✔ 60 m

3. ✖ 90 m

4. ✖ 15 m

Question Number : 184 Question Id : 80089423439 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In a centrifugal pump, water will not be delivered to:

Options :

1. ✖ Low discharge head

2. ✔ Lack of priming

3. ✖ Partial obstruction at discharge outlet

4. ✖ Direction of rotation is wrong

Question Number : 185 Question Id : 80089423440 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If the speed of a centrifugal pump is doubled, then the quantity of water delivered by the pump

Options :

1. ✔ Increases by 2 times

2. ✖ Decreases by 2 times

3. ✖ Increases by 4 times

4. ✖ Decreases by 4 times

Question Number : 186 Question Id : 80089423441 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In Longwall face machinery Shearer is mounted on

Options :

1. ✖ Lump breaker

2. ✔ AFC

3. ✖ Gate belt

4. ✖ Support frame

Question Number : 187 Question Id : 80089423442 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

DERD shearer consists of how many drums?

Options :

1. ✖ Four

2. ✖ Three

3. ✔ Two

4. ✖ One

Question Number : 188 Question Id : 80089423443 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Find the odd man out of the following equipments

Options :

1. ✖ Underground transformer

2. ✖ Gate end panel

3. ✖ Drill panel

4. ✔ Underground telephones

Question Number : 189 Question Id : 80089423444 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Stage loader is placed in between:

Options :

1. ✖ AFC and shearer

2. ✖ AFC and powered supports

3. ✔ AFC and Gate belt conveyor

4. ✖ AFC and power pack

Question Number : 190 Question Id : 80089423445 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The telephones used in underground coal mines are of

Options :

1. ✔ Intrinsically safe

2. ✖ Flame proof

3. ✖ Approved apparatus by DGMS

4. ✖ Both intrinsically safe and flame proof

Question Number : 191 Question Id : 80089423446 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The haulage signaling system used in underground coal mines is operated at a voltage of

Options :

1. ✔ 30 V

2. ✖ 100 V

3. ✖ 110 V

4. ✖ 230 V

Question Number : 192 Question Id : 80089423447 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In Cage winding, the over winding is prevented by which of the following:

Options :

1. ✔ Detaching safety hook

2. ✖ Breakage of rope

3. ✖ Convergence of guides

4. ✖ Thickening of guides

Question Number : 193 Question Id : 80089423448 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If the dimensions of the cage used in a mine is 3m x 1 m , the capacity of the cage as per regulations is ____

persons

Options :

1. ✖ 10

2. ✔ 15

3. ✖ 20

4. ✖ 30

Question Number : 194 Question Id : 80089423449 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The type of rope most suitable for balancing rope in Keope winding is:

Options :

1. ✖ Regular lay

2. ✖ Locked coil

3. ✔ Flattened strand

4. ✖ Spiral strand

Question Number : 195 Question Id : 80089423450 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which one of the following attachment is RELATED to friction winding

Options :

1. ✖ Safety hook

2. ✖ Safety catches

3. ✔ Tapered guides

4. ✖ Keps

Question Number : 196 Question Id : 80089423451 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In order to understand complexity of worker, the management experts have developed several models.

Which of the following model was developed on motivation of people by Edger H Shein?

Options :

1. ✖ Situation model

2. ✖ Trait model

3. ✔ Behavioral model

4. ✖ Democratic model

Question Number : 197 Question Id : 80089423452 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The modern mining industries are being organized under

Options :

1. ✖ Line organization

2. ✖ Staff organization

3. ✖ Matrix organization

4. ✔ Line and staff organization

Question Number : 198 Question Id : 80089423453 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following is not a process tools for TQM systems?

Options :

1. ✖ Process flow analysis

2. ✔ Plier

3. ✖ Histograms

4. ✖ Control charts

Question Number : 199 Question Id : 80089423454 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A worker re-employed after a break of service of one year or more shall undergo

Options :

1. ✖ Basic training course

2. ✔ Refresher course

3. ✖ Development course

4. ✖ Special training course

Question Number : 200 Question Id : 80089423455 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following is a slack time in a PERT network?

Options :

1. ✖ The endpoint that represents the completion of a major activity

2. ✖ The longest or most time-consuming sequence of events and activities

3. ✖ The time or resource required to progress from one event to another

4. ✔ The amount of time an individual activity can be delayed without delaying the whole Project