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 :	Mining Engineering 20th June 2023 Shift 2
Duration :	180
Total Marks :	200
Display Marks:	No
Share Answer Key With Delivery Engine :	Yes
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
Change Font Color :	No
Change Background Color :	No
Change Theme :	No
Help Button :	No
Show Reports :	No

Show Progress Bar :	No
Is this Group for Examiner? :	No
Examiner permission :	Cant View
Show Progress Bar? :	No

Mathematics

Section Id :	418099392
Section Number :	1
Mandatory or Optional :	Mandatory
Number of Questions :	50
Section Marks :	50
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Is Section Default? :	null

Question Number : 1 Question Id : 41809919603 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $A\begin{bmatrix}0 & 1\\2 & -1\end{bmatrix}=\begin{bmatrix}2 & 1\\-1 & 0\end{bmatrix}$, where A is a square matrix of order 2 then A =

Options :

1. ✖ $\begin{bmatrix}2 & 1\\0 & 0\end{bmatrix}$

2. ✖ $\begin{bmatrix}0 & 1\\2 & -1\end{bmatrix}$

3. ✖ $\begin{bmatrix} 2 & 1 \\ -1 & 0 \end{bmatrix}$

4. ✔ $\begin{bmatrix} 2 & 1 \\ -1/2 & -1/2 \end{bmatrix}$

Question Number : 2 Question Id : 41809919604 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the matrix $A = \begin{bmatrix} 2 & 3 \\ 5 & -1 \end{bmatrix}$ is expressed as the sum of a symmetric and a skew symmetric. Then the symmetric matrix is

Options :

1. ✖ $\begin{bmatrix} 2 & 1 \\ 2 & 4 \end{bmatrix}$

2. ✖ $\begin{bmatrix} 2 & 4 \\ 4 & 1 \end{bmatrix}$

3. ✔ $\begin{bmatrix} 2 & 4 \\ 4 & -1 \end{bmatrix}$

4. ✖ $\begin{bmatrix} 4 & 2 \\ 2 & -1 \end{bmatrix}$

Question Number : 3 Question Id : 41809919605 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If A is any square matrix of order n, then $|adj\ A|$ is equal to

Options :

1. ✔ $|A|^{n-1}$

2. ✖ $|A|^{n}$

3. ✖ $|A|$

4. ✖ $\frac{1}{|A|}$

Question Number : 4 Question Id : 41809919606 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $A-B=\begin{bmatrix}1 & 0\\ 0 & -1\end{bmatrix}$, $A+B=\begin{bmatrix}3 & 4\\ 2 & 5\end{bmatrix}$ then $AB=$

Options :

1. ✔ $\begin{bmatrix}4 & 10\\ 3 & 8\end{bmatrix}$

2. ✖ $\begin{bmatrix}4 & 3\\ 10 & 8\end{bmatrix}$

3. ✖ $\begin{bmatrix}4 & -10\\ -3 & 8\end{bmatrix}$

4. ✖ $\begin{bmatrix}4 & 10\\ -3 & 8\end{bmatrix}$

Question Number : 5 Question Id : 41809919607 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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

Options :

1. ✖ -1

2. ✔ 0

3. ✖ 2

4. ✖ 1

Question Number : 6 Question Id : 41809919608 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $\frac{x+4}{(x^2-4)(x+1)} = \frac{A}{(x-2)} + \frac{B}{(x+2)} + \frac{C}{(x+1)}$ then $A + B - C =$

Options :

1. ✖ -1

2. ✖ 0

3.

✔ 2

4. ✖ 1

Question Number : 7 Question Id : 41809919609 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $\frac{x^2-10x+1}{(x^2-5x+6)(x-1)} = \frac{A}{(x-1)} + \frac{B}{(x-2)} + \frac{-4}{(x-3)}$ then A + B

Options :

1. ✖ -2

2. ✖ 3

3. ✔ 5

4. ✖ 4

Question Number : 8 Question Id : 41809919610 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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

Options :

1. ✖ $\frac{1-\cos x}{\sin x}$

2. ✔ $\frac{1+\cos x}{\sin x}$

3. ✖ $\frac{1+\sin x}{\cos x}$

4. ✖ $\frac{1-\sin x}{\cos x}$

Question Number : 9 Question Id : 41809919611 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The least value of $2\sin^2\theta + 3\cos^2\theta$ is

Options :

1. ✖ 1

2. ✔ 2

3. ✖ 3

4. ✖ 5

Question Number : 10 Question Id : 41809919612 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

The value of $tan\ 10^o + tan\ 70^o - tan\ 50^o$ is

Options :

1. ✖ $-\sqrt{3}$

2. ✔ $\sqrt{3}$

3. ✖ $\frac{1}{\sqrt{2}}$

4. ✖ $-\frac{1}{\sqrt{2}}$

Question Number : 11 Question Id : 41809919613 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of $tan\ 3A - tan\ 2A - tan\ A$ is equal to

Options :

1. ✔ $tan\ 3A\ \tan 2A\ \tan A$

2. ✖ $-\ tan\ 3A\ \tan 2A\ \tan A$

3. ✖ $\tan A\ \tan 2A - \tan 2A\ \ tan3A - tan3A\ tanA$

4. ✖ $\tan A\ \tan 2A + \tan 2A\ \ tan3A - tan3A\ tanA$

Question Number : 12 Question Id : 41809919614 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of $sin\ \frac{\pi}{14}\ sin\ \frac{3\pi}{14}\ sin\ \frac{5\pi}{14}$ is

Options :

1. ✖ $\frac{1}{16}$

2. ✔ $\frac{1}{8}$

3. ✖ $\frac{1}{2}$

4. ✖ 1

Question Number : 13 Question Id : 41809919615 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $tan^2\theta + \sec\theta = 5$ then the value of $\cos\theta$ is

Options :

1. ✔ $\frac{-1}{3}\ or\ \frac{1}{2}$

2. ✖ $\frac{-11}{12}$ *or* $\frac{1}{2}$

3. ✖ $\frac{13}{12}$ *or* $\frac{1}{3}$

4. ✖ $\frac{5}{4}$ *or* $\frac{1}{2}$

Question Number : 14 Question Id : 41809919616 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The number of solutions of the equation tan x + sec x = 2 cos x lying in the interval [0, 2π] is

Options :

1. ✖ 0

2. ✖ 1

3. ✖ 2

4. ✔ 3

Question Number : 15 Question Id : 41809919617 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

If $\cos\theta = \frac{1}{2}\left(a + \frac{1}{a}\right)$ then $cos3\theta = K(a^3 + \frac{1}{a^3})$ where K is equal to

Options :

1. ✔ $\frac{1}{2}$

2. ✖ $-\frac{1}{2}$

3. ✖ 1

4. ✖ $\frac{3}{2}$

Question Number : 16 Question Id : 41809919618 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $Sin\,\theta + Sin\,3\theta + Sin\,5\theta = 0, 0 \leq \theta \leq \frac{\pi}{2}$ then $\theta =$

Options :

1. ✔ $0, \frac{\pi}{3}$

2. ✖ $0, \frac{\pi}{2}$

3. ✖ $1, \frac{\pi}{2}$

4. ✖ $2, \frac{\pi}{3}$

Question Number : 17 Question Id : 41809919619 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of $sin^{-1}\frac{12}{13} + cos^{-1}\frac{4}{5} + tan^{-1}\frac{63}{16}$ is

Options :

1. ✖ $-\pi$

2. ✔ π

3. ✖ $tan^{-1}\frac{4}{5}$

4. ✖ $-tan^{-1}\frac{4}{5}$

Question Number : 18 Question Id : 41809919620 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $2 + i\sqrt{3}$ is a root of the equation $x^2 + px + q = 0$ where p and q are real, the (p, q) =

Options :

1. ✖ (-3, 7)

2. ✖ (-4, 9)

3. ✔ (-4, 7)

4. ✖ (-3, 9)

Question Number : 19 Question Id : 41809919621 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of $i^2 + i^4 + i^6 + \ldots (2n+1)\ terms =$

Options :

1. ✖ 1

2. ✔ -1

3. ✖ 0

4. ✖ i

Question Number : 20 Question Id : 41809919622 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The locus of the point equidistant from the points $(a,\ b)$ and $(b,\ a)$ is ___

Options :

1. ✖ $bx - ay = 0$

2. ✖ $bx + ay = 0$

3. ✖ $ax - by = 0$

4. ✔ $x - y = 0$

Question Number : 21 Question Id : 41809919623 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The point $(-1,0)$ lies on the circle $x^2 + y^2 - 4x + 8y + k = 0$. The radius of the circle is

Options :

1. ✖ 4

2. ✔ 5

3. ✖ 3

4. ✖ 2

Question Number : 22 Question Id : 41809919624 Display Question Number : Yes Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The equation of the circle whose centre is the point (1, -3) and touches the line $2x - y - 4 = 0$ is

Options :

1. ✖ $x^2 + y^2 - 4x + 8y + \frac{49}{5} = 0$

2. ✖ $x^2 + y^2 - 2x + 8y + \frac{49}{5} = 0$

3. ✔ $x^2 + y^2 - 2x + 6y + \frac{49}{5} = 0$

4. ✖ $x^2 + y^2 + 2x + 6y + \frac{49}{5} = 0$

Question Number : 23 Question Id : 41809919625 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The line $y = mx + 1$ is a tangent to the parabola $y^2 = 4x$ if

Options :

1. ✔ $m = 1$

2. ✖ $m = 2$

3. ✖ $m = 3$

4. ✖ $m = 4$

Question Number : 24 Question Id : 41809919626 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The angle between the tangents drawn from the origin to the parabola $y^2 = 4a(x - a)$ is

Options :

1. ✖ 30^o

2. ✖ 45^o

3. ✖ 60^o

4. ✔ 90^o

Question Number : 25 Question Id : 41809919627 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The length of the latus rectum and eccentricity of the ellipse $25x^2 + 16y^2 = 400$ is

Options :

1. ✔ $(\frac{32}{5}, \frac{3}{5})$

2. ✖

$(\frac{32}{5}, \frac{-3}{5})$

3. ✖ $(\frac{-32}{5}, \frac{3}{5})$

4. ✖ $(\frac{-32}{5}, \quad \frac{-3}{5})$

Question Number : 26 Question Id : 41809919628 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $y = tan^{-1}\frac{\cos x}{1+\sin x}$ then $\frac{dy}{dx} =$

Options :

1. ✖ $\frac{1}{2}$

2. ✔ $\frac{-1}{2}$

3. ✖ 0

4. ✖ 1

Question Number : 27 Question Id : 41809919629 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $y = 10^{\log \sin x} + \tan h^{-1}(\sqrt{x})$ then $\frac{dy}{dx} =$

Options :

1. ✔ $10^{\log \sin x} \log_e 10 \cot x + \frac{1}{2\sqrt{x}} \sec h^2(\sqrt{x})$

2. ✖ $10^{\log \sin x} \log_e 10 \cot x - \frac{1}{2\sqrt{x}} \sec h^2(\sqrt{x})$

3. ✖ $10^{\log \sin x} \log_e 10 \tan x + \frac{1}{2\sqrt{x}} \sec h^2(\sqrt{x})$

4. ✖ $10^{\log \sin x} \log_e 10 \tan t x - \frac{1}{2\sqrt{x}} \sec h^2(\sqrt{x})$

Question Number : 28 Question Id : 41809919630 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $f(x) = \begin{cases} 3^x \cdot 4, & for\ x < 0 \\ 2a + x, & for\ x \geq 0 \end{cases}$ is continuous at $x = 0$ then a =

Options :

1. ✖ 0

2. ✔ 2

3. ✖ 1

4. ✖ 3

Question Number : 29 Question Id : 41809919631 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $x = a(\cos\theta + \theta \sin\theta), y = a(\sin\theta - \theta \cos\theta)$ then the value of $\frac{dy}{dx}$ $at\ \theta = \frac{\pi}{4}$ is

Options :

1. ✖ 0

2. ✖ $\frac{1}{\sqrt{3}}$

3. ✔ 1

4. ✖ $\sqrt{3}$

Question Number : 30 Question Id : 41809919632 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $u = \frac{x^3+y^3}{x-y}$ and if $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} = ku, then\ k = \_\_$

Options :

1. ✖ 3

2. ✖ -3

3. ✔ 2

4. ✖ -1

Question Number : 31 Question Id : 41809919633 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The maximum value of $\frac{logx}{x}, 0 < x < \infty$ is

Options :

1. ✖ e

2. ✔ $\frac{1}{e}$

3. ✖ 1

4. ✖ $e+1$

Question Number : 32 Question Id : 41809919634 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The maximum value of the function $2x^3 - 3x^2 - 12x + 4$ is

Options :

1. ✖ 13

2. ✖ 12

3. ✔ 11

4. ✖ 10

Question Number : 33 Question Id : 41809919635 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $u = f(x + ay) + g(x - ay)$, then $\frac{\partial^2 u}{\partial y^2}$ is equal to

Options :

1. ✖ $\frac{\partial^2 u}{\partial x^2}$

2. ✖ $a\frac{\partial^2 u}{\partial x^2}$

3. ✔ $a^2\frac{\partial^2 u}{\partial x^2}$

4. ✖ $\frac{\partial^2 u}{\partial x \partial y}$

Question Number : 34 Question Id : 41809919636 Display Question Number : Yes Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the curves $y^2 = 4(x+1)$ and $y^2 = k(9-x)$ cut orthogonally at (1, 1), then k =

Options :

1. ✔ 1

2. ✖ - 1

3. ✖ 2

4. ✖ 9

Question Number : 35 Question Id : 41809919637 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The stationary point and the corresponding stationary value of the function $f(x) = x^3 - 3x^2 - 9x + 22$ is

Options :

1. ✖ (1, 27)

2. ✔ (-1, 27)

3. ✖ (-1, 29)

4. ✖ (-1, 25)

Question Number : 36 Question Id : 41809919638 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$\int e^x \left(\frac{2+\sin 2x}{1+\cos 2x}\right) dx =$$

Options :

1. ✖ $e^x \sec x + c$

2. ✔ $e^x \tan x + c$

3. ✖ $e^x \cot x + c$

4. ✖ $e^x \operatorname{cosec} x + c$

Question Number : 37 Question Id : 41809919639 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$\int_0^{\pi} \frac{1}{5+4\cos x} dx =$$

Options :

1. ✖ $\frac{\pi}{2}$

2. ✔ $\frac{\pi}{3}$

3. ✖ $\frac{\pi}{4}$

4. ✖ π

Question Number : 38 Question Id : 41809919640 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The length of the arc of the curve $y = \log \sec x$ from $x = 0$ to $x = \frac{\pi}{3}$ is

Options :

1. ✔ $\log(2+\sqrt{3})$

2. ✖ $\log(2-\sqrt{3})$

3. ✖ $\log(1+\sqrt{3})$

4. ✖ $\log(1-\sqrt{3})$

Question Number : 39 Question Id : 41809919641 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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

Options :

1. ✔ $\frac{20}{3}$

2. ✖ $-\frac{20}{3}$

3. ✖ $\frac{10}{3}$

4. ✖ $\frac{15}{3}$

Question Number : 40 Question Id : 41809919642 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$\int \frac{1}{e^x+e^{-x}}\,dx =$

Options :

1. ✖ $\log(e^x + e^{-x}) + C$

2. ✔ $tan^{-1}e^x + C$

3. ✖ $\frac{1}{e^x+e^{-x}} + C$

4. ✖ $cot^{-1}e^x + C$

Question Number : 41 Question Id : 41809919643 Display Question Number : Yes Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $\int \frac{x^3}{\sqrt{(x^2+1)}}\,dx = A\,(x^2+1)^{\frac{3}{2}} - B\,(x^2+1)^{\frac{1}{2}} + c$ then A + B =

Options :

1. ✖ $-\frac{3}{4}$

2. ✖ $\frac{2}{3}$

3. ✔ $\frac{4}{3}$

4. ✖ $\frac{5}{4}$

Question Number : 42 Question Id : 41809919644 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $S_n = \int_0^{\pi/2} \frac{\sin(2n-1)x}{\sin x}\,dx$ and n is an integer then $S_{n+1} - S_n$ =

Options :

1. ✖ $-\frac{\pi}{2}$

2. ✔ 0

3. ✖ 1

4. ✖ $\frac{\pi}{2}$

Question Number : 43 Question Id : 41809919645 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $f(x) = \begin{cases} x^2, & for \quad 0 \le x < 1 \\ \sqrt{x}, & for \quad 1 < x \le 2 \end{cases}$, then $\int_0^2 f(x)\,dx =$

Options :

1. ✖ $\left(\frac{4\sqrt{2}+1}{3}\right)$

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

3. ✔ $\left(\frac{4\sqrt{2}-1}{3}\right)$

4. ✖ $\left(\frac{-4\sqrt{2}-1}{3}\right)$

Question Number : 44 Question Id : 41809919646 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The number of arbitrary constants in a general solution of second order differential equation contains

Options :

1. ✖ Zero

2. ✖ One

3. ✔ Two

4. ✖ Three

Question Number : 45 Question Id : 41809919647 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The general solution of $\frac{x\,dx+y\,dy}{x^2+y^2} = 0$ is

Options :

1. ✖ $\log(x+y) = c$

2. ✔ $\log(x^2+y^2) = c$

3. ✖ $\log(xy) = c$

4. ✖ $\log(x-y) = c$

Question Number : 46 Question Id : 41809919648 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The integrating factor for the differential equation $(x+1)\frac{dy}{dx} - y = e^{3x}(x+1)^2$ is _____

Options :

1. ✔ $\frac{1}{x+1}$

2. ✖ $x+1$

3. ✖ $\frac{1}{x^2+1}$

4. ✖ x^2+1

Question Number : 47 Question Id : 41809919649 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The Particular Integral of $(D^2 - 2D + 1)y = \cos hx$ is

Options :

1. ✔ $\frac{x^2e^x}{4} + \frac{e^{-x}}{8}$

2. ✖ $\frac{x^2e^{-x}}{4} + \frac{e^x}{8}$

3. ✖ $\frac{x^2e^x}{4} - \frac{e^{-x}}{8}$

4. ✖

$\frac{x^2e^{-x}}{4} - \frac{e^x}{8}$

Question Number : 48 Question Id : 41809919650 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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

Options :

1. ✖ $4xy = x^3 + 3$

2. ✔ $4xy = x^4 + 3$

3. ✖ $4xy = y^3 + 3$

4. ✖ $4xy = y^4 + 3$

Question Number : 49 Question Id : 41809919651 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The general solution of the differential equation $\frac{d^4y}{dx^4} + 2\frac{d^2y}{dx^2} + y = 0$ is

Options :

1. ✔ $y = (c_1 + c_2x)\sin x + (c_3 + c_4x)\cos x$

2. ✖ $y = (c_1 \sin x + c_2 \cos x + x \sin x + x \cos x)$

3. ✖ $y = (c_1 \sin x + c_2 \cos x + c_3 \tan x + c_4 \cot x)$

4. ✖ $y = (c_1 \sin x + c_2 \cos x + c_3 x + c_4)$

Question Number : 50 Question Id : 41809919652 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The general solution of $(D^2 - 4)y = \sin 3x$ is

Options :

1. ✖ $c_1 e^{-2x} + c_2 e^{2x} + \frac{1}{13}\sin 3x$

2. ✔ $c_1 e^{-2x} + c_2 e^{2x} - \frac{1}{13}\sin 3x$

3. ✖ $c_1 e^{-2x} + c_2 e^{2x} - \frac{1}{5}\sin 3x$

4. ✖ $c_1 e^{-2x} + c_2 e^{2x} + \frac{1}{5}\sin 3x$

Physics

Section Id :	418099393
Section Number :	2
Mandatory or Optional :	Mandatory
Number of Questions :	25
Section Marks :	25
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Is Section Default? :	null

Question Number : 51 Question Id : 41809919653 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the force (F), velocity (V) and time (T) are taken as fundamental units,

then the dimensions of mass are

Options :

1. ✔ $[FV^{-1}T]$

2. ✖ $[FVT^{-1}]$

3. ✖ $[FV^{-1}T^{-1}]$

4. ✖ $[FVT^{-2}]$

Question Number : 52 Question Id : 41809919654 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the units of force and velocity are doubled, then the units of power will

Options :

1. ✖ be halved

2. ✖ be doubled

3. ✔ be quadrupled

4. ✖ remain unaffected.

Question Number : 53 Question Id : 41809919655 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The magnitude of vector $3i+2j+12k$ is given by

Options :

1. ✔ $\sqrt{157}$

2. ✖ $\sqrt{112}$

3. ✖ $\sqrt{213}$

4. ✖ $9\sqrt{3}$

Question Number : 54 Question Id : 41809919656 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A vector makes equal angle with the positive direction of all the three coordinate axes. Then each angle is equal to

Options :

1. ✖ $Cos^{-1}(-1/3)$

2. ✖ $Cos^{-1}(-2/3)$

3. ✔ $Cos^{-1}(1/\sqrt{3})$

4. ✖ $Cos^{-1}(2/3)$

Question Number : 55 Question Id : 41809919657 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Four bodies P, Q, R& S are projected with equal velocities having angle of projection 15 ,30 ,45 &60 with the horizontal plane respectively. The body having low horizontal range is

Options :

1. ✖

Q

2. ✔ P

3. ✖ S

4. ✖ R

Question Number : 56 Question Id : 41809919658 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Co-efficient of rolling friction is _____ Co-efficient of sliding friction.

Options :

1. ✖ Equal to

2. ✖ Greater than

3. ✔ Smaller than

4. ✖ Some times greater and some times smaller than

Question Number : 57 Question Id : 41809919659 Display Question Number : Yes Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A body is thrown horizontally from the top of a tower of 20 m height. It touches the ground at a distance of 10 m from the foot of the tower. The initial velocity of the body is($g=10ms^{-2}$)

Options :

1. ✖ $2.5\ ms^{-1}$

2. ✔ $5\ ms^{-1}$

3. ✖ $10\ ms^{-1}$

4. ✖ $20\ ms^{-1}$

Question Number : 58 Question Id : 41809919660 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A 10 Newton force is applied on a body produce in it an acceleration of $2\ ms^{-2}$. The mass of the body is given by

Options :

1. ✖ 15 kg

2. ✖ 20 kg

3. ✖ 10 kg

4. ✔ 5 kg

Question Number : 59 Question Id : 41809919661 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The horizontal range and maximum height of a projectile are equal. The angle of projection of particle is given by

Options :

1. ✔ $\theta = \tan^{-1} 4$

2. ✖ $\theta = \tan^{-1}(1/4)$

3. ✖ $\theta = \tan^{-1} 2$

4. ✖ $\theta = 45^0$

Question Number : 60 Question Id : 41809919662 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The displacement of a particle moving in a straight line is given by

$x=2t^2+t+5$, where x is expressed in meter and t in seconds. The acceleration

at t=2s is

Options :

1. ✖ $10ms^{-2}$

2. ✖ $8ms^{-2}$

3. ✔ $4ms^{-2}$

4. ✖ $15ms^{-2}$

Question Number : 61 Question Id : 41809919663 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A position-dependant force, $F = 8 – 4x + 3x^2$ N acts on a body of mass 2 kg,

and displaces it from x = 0 to x = 5 m. The work done is

Options :

1. ✔ 115 J

2. ✖ 110 J

3. ✖ 250 J

4. ✖ 270 J

Question Number : 62 Question Id : 41809919664 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An object of mass 5 kg falls from rest through a vertical distance of 20 m and attains a velocity of 10 ms^{-1}. How much work is done by the resistance of air on the object? (Consider acceleration due to gravity, g= 10 ms^{-2}).

Options :

1. ✖ -250 J

2. ✔ -750 J

3. ✖ -500 J

4. ✖ -300 J

Question Number : 63 Question Id : 41809919665 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the heart pushes 1 cc of blood in one second under pressure 19500 Nm^{-2}, the power of heart is

Options :

1. ✔ 0.0195 W

2. ✖ 0.1950 W

3. ✖ 19.50 W

4. ✖ 9.50 W

Question Number : 64 Question Id : 41809919666 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is a necessary condition for simple harmonic motion?

Options :

1. ✖ proportionality between acceleration and velocity

2. ✔ proportionality between restoring force and displacement

3. ✖ constant time period

4. ✖ constant acceleration

Question Number : 65 Question Id : 41809919667 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The phase, at a given time 't', of a particle undergoing simple harmonic motion describes

Options :

1. ✖ only the direction of motion of the particle at time t

2. ✖ only the position of the particle at time t

3. ✔ both the position and direction of the particle at time t

4. ✖ only about the wavelength of the particle at time t

Question Number : 66 Question Id : 41809919668 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The length of a second's pendulum at the surface of the earth is

Options :

1. ✔ 100 cm

2. ✖ 98 cm

3. ✖ 98 m

4. ✖ 100 m

Question Number : 67 Question Id : 41809919669 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The reverberation time of a room is one second. What will be the reverberation time for another room having all the dimensions double that of the first room

Options :

1. ✖ $\frac{1}{2}$ Sec

2. ✔ 2 Sec

3. ✖ $\frac{1}{4}$ Sec

4. ✖ 4 Sec

Question Number : 68 Question Id : 41809919670 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Calculate the beat frequency if the interfering wave frequencies are 500Hz and 1000Hz respectively.

Options :

1. ✖ 1500 Hz

2. ✖ 250 Hz

3. ✖ 750 Hz

4. ✔ 500 Hz

Question Number : 69 Question Id : 41809919671 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Every gas behaves as an ideal gas at

Options :

1. ✖ high temperature and high pressure

2. ✖ Low temperature and low pressure

3. ✔ High temperature and low pressure

4. ✖

High pressure and low temperature

Question Number : 70 Question Id : 41809919672 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A perfect Carnot engine utilizes an ideal gas and works between the temperatures 227°C and 127°C. If the work output of the engines is 10^4 J, then the amount of heat received from the source will be

Options :

1. ✖ $1x10^4 J$

2. ✖ $3x10^4 J$

3. ✔ $5x10^4 J$

4. ✖ $4x10^4 J$

Question Number : 71 Question Id : 41809919673 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For an adiabatic process of an ideal gas, the value of $\frac{dp}{p}$ is equal to

Options :

1. ✔

$-\gamma\frac{dv}{v}$

2. ✖ $-\gamma\frac{v}{dv}$

3. ✖ $\frac{dv}{v}$

4. ✖ $-\gamma^2\frac{dv}{v}$

Question Number : 72 Question Id : 41809919674 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A system is given 400 calories of heat and 1000 joule of work is done by the system, then the change in internal energy of the system will be

Options :

1. ✔ 680 Joule

2. ✖ 680 erg

3. ✖ 860 Joule

4. ✖

-860 Joule

Question Number : 73 Question Id : 41809919675 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A perfect gas at 27°c is heated at constant pressure, so as to triple its volume. The temperature of the gas is

Options :

1. ✖ 627 K

2. ✔ 900 K

3. ✖ 300 K

4. ✖ 427 K

Question Number : 74 Question Id : 41809919676 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Work function of a metal is 10 eV. Photons of 20 eV are bombarded on it. The photoelectric threshold frequency will be

Options :

1. ✔ equal to $\frac{10}{h}$

2. ✖ greater than $\frac{10}{h}$

3. ✖ less than $\frac{10}{h}$

4. ✖ greater than or equal to $\frac{10}{h}$

Question Number : 75 Question Id : 41809919677 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Superconducting material exhibits

Options :

1. ✖ zero conductivity & diamagnetism

2. ✖ zero resistivity & paramagnetism

3. ✖ infinite conductivity & paramagnetism

4. ✔ zero resistivity & diamagnetism

Chemistry

Section Id :	418099394
Section Number :	3
Mandatory or Optional :	Mandatory
Number of Questions :	25
Section Marks :	25
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Is Section Default? :	null

Question Number : 76 Question Id : 41809919678 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a hydrogen atom, if the energy of an electron in the ground state is 13.6 eV, then that in the 2nd excited state is

Options :

1. ✔ 1.51 eV

2. ✖ 3.02 eV

3. ✖ 6.04 eV

4. ✖ 1.36 eV

Question Number : 77 Question Id : 41809919679 Display Question Number : Yes Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following sets of quantum numbers is correct for an electron present in 4f orbital?

Options :

1. ✖ $n = 4, l = 4, m = -4, s = -½$

2. ✖ $n = 3, l = 2, m = -2, s = +½$

3. ✖ $n = 4, l = 3, m = +4, s = -½$

4. ✔ $n = 4, l = 3, m = +1, s = +½$

Question Number : 78 Question Id : 41809919680 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following statements in relation to the hydrogen atom is true?

Options :

1. ✖ 3s and 3p orbitals are of lower energy than 3d orbital

2. ✔ 3s, 3p and 3d orbitals all have the same energy

3. ✖ 3p orbital is lower in energy than 3d orbital

4. ✖ 3s orbital is lower in energy than 3p orbital

Question Number : 79 Question Id : 41809919681 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Variable valency is shown by

Options :

1. ✖ s-block elements

2. ✖ s- and p- block elements

3. ✔ p- and d-block elements

4. ✖ All elements

Question Number : 80 Question Id : 41809919682 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The compound in which C uses its sp^3 hybrid orbitals for bond formation is

Options :

1. ✔ $(CH_3)_3CH$

2. ✖ CH_3COOH

3. ✖ CH_3CHO

4. ✖ CH_3COCH_3

Question Number : 81 Question Id : 41809919683 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The concentrated sulphuric acid that is sold commercially is 95% H_2SO_4 by weight. If the density of this commercial acid is 1.83 g cm^{-3}, the molarity of this solution is :-

Options :

1. ✖ 8.9

2. ✖ 9.8

3. ✖ 19.6

4. ✔ 18.3

Question Number : 82 Question Id : 41809919684 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The density of a solution prepared by dissolving 100 g of urea (mol. mass = 60 u) in 1000 g of water is 1.15 g/mL. The molarity of this solution is

Options :

1. ✖ 2.04

2. ✖ 1.68

3. ✖ 0.92

4. ✔ 1.73

Question Number : 83 Question Id : 41809919685 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When a crystal of a solute is introduced into a super saturated solution of the solution, which of the following is true

Options :

1. ✖ The solution becomes unsaturated

2. ✔ The excess solute crystallizes out

3. ✖ The solute dissolves

4. ✖ The solution becomes saturated

Question Number : 84 Question Id : 41809919686 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The conjugate acid of $S_2O_8^{2-}$ is

Options :

1. ✖ H_2SO_4

2. ✖ $H_2S_2O_7$

3. ✔ $HS_2O_8^-$

4. ✖ $H_2S_2O_8$

Question Number : 85 Question Id : 41809919687 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following gases on dissolution in water make the solution acidic (A) CO (B) CO_2 (C) SO_3 (D) PH_3

Options :

1. ✖ (A) and (B)

2. ✔ (B) and (C)

3. ✖ (A) and (D)

4. ✖ (C) and (D)

Question Number : 86 Question Id : 41809919688 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

On electrolysing a solution of dilute H_2SO_4 between platinum electrodes, the gas evolved at the anode and cathode are respectively

Options :

1. ✖ SO_2 and O_2

2. ✖ SO_3 and H_2

3. ✔ O_2 and H_2

4. ✖ H_2 and O_2

Question Number : 87 Question Id : 41809919689 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In an electrolytic cell, flow of electrons is from

Options :

1. ✖ cathode to anode in solution

2. ✔ cathode to anode through external supply

3. ✖ cathode to anode through internal supply

4. ✖ anode to cathode through external supply

Question Number : 88 Question Id : 41809919690 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The thermodynamic efficiency of a cell is given by

Options :

1. ✔ $nFE/\Delta H$

2. ✖ $\Delta H/\Delta G$

3. ✖ $nFE/\Delta G$

4. ✖ nFE°

Question Number : 89 Question Id : 41809919691 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

At 25 °C, the standard e.m.f. of cell having reactions involving two electron change is found to be 0.295 V. The equilibrium constant of the reaction is

Options :

1. ✖ 29.5×10^{-2}

2. ✖ 10

3. ✔ 10^{10}

4. ✖ 29.5×10^{10}

Question Number : 90 Question Id : 41809919692 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the chemical formula of Calgon

Options :

1. ✔ $[Na(PO)_3]_6$

2. ✖ $[Ca_2(P_6O_{18})]^{2-}$

3. ✖ H_2CO_3

4. ✖ $Na_2CO_3+Ca(OH)_2$

Question Number : 91 Question Id : 41809919693 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Alkalinity of water is due to the presence of _____

(A) OH^- (B) CO_3^{2-} (C) HCO_3^-

Options :

1. ✖ Only (A)

2. ✖ Both (A) and (B)

3. ✖ Both (B) and (C)

4. ✔ All the three (A), (B) and (C)

Question Number : 92 Question Id : 41809919694 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Brackish water means

Options :

1. ✖ Ground water

2. ✖ Fresh Water

3. ✖ River Water

4. ✔ Salt Water

Question Number : 93 Question Id : 41809919695 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following two metals are corrosion resistant

Options :

1. ✖ Iron and Nickel

2. ✔ Nickel and Copper

3. ✖ Copper and Molybdenum

4. ✖ Iron and Molybdenum

Question Number : 94 Question Id : 41809919696 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The coating which protects the base metal 'sacrificially' is

Options :

1. ✖ Metallic coating

2. ✔ Anodic coating

3. ✖

Metal oxide coating

4. ✖ Phosphate coating

Question Number : 95 Question Id : 41809919697 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is also known as elastomers

Options :

1. ✖ PVC

2. ✖ Nylon 6,6

3. ✔ Synthetic rubber

4. ✖ Polycarbonate

Question Number : 96 Question Id : 41809919698 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is an inorganic polymer?

Options :

1. ✔ Silicone

2. ✖

Epoxy resin

3. ✖ Polyurethane

4. ✖ Teflon

Question Number : 97 Question Id : 41809919699 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The termination step in the cationic polymerization is caused by

Options :

1. ✖ Free radical

2. ✖ cation

3. ✔ anion

4. ✖ carbene

Question Number : 98 Question Id : 41809919700 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The sulphur compounds from gasoline are removed by

Options :

1. ✖ Lead sulphate

2. ✖ Lead nitrate

3. ✖ Lead sulphide

4. ✔ Sodium plumbite

Question Number : 99 Question Id : 41809919701 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Fluoride pollution mainly affects

Options :

1. ✔ Teeth

2. ✖ Heart

3. ✖ Kidneys

4. ✖ Liver

Question Number : 100 Question Id : 41809919702 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Silicosis is caused by

Options :

1. ✖ Acid rain

2. ✔ Inhalation of aerosols

3. ✖ Inhalation of sulphurdioxide

4. ✖ Depletion of ozone

Mining Engineering

Section Id :	418099395
Section Number :	4
Mandatory or Optional :	Mandatory
Number of Questions :	100
Section Marks :	100
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Is Section Default? :	null

Question Number : 101 Question Id : 41809919703 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Young's modulus of the rock can be determined from the _____.

Options :

1. ✔ Stress-strain graph

2. ✖ Load-deformation graph

3. ✖ Shear-stress normal stress graph

4. ✖ Lateral and longitudinal stress graph

Question Number : 102 Question Id : 41809919704 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Permitted explosives are safe to use in underground coal mines because _____.

Options :

1. ✖ They have less strength

2. ✖ They have low velocity of detonation

3. ✖ They do not produce much noise during blasting

4. ✔ Special chemical is used to extinguish the spark produced during blasting

Question Number : 103 Question Id : 41809919705 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Contours are lines of equal_____ in surveying.

Options :

1. ✖ Length

2. ✔ Elevation

3. ✖ Bearing

4. ✖ Latitude

Question Number : 104 Question Id : 41809919706 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Planimeter is used for which purpose?

Options :

1. ✖ Correlation

2. ✖

Stope surveying

Photogrammetry

3. ✖

Area calculation

4. ✔

Question Number : 105 Question Id : 41809919707 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

According to CMR 2017, the percentage of inflammable gas does not exceed _____ in the general body of the return air of any ventilating district and _____ in any place in the mine.

Options :

1.0, 1.25

1. ✖

1.25, 1.75

2. ✖

0.75, 1.25

3. ✔

1.25, 1.5

4. ✖

Question Number : 106 Question Id : 41809919708 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

_____ is one of the chemicals being used in the silicatization process during shaft sinking.

Options :

1. ✔ Silicate of soda

2. ✖ Sodium chloride

3. ✖ Calcium chloride

4. ✖ Anhydrous ammonia

Question Number : 107 Question Id : 41809919709 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Sheathed explosives are _____.

Options :

1. ✖ P1 type permitted explosives

2. ✔ P2 type permitted explosives

3.

P3 type permitted explosives

✖

P4 type permitted explosives

4. ✖

Question Number : 108 Question Id : 41809919710 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A line 'AB' is having reduced bearing of S 60° E. The whole circle bearing of 'AB' line is _____.

Options :

1. ✖ 100°

2. ✖ 90°

3. ✔ 120°

4. ✖ 150°

Question Number : 109 Question Id : 41809919711 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The principle behind the wire gauge in oil flame safety lamp is _____.

Options :

1. ✖ Convection

2. ✔ Conduction

3. ✖ Electromagnetic radiation

4. ✖ Alpha radiation

Question Number : 110 Question Id : 41809919712 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Booster is being used to blast _____ .

Options :

1. ✖ Low explosives

2. ✖ Cap-sensitive explosives

3. ✔ Non-cap sensitive explosives

Judson powder explosive

4. ✖

Question Number : 111 Question Id : 41809919713 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A jaw clutch is being used in the _____.

Options :

Tail rope haulage

1. ✖

Direct rope haulage

2. ✔

Endless rope haulage

3. ✖

Main and tail rope haulage

4. ✖

Question Number : 112 Question Id : 41809919714 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Joining of two ropes is called _____.

Options :

Splicing

1. ✔

2. ✖ Capping

3. ✖ Interlocking

4. ✖ Gassing

Question Number : 113 Question Id : 41809919715 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Chasnala mine disaster is infamous because of _____.

Options :

1. ✖ Fire

2. ✔ Inundation

3. ✖ Explosion

4. ✖ Noxious gases

Question Number : 114 Question Id : 41809919716 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

_____ is the mixture of Hopkalite used for detection of CO.

Options :

1. ✖ MnO_2 and PbO

2. ✔ MnO_2 and CuO

3. ✖ MnO_2 and NaCl

4. ✖ MnO_2 and silica gel

Question Number : 115 Question Id : 41809919717 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

_____ is the appropriate apparatus used to administer pure oxygen to an unconscious person or affected by noxious gasses.

Options :

1. ✖ Smoke helmet

2. ✔ Reviving apparatus

Self-rescuer

3. ✖

SCBA

4. ✖

Question Number : 116 Question Id : 41809919718 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Dragline machine is used to handle the _____ in a coal mine.

Options :

Blasted coal

1. ✖

Blasted overburden

2. ✔

Material other than blasted coal and overburden

3. ✖

Blasted coal and overburden both

4. ✖

Question Number : 117 Question Id : 41809919719 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The minimum width of the coal pillar (centre to centre), as per CMR 2017, for a depth of 50 m with a maximum width of gallery of 4.8 m is _____.

Options :

1. ✖ 12.0 m

2. ✔ 19.5 m

3. ✖ 25.5 m

4. ✖ 35.5 m

Question Number : 118 Question Id : 41809919720 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The pull of 1.5 m obtained per blast in a driving gallery of 4.0 m X 3.0 m dimension. The total explosive consumed per blast is 36 kg. The density of the rock-mass is 2.5 t/m^3. What will be the powder factor?

Options :

1. ✖ 0.5 kg/tonne

2. ✔ 0.8 kg/tonne

3. ✖ 1.5 kg/tonne

4. ✖ 2.0 kg/tonne

Question Number : 119 Question Id : 41809919721 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The line of collimation should be _____.

Options :

1. ✔ Parallel to the axis of the bubble

2. ✖ Perpendicular to the axis of the bubble

3. ✖ Towards the magnetic north

4. ✖ 45° from magnetic north

Question Number : 120 Question Id : 41809919722 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Tacheometry surveying is used for determination of _____.

Options :

1. ✔ Horizontal and Vertical distance

2. ✖ Horizontal distance

3. ✖ Horizontal angles

4. ✖ Vertical angles

Question Number : 121 Question Id : 41809919723 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

lily controller is used as a protective device in the winder for controlling the ____.

Options :

1. ✖ Over voltage

2. ✔ Over speed

3. ✖ Over current

4. ✖ Over load

Question Number : 122 Question Id : 41809919724 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which method shall be followed in shaft sinking for a condition of loose deposits of sand, mud or alluvium?

Options :

1. ✖ Caisson method

2. ✖ Freezing method

3. ✖ Cementation method

4. ✔ Piling method

Question Number : 123 Question Id : 41809919725 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

PERT is being used _____.

Options :

1. ✔ For estimation of time requirement to complete the project

2. ✖ For analysing the ventilation requirement for underground mines

3. ✖ In connection network for initiation of blasting in opencast mines

4. ✖ For estimation of the grade

Question Number : 124 Question Id : 41809919726 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Streak plate is being used to identified the _____.

Options :

1. ✖ Rocks

2. ✔ Minerals

3. ✖ Fossils

4. ✖ Metal

Question Number : 125 Question Id : 41809919727 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The lowest admissible limit of metallic content in an ore is known as its .

Options :

1. ✔ Tenor

2. ✖ Gangue

3. ✖ Ore

4. ✖ Mineral

Question Number : 126 Question Id : 41809919728 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A drum Shearer is mounted on _____.

Options :

1. ✖ A.F.C

2. ✖ Separate rail

3. ✔ Its own skid

4. ✖ Support frame

Question Number : 127 Question Id : 41809919729 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In India, formation of the coal from the vegetation is based on the _____ theory.

Options :

1. ✖ In situ

2. ✔ Drift

3. ✖ Volcanic

4. ✖ Metamorphic

Question Number : 128 Question Id : 41809919730 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

_____ type of rope is suitable for haulage purpose.

Options :

1. ✖ Half locked coil

2. ✔ Lang lay

Ordinary lay

3. ✖

Full locked coil

4. ✖

Question Number : 129 Question Id : 41809919731 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Cut and fill stoping method for extraction of the ore from underground melliferous mine can be done for _____ ore body and _____ host rock.

Options :

1. ✖ Weak, strong

2. ✖ Weak, weak

3. ✔ Strong, weak

4. ✖ Strong, strong

Question Number : 130 Question Id : 41809919732 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

Salt marl and gypsum deposits are generally formed by _____.

Options :

1. ✖ Natural sedimentation

2. ✖ Mechanical concentration

3. ✔ Evaporation

4. ✖ Hydro-thermal

Question Number : 131 Question Id : 41809919733 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Reportable injury, other than serious bodily injury, means any injury which involves the enforced absence of the injured person from work for a period of _____ or more.

Options :

1. ✖ 24 hours

2. ✖ 48 hours

3. ✔ 72 hours

4. ✖ 96 hours

Question Number : 132 Question Id : 41809919734 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The aim of sealing of a fire is to prevent supply of _____ to the fire.

Options :

1. ✔ O_2

2. ✖ CO

3. ✖ CO_2

4. ✖ CH_4

Question Number : 133 Question Id : 41809919735 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

DTH is a _____ machine.

Options :

1. ✖ Rotary

2. ✖ Percussive

3. ✔ Rotary and percussive both

4. ✖ Augur type

Question Number : 134 Question Id : 41809919736 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The horizontal entry of underground mine of a hilly deposit is known as_____.

Options :

1. ✖ Inclined Shaft

2. ✖ Decline

3. ✖ Incline

4. ✔

Adit

Question Number : 135 Question Id : 41809919737 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Mining in conjunction with hydraulic stowing from an underground coal mine shall be adopted, in general, for _____.

Options :

1. ✔ Protection of the surface structures

2. ✖ Enhancing the rate of production

3. ✖ Extraction of thin flat seam

4. ✖ Extraction of coal from 3rd degree gassiness mine

Question Number : 136 Question Id : 41809919738 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Blasting Gallery method shall be adopted for _____.

Options :

1. ✔ Thick coal seam

2. ✖ Thin coal seam

3. ✖ Flat ore body

4. ✖ Highly inclined ore body

Question Number : 137 Question Id : 41809919739 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A psychrometer is used for measuring _____.

Options :

1. ✔ Relative humidity

2. ✖ Temperature

3. ✖ Methane content

4. ✖ Noise level

Question Number : 138 Question Id : 41809919740 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Sum of the interior angles of the traverse is _____. (Where, n is the number of sides)

Options :

1. ✖ $(n + 1)\ 45^0$

2. ✔ $(2n - 4)\ 90^0$

3. ✖ $(n - 1)\ 180^0$

4. ✖ $(n)\ 90^o$

Question Number : 139 Question Id : 41809919741 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Sublevel caving stoping can be adopted for a weak and cavable hanging wall to extract _____.

Options :

1. ✖ Thin and flat ore body

2. ✔ Thick and inclined ore body

3. ✖ Thin and inclined ore body

4. ✖ Thick and flat ore body

Question Number : 140 Question Id : 41809919742 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Exploration drilling is generally carried out by _____ machine.

Options :

1. ✔ Diamond core drilling

2. ✖ Churn drilling

3. ✖ Percussion drilling

4. ✖ DTH drilling

Question Number : 141 Question Id : 41809919743 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Inclination of the ore pass shall be _____ .

Options :

1. ✖ Less than angle of repose of the broken material

2. ✔ More than angle of repose of the broken material

3. ✖ Decided based on the level interval

4. ✖ Max 20^0 from horizontal

Question Number : 142 Question Id : 41809919744 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The coal seams are considered as contiguous seams, in India, if the parting thickness between two seams laying within _____.

Options :

1. ✖ 10 m

2. ✔ 9 m

3. ✖ 15 m

4. ✖ 20 m

Question Number : 143 Question Id : 41809919745 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The continuous coal mining shall be done by _____ machines.

Options :

1. ✖ LHD

2. ✖ SDL

3. ✔ Shearer

4. ✖ LPDT

Question Number : 144 Question Id : 41809919746 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Geological process for formation of Zn deposit is called _____.

Options :

Hydrothermal

1. ✔

Magmatic

2. ✖

Oxidation and Supergene Enrichment

3. ✖

Evaporation

4. ✖

Question Number : 145 Question Id : 41809919747 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Sandwich conveyor is a type of _____.

Options :

Cable belt conveyor

1. ✖

Shaker conveyor

2. ✖

Chain conveyor

3. ✖

High angle conveyor

4. ✔

Question Number : 146 Question Id : 41809919748 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

_____ is associated with presence of CH_4.

Options :

1. Black Damp ✖

2. Fire Damp ✔

3. After Damp ✖

4. Stink Damp ✖

Question Number : 147 Question Id : 41809919749 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Primary input parameters for designing the panel layout (i.e. number of pillars in a panel) are _____.

Options :

1. Incubation period and depth of seam ✖

2. ✖ Thickness of the seam and depth

3. ✔ Incubation period and production from the panel

4. ✖ Production from the panel and thickness of the seam

Question Number : 148 Question Id : 41809919750 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

_____ may be an appropriate stoping method for high dipping ore body and competent host rock.

Options :

1. ✔ Open stoping

2. ✖ Block caving

3. ✖ Cut and fill

4. ✖ Shrinkage stoping

Question Number : 149 Question Id : 41809919751 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A total station is advanced version of

Options :

1. ✔ A theodolite

2. ✖ A dumpy level

3. ✖ A DGPS

4. ✖ A Geodimeter

Question Number : 150 Question Id : 41809919752 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The metamorphic form of Shale is _____

Options :

1. ✖ Quartzite

2. ✖ Talc

3. ✔ Slate

4. ✖ Gneiss

Question Number : 151 Question Id : 41809919753 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Water vapour (H_2O) is reacted with _____ to produce hydrogen (H_2) gas during the coal gasification reaction.

Options :

1. ✖ O_2

2. ✖ CO_2

3. ✖ CO

4. ✔ C

Question Number : 152 Question Id : 41809919754 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When angle of the joints are more than slope angle in the same direction,

_____ is the most likely mode of slope failure.

Options :

1. ✖ Circular

2. ✖ Wedge

3. ✔ Toppling

4. ✖ Plane

Question Number : 153 Question Id : 41809919755 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Square set stoping method comes under _____ category.

Options :

1. ✖ Open stoping

2. ✔ Supported stoping

3. ✖ Caving stoping

VCR

4. ✖

Question Number : 154 Question Id : 41809919756 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

_____ instrument is used to measure the cooling power of the air in an underground mine.

Options :

Anemometer

1. ✖

Velometer

2. ✖

Manometer

3. ✖

Kata thermometer

4. ✔

Question Number : 155 Question Id : 41809919757 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The length of a shaft A and B is 100 m and 50 m respectively. The density of the air in shaft A (down cast) and B (upcast) is 1.1 kg/m^3 and 1.05 kg/m^3 respectively. The natural ventilation pressure (NPV) difference for mine having two shafts, connected with a level is _____.

Options :

1. ✖ 57.5 Pa

2. ✔ 575 Pa

3. ✖ 162.5 Pa

4. ✖ 1625 Pa

Question Number : 156 Question Id : 41809919758 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In ventilation network analysis, Kirchhoff's first law is used. It states _____.

Options :

1. ✖ Algebraic sum of all pressure drops in a closed path must be zero

2. ✔ The algebraic sum of the air quantity flowing at a junction is zero

3.

The resistance of an airway varies with the square of the air velocity

The pressure drops in any airway is proportional to the air quantity

4. ✖

Question Number : 157 Question Id : 41809919759 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The process of taking a small representative portion of a bigger mass is called _____.

Options :

Prospecting

1. ✖

Searching

2. ✖

Sampling

3. ✔

Exploration

4. ✖

Question Number : 158 Question Id : 41809919760 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Water head can be _____ by using multiple similar pumps in a _____ connection.

Options :

1. ✖ Decrease, parallel

2. ✖ Decrease, series

3. ✖ Increase, parallel

4. ✔ Increase, series

Question Number : 159 Question Id : 41809919761 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The equivalent resistance of two identical parallel roadways is R. By adding two additional identical roadways in parallel i.e. total four parallel roadways, the resistance becomes _____.

Options :

1. ✖ 2 R

2. ✖ 4 R

0.5 R

3. ✖

0.25 R

4. ✔

Question Number : 160 Question Id : 41809919762 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Open pit mining method can be adopted for _____.

Options :

Vein shaped ore deposit

1. ✔

Coal deposit

2. ✖

Lignite deposit

3. ✖

Deep seated deposit

4. ✖

Question Number : 161 Question Id : 41809919763 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Stone dust barriers are installed in an underground coal mine _____.

Options :

1. ✔ To prevent the imitation of coal dust explosion

2. ✖ To prevent imitation of firedamp explosion

3. ✖ To act as the storage of stone dust

4. ✖ To prevent inundation in the mine

Question Number : 162 Question Id : 41809919764 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

_____ ropes are used in dragline machine.

Options :

1. ✖ Locked coil

2. ✖ Regular lay

3. ✔ Langs lay

Flattened strand

4. ✖

Question Number : 163 Question Id : 41809919765 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When working approaches waterlogged areas, _____ apparatus is used for precautionary measure.

Options :

Diamond drilling

1. ✖

Burn side boring

2. ✔

Jackhammer drilling

3. ✖

Chilled shot drilling

4. ✖

Question Number : 164 Question Id : 41809919766 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Horizontal and vertical axis of the Cowards (mine explosibility) diagram is _____ and _____ respectively.

Options :

1. ✔ Percentage of CH_4, percentage of O_2

2. ✖ Percentage of O_2, percentage of CH_4

3. ✖ Percentage of CO, percentage of CH_4

4. ✖ Percentage of CO_2, percentage of CH_4

Question Number : 165 Question Id : 41809919767 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Strength parameters for Mohr–Coulomb failure criterion are _____.

Options :

1. ✔ Cohesion and friction angle

2. ✖ Friction angle and compressive strength

3. ✖ Compressive strength and tensile strength

4. ✖ Tensile strength and cohesion

Question Number : 166 Question Id : 41809919768 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The magnetic declination in the instrument is $4^0 10'$ towards East. The magnetic bearing of a line 'AB' is measured S $30^0 20'$ E. What is the true bearing of the line 'AB'?

Options :

1. ✔ $145^0 30'$

2. ✖ $153^0 50'$

3. ✖ $63^0 50'$

4. ✖ $65^0 30'$

Question Number : 167 Question Id : 41809919769 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Low profile dump trucks (LPDT) can be used in _____.

Options :

1. ✔ Underground melliferous mines

Underground coal mines

2. ✖

Surface mines

3. ✖

Stone quarries

4. ✖

Question Number : 168 Question Id : 41809919770 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Stress is a _____ property.

Options :

Scalar

1. ✖

Vector

2. ✖

Tensor

3. ✔

Non dimensional

4. ✖

Question Number : 169 Question Id : 41809919771 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Smalman clip is the device used in _____.

Options :

Endless rope haulage

1. ✔

Belt conveyor

2. ✖

Direct rope haulage

3. ✖

Main tail rope haulage

4. ✖

Question Number : 170 Question Id : 41809919772 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Theodolite instrument can measure _____.

Options :

Horizontal angle only

1. ✖

Vertical angle only

2. ✖

3. ✔ Horizontal and Vertical angles

4. ✖ Both angles and distance

Question Number : 171 Question Id : 41809919773 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The average density of rock-mass is 2.5 T/m^3. What will be the vertical stress at a depth of 100 m?

Options :

1. ✔ 2.5 MPa

2. ✖ 25 MPa

3. ✖ 0.25 MPa

4. ✖ 250 MPa

Question Number : 172 Question Id : 41809919774 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Emulsion explosive is mixture of _____.

Options :

1. ✖ Ammonium nitrate, TNT, NG

2. ✖ Ammonium nitrate, TNT, guar gum

3. ✔ Ammonium nitrate, water, hollow microballons

4. ✖ Ammonium nitrate, NG, water

Question Number : 173 Question Id : 41809919775 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Operating width of the gallery for continuous miner (CM) operation is___.

Options :

1. ✔ 5.5 m to 6 m

2. ✖ > 8 m

3. ✖ < 4.8 m

4. ✖

It can work for any width

Question Number : 174 Question Id : 41809919776 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A length of line AB has been measured 610.20 m by using defective chain of 20 m length. The actual length of line AB was 612.0 m. What was the actual length of the chain_____?

Options :

1. ✖ 20.04 m

2. ✖ 20.05 m

3. ✔ 20.06 m

4. ✖ 20.07 m

Question Number : 175 Question Id : 41809919777 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

EMP means _____.

Options :

Environment Mining Project

1. ✖

Environment Management Plan

2. ✔

Environment Management Project

3. ✖

Environment monitoring project

4. ✖

Question Number : 176 Question Id : 41809919778 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The length of the tail rope is _____ to the depth of the shaft.

Options :

Two times

1. ✖

Three times

2. ✖

Equal

3. ✔

Half

4. ✖

Question Number : 177 Question Id : 41809919779 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The Secondary blasting method of snake holing shall be used to blast _____.

Options :

1. ✔ Boulders

2. ✖ Benches

3. ✖ Ledges

4. ✖ Toe of the bench

Question Number : 178 Question Id : 41809919780 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

As per MMRD (1957), the maximum period for granting the mining lease is _____.

Options :

1. ✖ 25 years

2. ✔ 30 years

35 years

3. ✖

40 years

4. ✖

Question Number : 179 Question Id : 41809919781 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Poisson ratio is defined as a ratio of _____.

Options :

Longitudinal stress and lateral stress

1. ✖

Longitudinal strain and lateral strain

2. ✖

Lateral strain and longitudinal strain

3. ✔

Lateral stress and longitudinal stress

4. ✖

Question Number : 180 Question Id : 41809919782 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Fan cut drilling pattern is being adopted, in general, for _____ method.

Options :

1. ✖ Cut and fill method

2. ✖ Long hole drilling

3. ✔ Sub-level stoping

4. ✖ Shrinkage stoping

Question Number : 181 Question Id : 41809919783 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The closing error in a closed traverse is adjusted by____

Options :

1. ✖ Lehmann's rule

2. ✖ Slide rule

3. ✔ Bowditch's rule

4. ✖ Simpson's rule

Question Number : 182 Question Id : 41809919784 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Black damp is a mixture of _____.

Options :

1. ✔ $CO_2 + N_2$

2. ✖ $CH_4 + CO$

3. ✖ $CO + CO_2$

4. ✖ $O_2 + H_2S$

Question Number : 183 Question Id : 41809919785 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Manholes shall be not less than _____ in depth.

Options :

1. ✖ 1.8 m

2. ✔ 1.2 m

2.1 m

3. ✖

1.5 m

4. ✖

Question Number : 184 Question Id : 41809919786 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A core sample having diameter of 54 mm has been tested for determination of UCS. The failure load of 30 T has been observed. What is the approximate value of UCS of the specimen?

Options :

13.1 MPa

1. ✖

131 MPa

2. ✔

32.75 MPa

3. ✖

327.5 MPa

4. ✖

Question Number : 185 Question Id : 41809919787 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

_____ is the ore of metal lead.

Options :

1. ✖ Graphite

2. ✖ Sphalerite

3. ✔ Galena

4. ✖ Pyrite

Question Number : 186 Question Id : 41809919788 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Horizon mining for extraction of the coal shall be adopted for _____.

Options :

1. ✖ Nearly flat thick seam

2. ✔ Highly incline seam

3. ✖ Up to seam gradient of 1:4

Nearly flat thin seam

4. ✖

Question Number : 187 Question Id : 41809919789 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Stripping ratio is defined as _____.

Options :

Volume of overburden to be removed for extraction of unit weight of the ore

1. ✔

Volume of overburden to be removed for extraction of unit volume of the ore

2. ✖

Volume of ore to be removed for extraction of unit weight of the overburden

3. ✖

Volume of ore to be removed for extraction of unit volume of the overburden

4. ✖

Question Number : 188 Question Id : 41809919790 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Inflammable material should not be stored in underground with in _____

meters of a mine entry.

Options :

1. ✖ 5

2. ✖ 10

3. ✔ 15

4. ✖ 20

Question Number : 189 Question Id : 41809919791 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which method is not application for correlation survey with single shaft.

Options :

1. ✖ Weisbach triangle

2. ✔ Gyro theodolite

3. ✖ Weiss quadrilateral

4. ✖ Co-planing method

Question Number : 190 Question Id : 41809919792 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

_____ is the widely used metamorphic rocks in the construction.

Options :

1. ✔ Marble

2. ✖ Slate

3. ✖ Schist

4. ✖ Mylonite

Question Number : 191 Question Id : 41809919793 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

ISO 9000 slandered is related with _____.

Options :

1. ✔ Quality management

2. ✖ Environmental management

3. ✖ Occupational health and safety (OH&S) management

Food safety management

4. ✖

Question Number : 192 Question Id : 41809919794 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A very deep seethed coal seam can be accessed by _____.

Options :

1. ✖ Incline

2. ✖ Opencast

3. ✖ Adit

Shaft

4. ✔

Question Number : 193 Question Id : 41809919795 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

_____ are used to reduce oscillations of cage in the shaft.

Options :

1. ✖ Safety catches

2. ✔ Guide ropes

3. ✖ Keps

4. ✖ Bell

Question Number : 194 Question Id : 41809919796 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one of the following is not a notified disease under the provisions of Mines Act, 1952.

Options :

1. ✔ Tuberculosis

2. ✖ Pneumoconiosis

3. ✖ Asbestosis

4. ✖

Question Number : 195 Question Id : 41809919797 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Installation of booster fan in one district _____.

Options :

1. ✔ Reduces the flow of air in another district

Increases the flow of air in another district

2. ✖

Reduces the resistance of another district

3. ✖

Increases the resistance in the panel

4. ✖

Question Number : 196 Question Id : 41809919798 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Coning and quartering method is being used _____ .

Options :

1. ✔ In sampling

2. ✖ For estimation of grade

3. ✖ For estimation of physico-mechanical properties

4. ✖ For Hydrogeological parameters

Question Number : 197 Question Id : 41809919799 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The first stage of formation of coal is _____.

Options :

1. ✔ Peat

2. ✖ Lignite

3. ✖ Anthracite

4. ✖ Bituminous

Question Number : 198 Question Id : 41809919800 Display Question Number : Yes Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In Vertical Crater Retreat (VCR) method, Length to Diameter (L/ D) ratio of

charge shall be _____.

Options :

1. ✖ ≤ 4

2. ✔ ≤ 6

3. ✖ > 1

4. ✖ >10

Question Number : 199 Question Id : 41809919801 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

As per provision of regulation 196 (2b) of CMR 2017 regarding the blasting

in opencast mines, danger zone is an area falling within a radius of

_____.

Options :

1. ✖ 200 m

2. ✖ 300 m

3. ✖ 400 m

4. ✔ 500 m

Question Number : 200 Question Id : 41809919802 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In the case of super critical condition, the central area above the panel generally observes _____ the surface.

Options :

1. ✖ High horizontal tensile strain

2. ✖ High horizontal compressive strain

3. ✔ Zero horizontal strain

4. ✖ Zero subsidence