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 06th May 2024
Subject Name: Mining Engineering
Creation Date: 2024-05-06 19:15:16
Duration: 180
Total Marks: 200
Display Marks: No
Share Answer Key With Delivery Engine: Yes
Actual Answer Key: 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

MINING ENGINEERING
Group Number : 1
Group Id : 76144613
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
Examiner permission : Cant View
Show Progress Bar? : No

Mathematics
Section Id : 76144647
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
Maximum Instruction Time : 0
If \( A = \begin{pmatrix} k & 1 \\ 1 & k \end{pmatrix} \) and \( |A^3| = 27 \), then \( k = \)

Options:

7614469601. \( \pm 1 \)

7614469602. \( \pm 2 \)

7614469603. \( \pm 4 \)

7614469604. \( \pm 5 \)

If \( A = \begin{pmatrix} 1 & -1 \\ 2 & 1 \end{pmatrix} \) satisfies \( aA^2 + bA + cI = 0 \), then \( b + 2c = \)

Options:
Question Number : 3 Question Id : 7614462413 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

Let \((x, y, z)\) be the solution of the system of equations \(x + 3y + z = 3,\)
\(x + 4y + 2z = 3, \quad -x - 2y + 3z = -6\). Then \(x^2 + y^2 + z^2 = \)

Options :

7614469609. \(\checkmark\) 12

7614469610. \(\checkmark\) 9

7614469611. \(\checkmark\) 6

7614469612. \(\checkmark\) 3

Question Number : 4 Question Id : 7614462414 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
If \( A = \begin{pmatrix} 2 & x + 9 \\ 1 & 2x \end{pmatrix} \) is invertible, then \( x \neq \) 

Options:

7614469613. ✗ 4

7614469614. ✗ 1

7614469615. ✓ 3

7614469616. ✗ 5

The value of \( x \) satisfying \( 3^{\log_5(x-5)} = \log_5(125) \) is

Options:

7614469617. ✓ 10

7614469618. ✗ 5

7614469619. ✗ 9

7614469620. ✗ 3
If \( \frac{4x^2+1}{x^3-1} = \frac{A}{x-1} + \frac{Bx+C}{x^2+x+1} \), then \( A - B + C = \)

Options:

7614469621. ✗ -3

7614469622. ✓ 0

7614469623. ✗ 2

7614469624. ✗ 1

The diameter of the circle \((x-1)^2 + (y+3)^2 = 3\) is

Options:

7614469625. ✗ \(\sqrt{3}\)

7614469626. ✗ \(4\sqrt{3}\)
7614469627. $2\sqrt{3}$

7614469628. $3$

Question Number : 8 Question Id : 7614462418 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

If the circle $x^2 + y^2 - 3x - 2y + c = 0$ passes through origin, then $c =$

Options :

7614469629. $-1$

7614469630. $1$

7614469631. $0$

7614469632. $\infty$

Question Number : 9 Question Id : 7614462419 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

The latus rectum of parabola $x^2 = 4y$ is

Options :

7614469633. $4$
Question Number : 10 Question Id : 7614462420 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

The centre of the circle $45x^2 + 45y^2 - 60x + 36y + 19 = 0$ is

Options :

7614469637. $\star$ $(0,0)$

7614469638. $\star$ $(60,36)$

7614469639. $\star$ $(-60,36)$

7614469640. $\checkmark$ $\left(\frac{2}{3}, -\frac{2}{5}\right)$

Question Number : 11 Question Id : 7614462421 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0
Homogeneous second degree equation \( a x^2 + 2hxy + by^2 = 0 \) represents two real and distinct lines through origin if

Options:

7614469641. \( h^2 > ab \)

7614469642. \( h^2 = ab \)

7614469643. \( h^2 < ab \)

7614469644. \( h^2 = a + b \)

The equation of the circle with extremities (1,3) and (5, 7) of the diameter is

Options:

7614469645. \( x^2 + y^2 + 6x + 10y + 26 = 0 \)

7614469646. \( x^2 + y^2 - 6x - 10y + 26 = 0 \)

7614469647. \( x^2 + y^2 - 6x + 10y + 26 = 0 \)

7614469648. \( x^2 + y^2 - 6x - 10y - 26 = 0 \)
Question Number : 13 Question Id : 7614462423 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0
If the line passing through the points \((a,6a)\) and \((5,6)\) is perpendicular to the line 
\(3x+4y+5 = 0\), then \(7a = \)

Options :

7614469649. ✗ -5

7614469650. ✗ -3

7614469651. ✔ -1

7614469652. ✗ -2

Question Number : 14 Question Id : 7614462424 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0
If \((0, k), (1,3)\) and \((82,30)\) are collinear, then \(k = \)

Options :

\[
\begin{array}{ll}
\frac{8}{3} & \\
7614469653. ✔ & \\
\frac{9}{4} & \\
7614469654. ✗ & \\
\end{array}
\]
Question Number : 15 Question Id : 7614462425 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

If the two parallel sides of a square are 2x+y+7 = 0, 2x+y+5 = 0, then the area of that square is (in square units is)

Options :

\[
\begin{align*}
\text{Option A: } & \frac{3}{5} \\
\text{Option B: } & \frac{4}{5} \\
\text{Option C: } & \frac{6}{5} \\
\text{Option D: } & \frac{7}{5}
\end{align*}
\]

Question Number : 16 Question Id : 7614462426 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0
The point at two circles \( x^2 + y^2 - 4x - 2y - 4 = 0, x^2 + y^2 - 12x - 8y - 12 = 0 \) touches is

Options :

\[
\left( \frac{-2}{5}, \frac{-4}{5} \right)
\]

7614469661. ✔

\[
\left( \frac{2}{5}, \frac{4}{5} \right)
\]

7614469662. ✗

\[
\left( \frac{2}{5}, \frac{-4}{5} \right)
\]

7614469663. ✗

\[
\left( \frac{-2}{5}, \frac{4}{5} \right)
\]

7614469664. ✗

Question Number : 17 Question Id : 7614462427 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0
If \( x + y = k \) is a normal to the parabola \( y^2 = 12x \), then \( k = \)

Options :

7614469665. ✗ 5

7614469666. ✔ 9

7614469667. ✗ 7
Question Number : 18 Question Id : 7614462428 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

The set of all points where the function \( f(x) = x|x| \) is differentiable is

Options :

\( (0, \infty) \)

\( (-\infty, \infty) \)

\( (-\infty, 0) \cup (0, \infty) \)

\( (-\infty, 0) \)

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Question Number : 19 Question Id : 7614462429 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

\[ \lim_{{x \to 1}} \frac{1 + x + x^2 + \ldots + x^{n-1} - n}{x - 1} = \]

Options :

\( n^2 + n \)
\[ \frac{n^2 + n}{2} \]

7614469674. \( \times \)

\[ \frac{n^2 - n}{2} \]

7614469675. \( \checkmark \)

\[ n^2 - n \]

7614469676. \( \times \)

Question Number : 20 Question Id : 7614462430 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

If \( x = 2 \cos t, y = 2 \sin t \), then \( \frac{d^2 y}{dx^2} \) at \( t = \frac{\pi}{4} \) is

Options :

\[ \frac{1}{\sqrt{2}} \]

7614469677. \( \times \)

\[ -\sqrt{2} \]

7614469678. \( \checkmark \)

\[ \sqrt{3} \]

7614469679. \( \times \)

\[ -\frac{1}{\sqrt{3}} \]

7614469680. \( \times \)
Question Number : 21 Question Id : 7614462431 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

The equation of the tangent to the curve \( y = x^3 - 3x + 2 \) at the point \((2, 4)\) is

Options :

7614469681. \(9x - y - 14 = 0\)

7614469682. \(9x + y - 14 = 0\)

7614469683. \(9x - y + 14 = 0\)

7614469684. \(9x + y = 0\)

Question Number : 22 Question Id : 7614462432 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

If \( y = a \log x + bx^2 + x \) has its extreme values at \( x = -1 \) and \( x = 2 \), then the values of \( a \) and \( b \) are respectively are

Options :

7614469685. \(-2, 2\)

7614469686. \(-4, 4\)

7614469687. \(-\frac{1}{4}, 0\)
If the curves $y^2 = 2x$ and $2xy = k$ cut at right angle, then $k^2 =$

Options:

7614469689. 4

7614469690. 8

7614469691. 16

7614469692. 9

If $x^y y^x = 1$, then $\frac{dy}{dx} =$
\[-\frac{y}{x} \left( \frac{x + y \log x}{y + x \log y} \right)\]

7614469693. ☒

\[-\frac{y}{x} \left( \frac{x - \log x}{y + \log y} \right)\]

7614469694. ☒

\[-\frac{y}{x} \left( \frac{y - x \log y}{x + y \log x} \right)\]

7614469695. ☒

\[-\frac{y}{x} \left( \frac{y + x \log y}{x + y \log x} \right)\]

7614469696. ☒

**Question Number :** 25  
**Question Id :** 7614462435  
**Question Type :** MCQ  
**Option Shuffling :** Yes  
**Display Question Number :** Yes  
**Is Question Mandatory :** No  
**Calculator :** None  
**Response Time :** N.A  
**Think Time :** N.A  
**Minimum Instruction Time :** 0  
**Correct Marks :** 1  
**Wrong Marks :** 0

If \( u = \tan^{-1} \left( \frac{x^3 + y^3}{x - y} \right), x \neq y \) and if \( x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} - \sin ku = 0 \), then \( k = \)

**Options :**

7614469697. ☒ 3

7614469698. ☒ 4

7614469699. ☒ 2
Question Number : 26 Question Id : 7614462436 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

The slope of the tangent to the curve $xy=1$ at $(1,1)$ is

Options :

7614469701. $\times$ -2

7614469702. $\checkmark$ -1

7614469703. $\times$ 1

7614469704. $\times$ 2

Question Number : 27 Question Id : 7614462437 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

The function $f(x) = xe^{-x}$ $(x \in R)$ attains a maximum value at $x = $

Options :

7614469705. $\times$ 2

7614469706. $\times$ $1/e$
The integral value of \( \int \frac{\cos 2x}{\sin^2 x \cos^2 x} \, dx = \)

Options:

1. \( \csc^2 x - \sec^2 x + c \)

2. \( \cot x + \tan x + c \)

3. \( -\cot x - \tan x + c \)

4. \( \csc x - \sec x + c \)
The integral value of \( \int_{0}^{\pi} x \sin x \cos^{4} x \, dx \) is

**Options:**

7614469717. \( \frac{\pi}{10} \)

7614469718. \( \frac{\pi}{5} \)

7614469719. \( -\frac{\pi}{5} \)

7614469720. \( -\frac{\pi}{10} \)
Question Number : 31 Question Id : 7614462441 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0
The area enclosed between the curves $y^2 = x$ and $y = |x|$ is
Options :

7614469721. ✗ $\frac{1}{3}$

7614469722. ✗ $1$

7614469723. ✗ $\frac{2}{3}$

7614469724. ✓ $\frac{1}{6}$

Question Number : 32 Question Id : 7614462442 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0
The differential equation of the family of curves $xy = c_1e^x + c_2e^{-x}$ is
Options :

$$\frac{d^2y}{dx^2} - 2 \frac{dy}{dx} - y = 0$$
7614469725. ✗

$$x \frac{d^2y}{dx^2} + 2 \frac{dy}{dx} - xy = 0$$
7614469726. ✓

$$x \frac{d^2y}{dx^2} - 2 \frac{dy}{dx} - y = 0$$
7614469727. ✗
\[ x^2 \frac{d^2 y}{dx^2} + 2 \frac{dy}{dx} - y = 0 \]

Question Number : 33 Question Id : 7614462443 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

The general solution of the differential equation \( \frac{dy}{dx} - x \tan(y - x) = 1 \) is

Options :
1. \( \sin(y - x) = ce^{\frac{x^2}{2}} \)
2. \( \cos(y - x) = ce^{\frac{x^2}{2}} \)
3. \( \sin(y + x) = ce^{\frac{-x^2}{2}} \)
4. \( \tan(y - x) = ce^{\frac{x^2}{2}} \)

Question Number : 34 Question Id : 7614462444 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

The general solution of the differential equation \( xy \frac{dy}{dx} = \frac{1 + y^2}{1 + x^2} \) is
(1 + x)(1 + y) = c \sqrt{x} y^2

7614469734. ✔ (1 + x^2)(1 + y^2) = c \sqrt{x}

7614469735. ✗ (1 + x^2)(1 + y^2) = cy

7614469736. ✗ (1 + x^2)(1 + y^2) = cxy

Question Number : 35  Question Id : 7614462445  Question Type : MCQ  Option Shuffling : Yes
Display Question Number : Yes  Is Question Mandatory : No  Calculator : None  Response Time : N.A  Think Time : N.A  Minimum Instruction Time : 0
Correct Marks : 1  Wrong Marks : 0

The general solution of the differential equation \( \frac{dy}{dx} - \frac{2}{x} y = 2x^3 + x \) is

Options :

7614469737. ✔ \( y = x^4 + x^2 \log x + cx^2 \)

7614469738. ✗ \( y = x^3 + x^2 \log x + cx^2 \)

7614469739. ✗ \( y = x^3 + x \log x + cx^2 \)

7614469740. ✗ \( y = x^2 + x \log x + cx^3 \)

Question Number : 36  Question Id : 7614462446  Question Type : MCQ  Option Shuffling : Yes
The general solution of the differential equation $\sec^2 y \frac{dy}{dx} + x \tan y = x^3$ is

Options:

7614469741. $\sin y = x^2 + 2 + ce^{\frac{-x^2}{2}}$

7614469742. $\cos y = 2x^2 - 1 + ce^{\frac{-x^2}{2}}$

7614469743. $\cot y = x^2 - 2 + ce^{\frac{-x^2}{2}}$

7614469744. $\tan y = x^2 - 2 + ce^{\frac{-x^2}{2}}$

The particular integral of the differential equation $\frac{d^2 y}{dx^2} + 16y = e^{-3x} + \cos 4x$

is

Options:

7614469745. $\frac{1}{7}e^{-3x} + \frac{x}{8}\cos 4x$
\[
\frac{1}{23} e^{-3x} + \frac{x}{8} \cos 4x
\]
\[
\frac{1}{25} e^{-3x} + \frac{x}{8} \sin 4x
\]
\[
\frac{1}{36} e^{-3x} + \frac{x}{9} \sin 4x
\]

Question Number : 38 Question Id : 7614462448 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

A particular integral of the differential equation \( \frac{d^2 y}{dx^2} + \frac{dy}{dx} + y = x^2 \) is

Options :

\[
x^2 + 4x
\]

\[
2x^2 - x
\]

\[
x^2 - 8x
\]

\[
x^2 - 2x
\]

Question Number : 39 Question Id : 7614462449 Question Type : MCQ Option Shuffling : Yes
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 \( \frac{d^2y}{dx^2} - 2 \frac{dy}{dx} - 15y = 0 \) subject to the conditions \( y'(0) = 0, y''(0) = 2 \) is

Options:

\[ y = \frac{1}{20} e^{3x} + \frac{1}{12} e^{5x} \]

7614469753. ✗

\[ y = \frac{1}{20} e^{5x} + \frac{1}{12} e^{-3x} \]

7614469754. ✓

\[ y = \frac{1}{12} e^{5x} + \frac{1}{20} e^{-3x} \]

7614469755. ✗

\[ y = \frac{1}{20} e^{-5x} + \frac{1}{12} e^{-3x} \]

7614469756. ✗

The solution of the differential equation \( L \left\{ \int_0^t e^{-u} \sin u \, du \right\} = \)

Options:

\[ \frac{1}{s^2 + 2s + 2} \]

7614469757. ✗

7614469758. ✗
\[ \frac{s}{s^2 + 2s + 2} \]

\[ \frac{1}{s(s^2 + 2)} \]

Question Number : 41 Question Id : 7614462451 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

If \( L\{ f(t) \} = \log \left( \frac{s-1}{s} \right) \), then \( f(1) = \)

Options :

7614469761. \( 1-e \)

7614469762. \( e-1 \)

7614469763. \( e \)

7614469764. \( e+1 \)

Question Number : 42 Question Id : 7614462452 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A
\[ \int_0^\infty \frac{\sin 2t}{t} \, dt = \] 

Options:

7614469765. \( \star \) \( \pi \)

7614469766. \( \star \) 0

7614469767. \( \star \) \( 2\pi \)

7614469768. \( \checkmark \) \( \frac{\pi}{2} \)

---

If \( L\{t \sin kt\} = \frac{4s}{(s^2 - 4)^2} \), then \( k = \)

Options:

7614469769. \( \star \) 1

7614469770. \( \star \) 4

7614469771. \( \checkmark \) 2

7614469772.
1
2

Question Number: 44 Question Id: 7614462454 Question Type: MCQ Option Shuffling: Yes
Display Question Number: Yes Is Question Mandatory: No Calculator: None Response Time: N.A Think Time: N.A Minimum Instruction Time: 0
Correct Marks: 1 Wrong Marks: 0

Let \( L^{-1} \left\{ \frac{e^{-s}}{s^2 + 4s + 5} \right\} = f(t) \). If \( t > 1 \), then \( f(t) = \)

Options:

\( e^{-2t} \sin t \)

7614469773. ✗

\( e^{-2(t-1)} \sin (t-1) \)

7614469774. ✔

\( e^{-2(t+1)} \sin (t+1) \)

7614469775. ✗

\( e^{2t} \sin t \)

7614469776. ✗

Question Number: 45 Question Id: 7614462455 Question Type: MCQ Option Shuffling: Yes
Display Question Number: Yes Is Question Mandatory: No Calculator: None Response Time: N.A Think Time: N.A Minimum Instruction Time: 0
Correct Marks: 1 Wrong Marks: 0

If \( L\{f(t)\} = \frac{2s-1}{(s+1)(s-2)} \), then \( L\{f(4t)\} = \)

Options:
\[
\frac{2(s+2)}{(s-4)(s+8)}
\]

\[
\frac{2(s-1)}{(4s+1)(4s-2)}
\]

\[
\frac{s-2}{(s-4)(s+8)}
\]

\[
\frac{2(s-2)}{(s+4)(s-8)}
\]

Question Number : 46 Question Id : 7614462456 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

If \( Y(s) \) is the Laplace transform of the solution \( y(t) \) of \( y'' + y = \sin 3t \),
\[ y(0) = 0, \quad y'(0) = 0 \]
then \( Y(0) = \)

Options :

7614469780. ✓

7614469778. ✗

7614469777. ✗

7614469781. ✗

7614469779. ✗

7614469782. ✗

7614469783. ✓
The value of the Fourier coefficient $a_n$ in the series expansion of $f(x) = |x| \sin x$ in $(-\pi, \pi)$ when $n$ is odd is

**Options:**

- $\frac{4}{\pi n^2}$
- $\frac{-4}{\pi n^2}$
- $\frac{2}{\pi n^2}$
- $0$

The value of the Fourier coefficient $b_0$ in the series expansion of $f(x) = |x| \sin x$ in $(-\pi, \pi)$ is

**Options:**
If \( f(x) = \sin x \) is expressed as Fourier Cosine series in the interval \((0, \pi)\), then the value of \( a_0 \) is

Options:

- \( \frac{2}{\pi} \)
- \( \frac{1}{\pi} \)
- \( \frac{4}{\pi} \)
- \( \frac{-2}{\pi} \)
\[ \int_{0}^{\pi} \sin 6x \sin 4x \, dx = \]

Options:

- \( \frac{\pi}{2} \)
- \( 7614469797 \) ✗
- \( \pi \)
- \( 7614469798 \) ✗
- \( 1 \)
- \( 7614469799 \) ✗
- \( 0 \)
- \( 7614469800 \) ✅

**Physics**

Section Id : 76144648
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
Maximum Instruction Time : 0
Question Number : 51 Question Id : 7614462461 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

Which one of the following equation is dimensionally incorrect for the expression representing displacement ‘y’ and amplitude ‘A’ of a particle executing Simple Harmonic Motion with time period ‘T’?

Options :

\[ y = \frac{A}{\sqrt{2}} (\sin \omega t + \cos \omega t) \]  
7614469801.

\[ y = A \sin \omega t \]  
7614469802.

\[ y = \frac{A}{T} \sin \left( \frac{t}{A} \right) \]  
7614469803.

\[ y = A \sin \left( \frac{4\pi t}{T} \right) \]  
7614469804.

Question Number : 52 Question Id : 7614462462 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0
The resultant of two equal forces acting at right angles to each other is 1224 N. Then the magnitude of each force in Newtons.

Options:

- 7614469805. ✗ 612, 612
- 7614469806. ✗ 1224, 1224
- 7614469807. ✓ 865, 865
- 7614469808. ✗ 432, 432

---

The magnitude of three vectors \( \vec{A}, \vec{B}, \vec{C} \) are in order 12, 5, 13 units and \( \vec{A} + \vec{B} = \vec{C} \), then what will be the angle between the vectors \( \vec{A} \) & \( \vec{B} \)

Options:

- 7614469809. ✓ 90°
- 7614469810. ✗ 60°
- 7614469811. ✗ 30°
- 7614469812. ✗ 45°
Question Number : 54  Question Id : 7614462464  Question Type : MCQ  Option Shuffling : Yes
Display Question Number : Yes  Is Question Mandatory : No  Calculator : None  Response Time : N.A  Think Time : N.A  Minimum Instruction Time : 0
Correct Marks : 1  Wrong Marks : 0

A boy pulls a body of mass 50 kg resting on a flat horizontal surface. Calculate the frictional force if the coefficient of friction is 0.2

Options :

7614469813. ✔ 98.1 kg.m.s^{-2}

7614469814. ✗ 15 kg

7614469815. ✗ 98.1 \times 10^3 \text{ g.cm.s}^{-2}

7614469816. ✗ 1500 g

Question Number : 55  Question Id : 7614462465  Question Type : MCQ  Option Shuffling : Yes
Display Question Number : Yes  Is Question Mandatory : No  Calculator : None  Response Time : N.A  Think Time : N.A  Minimum Instruction Time : 0
Correct Marks : 1  Wrong Marks : 0

If a projectile is thrown with a velocity \( u \) at an angle of \( \theta \) with the horizontal, then the velocity at maximum height during the projectile motion will be:

Options :

7614469817. ✗ 2u \sin \theta

7614469818. ✔ u \sin \theta

7614469819. ✗ 2u \cos \theta
Question Number : 56 Question Id : 7614462466 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

A child of mass 5 kg is going round a merry-go-round that makes 1 rotation in 3.14 seconds. If the radius of the merry-go-round is 2 m then the centrifugal force on the child will be

Options :

7614469821. ✗ 10 Newton

7614469822. ✗ 20 Newton

7614469823. ✗ 30 Newton

7614469824. ✔ 40 Newton

Question Number : 57 Question Id : 7614462467 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

A metal plate of area 100 cm² is placed on the surface of a liquid and a force of 1μN is required to move the plate so as to produce a velocity change 1 cm/s between two successive layers separated by 1 cm. The coefficient of viscosity of the liquid is

Options :
Question Number : 58

Water rises to a height ‘h’ in a capillary tube of radius ‘r’ when immersed in water. The mass of the water in the capillary tube is ‘m’. The mass of water that will rise in another capillary tube of radius \( \frac{r}{2} \) when immersed in water is

Options :

7614469829. ✗ \( m \)

7614469830. ✗ \( 2m \)

7614469831. ✗ \( \frac{m}{2} \)

7614469832. ✗ \( 4m \)
The continuity equation for compressible fluid is (the quantities carry their usual meaning)

Options:

7614469833. \( \rho_2 A_1 v_1 = \rho_1 A_2 v_2 \)

7614469834. \( A_1 v_1 = A_2 v_2 \)

7614469835. \( \rho_1 v_1 = \rho_2 v_2 \)

7614469836. \( \rho_1 A_1 v_1 = \rho_2 A_2 v_2 \)

A block of mass ‘m’ is moving on frictionless horizontal surface with velocity 5m/sec, compresses an ideal spring by 2m and comes to rest. The ratio of mass ‘m’ of the block to spring constant ‘k’ is.

Options:

7614469837. \( 25: 4 \)

7614469838. \( 4: 25 \)
Question Number : 61 Question Id : 7614462471 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

Match the following:

a) Adiabatic Process i) no volume change takes place.
b) Isochoric Process ii) no pressure change takes place.
c) Isobaric Process iii) no temperature change takes place.
d) Isothermal Process iv) no heat transfer takes place.

Options:

7614469841. ✗ a-iv, b-iii, c-ii, d-i

7614469842. ✗ a-i, b-iv, c-ii, d-iii

7614469843. ✓ a-iv, b-i, c-ii, d-iii

7614469844. ✗ a-i, b-ii, c-iii, d-iv

Question Number : 62 Question Id : 7614462472 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

First law of thermodynamics represents conservation of
The displacement of a particle executing Simple Harmonic Motion is given by $x = a \cos \frac{\pi t}{2}$ where ‘$x$’ and ‘$a$’ are in metre. The distance covered by it in the time interval between $t = 0$ sec to $t = 4$ sec in metre is

Options:

7614469849. $0$

7614469850. $2a$

7614469851. $4a$

7614469852. $3a$
A simple pendulum 80 cm long oscillates with an amplitude of 0.02 m. The acceleration at the ends of its path is \(a = 10 \text{ ms}^{-2}\).

Options:

7614469853. \(0 \text{ ms}^{-2}\)

7614469854. \(0.25 \text{ ms}^{-2}\)

7614469855. \(2.5 \text{ ms}^{-2}\)

7614469856. \(10 \text{ ms}^{-2}\)

A particle undergoing Simple Harmonic Motion passes through the mean position with a velocity of 2 \(\text{ ms}^{-1}\). The velocity of the particle at the point where its displacement is half the amplitude is.

Options:

7614469857. \(2\sqrt{3} \text{ ms}^{-1}\)

7614469858. \(4\sqrt{3} \text{ ms}^{-1}\)

7614469859. \(0 \text{ ms}^{-1}\)
7614469860. $\sqrt{3} \text{ m/s}^{-1}$

Question Number : 66 Question Id : 7614462476 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

A boy standing between two parallel walls fires a gun. He hears the first echo after 4 sec and next after 6 sec. The distance between the two walls is (take velocity of sound in air as 340 m/s)

Options :

7614469861. $\checkmark$ 680 m

7614469862. $\checkmark$ 1020 m

7614469863. $\checkmark$ 1700 m

7614469864. $\checkmark$ 340 m

Question Number : 67 Question Id : 7614462477 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

In a good acoustic hall the distribution of sound should be

Options :

7614469865. $\checkmark$ Gradually increasing
Exponentially increasing

Randomly change

Uniform

Question Number : 68 Question Id : 7614462478 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

Two magnetic poles placed 5 cm apart in air attract each other with a force of 100 dyne. How far from each other should they be placed to get the force of attraction 25 dyne?

Options :

10 cm

4 cm

2 cm

6 cm

Question Number : 69 Question Id : 7614462479 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0
In a Wheatstone bridge, the four arms have each a resistance of 50 ohm. The galvanometer current is:

Options:

7614469873. ✗ 0.05 A

7614469874. ✗ 0.5 A

7614469875. ✓ 0 A

7614469876. ✗ 5 A

Question Number : 70 Question Id : 7614462480 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

In a transformer, the number of turns in secondary and primary coils are 50 and 200 respectively. If 4 A of current is flowing through the primary, the current flowing through the secondary coil is:

Options:

7614469877. ✓ 1 A

7614469878. ✗ 2 A

7614469879. ✗ 3 A

7614469880. ✗ 4 A
Electrons are ejected when a photosensitive material is illuminated by violet light but not by blue light. Would electrons come out from the same material when it is illuminated by red light?

Options:

7614469881. Yes

7614469882. No

7614469883. Yes, if intensity of incident light is increased

7614469884. Yes, if material is illuminated for a long time

Optical fibres are electrically

Options:

7614469885. Conductors

7614469886. Superconductors

7614469887. Semiconductors
Question Number : 73
Question Id : 7614462483
Question Type : MCQ
Option Shuffling : Yes
Display Question Number : Yes
Is Question Mandatory : No
Calculator : None
Response Time : N.A
Think Time : N.A
Minimum Instruction Time : 0
Correct Marks : 1
Wrong Marks : 0
In superconducting state the material behaves as
Options :

7614469889. ✔️ Perfect diamagnetic

7614469890. ✗ Weak diamagnetic

7614469891. ✗ Perfect ferromagnetic

7614469892. ✗ Weak paramagnetic

Question Number : 74
Question Id : 7614462484
Question Type : MCQ
Option Shuffling : Yes
Display Question Number : Yes
Is Question Mandatory : No
Calculator : None
Response Time : N.A
Think Time : N.A
Minimum Instruction Time : 0
Correct Marks : 1
Wrong Marks : 0
In semiconductors at room temperature
Options :

7614469893. ✗ The conduction band is completely empty

7614469894. ✔️ The conduction band is partially empty and the conduction band is partially filled
The valence band is completely filled and the conduction band is partially filled.

7614469895. ✗

7614469896. ✗ The valence band is completely filled

Question Number : 75 Question Id : 7614462485 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0 Semiconductors are doped

Options :

7614469897. ✗ To increase the resistivity

7614469898. ✔ To get the desired level of conductivity

7614469899. ✗ To reduce the conductivity

7614469900. ✗ To get the positive temperature coefficient of resistance

Chemistry

Section Id : 76144649
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
Maximum Instruction Time: 0
Sub-Section Number: 1
Sub-Section Id: 76144663
Question Shuffling Allowed: Yes
Is Section Default?: null

Question Number: 76  Question Id: 7614462486  Question Type: MCQ  Option Shuffling: Yes
Display Question Number: Yes  Is Question Mandatory: No  Calculator: None
Response Time: N.A  Think Time: N.A  Minimum Instruction Time: 0
Correct Marks: 1  Wrong Marks: 0

Number of neutrons present in an element with atomic number 19 and mass number 39.

Options:

7614469901. ✗ 19

7614469902. ✗ 58

7614469903. ✗ 39

7614469904. ✔ 20

Question Number: 77  Question Id: 7614462487  Question Type: MCQ  Option Shuffling: Yes
Display Question Number: Yes  Is Question Mandatory: No  Calculator: None
Response Time: N.A  Think Time: N.A  Minimum Instruction Time: 0
The dative bond is present in

Options:

7614469905. ✗ Ammonia

7614469906. ✔ Ammonium ion

7614469907. ✗ Urea

7614469908. ✗ Nitrogen

Correct Marks : 1 Wrong Marks : 0

Which of the following molecules contains coordinate covalent bond?

Options:

7614469909. ✗ NH₂⁻

7614469910. ✗ N₂H₄

7614469911. ✔ H₃O⁺

7614469912. ✗ H₂O₂
Concentrated hydrochloric acid contains 37% (by mass) HCl. The density of its solution is 1.18 g/mL. The molarity of HCl is

Options:

7614469913. ✔ 12.0

7614469914. ✗ 16.03

7614469915. ✗ 6.0

7614469916. ✗ 1.20

A colloidal solution can be purified by the method of

Options:

7614469917. ✗ Peptization

7614469918. ✔ Dialysis

7614469919. ✗ Mechanical Dispersion

7614469920. ✗ Oxidation
Question Number : 81  Question Id : 7614462491  Question Type : MCQ  Option Shuffling : Yes
Display Question Number : Yes  Is Question Mandatory : No  Calculator : None  Response Time : N.A  Think Time : N.A  Minimum Instruction Time : 0
Correct Marks : 1  Wrong Marks : 0

The compound that does not act as a Lewis acid.

Options :

7614469921. ✔ BaCl₂

7614469922. ✗ AlCl₃

7614469923. ✗ BF₃

7614469924. ✗ BeCl₂

Question Number : 82  Question Id : 7614462492  Question Type : MCQ  Option Shuffling : Yes
Display Question Number : Yes  Is Question Mandatory : No  Calculator : None  Response Time : N.A  Think Time : N.A  Minimum Instruction Time : 0
Correct Marks : 1  Wrong Marks : 0

The pH value of 0.001 M NaOH solution is

Options :

7614469925. ✗ 3

7614469926. ✗ 9

7614469927. ✗ 7
The solvent not used for green synthesis is

Options:

- Aniline
- Room temperature ionic liquids
- Bio solvents
- Supercritical fluids

Which of these days is celebrated in the form of World Environment Day all around the world?

Options:

- July 5th
- June 10th
Question Number : 85 Question Id : 7614462495 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0
Extra pure water can be obtained by using

Options :

7614469937. Lime – Soda process
7614469938. Permutit process
7614469939. Ion-exchange process
7614469940. Electrodialysis process

Question Number : 86 Question Id : 7614462496 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0
Sterilization of water can be done by using

Options :

7614469941. Ozone
Oxygen

Caustic Potash

Hydrogen peroxide

Question Number : 87 Question Id : 7614462497 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

The product formed at cathode when Pt electrodes are used in the electrolysis of Fused NaCl.

Options :

Cl₂

NaOH

HCl

Na

Question Number : 88 Question Id : 7614462498 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

What is the electrochemical equivalent (z) of copper, when 0.3950 g of copper is deposited by a current of 0.5 amperes in 40 minutes.
Question Number : 89 Question Id : 7614462499 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0 Extraction of zinc from zinc blende is achieved by

Options :

7614469953. Electrolytic reduction

7614469954. Roasting followed by reduction with carbon

7614469955. Roasting followed by reduction with another metal

7614469956. Roasting followed by self-reduction

Question Number : 90 Question Id : 7614462500 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
In blast furnace iron oxide is reduced by

Options:

7614469957. ✗ Silica

7614469958. ✔ Carbon monoxide

7614469959. ✗ Carbon

7614469960. ✗ Limestone

During electrochemical corrosion in acidic environment

Options:

7614469961. ✗ Oxygen evolution occurs

7614469962. ✔ Hydrogen evolution takes place

7614469963. ✗ Oxygen absorption occurs

7614469964. ✗ Hydrogen absorption takes place
The process of cementation of iron with zinc powder is known as

Options:

7614469965. Sheradising

7614469966. Galvanizing

7614469967. Zincing

7614469968. Tinning

Bakelite is manufactured by the reaction between

Options:

7614469969. Urea and formaldehyde

7614469970. Phthalic acid and ethylene glycol

7614469971. Ethylene glycol and formaldehyde

7614469972. Phenol and formaldehyde
Question Number : 94 Question Id : 7614462504 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

Which of the following is an elastomer

Options :

7614469973. ✔️ Polystyrene

7614469974. ✔️ Buna-S rubber

7614469975. ✔️ Melamine

7614469976. ✔️ Dacron

Question Number : 95 Question Id : 7614462505 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

A good fuel has

Options :

7614469977. ✔️ Moderate ignition temperature and high calorific value

7614469978. ✔️ High ignition temperature and high calorific value

7614469979. ✔️ Low ignition temperature and low calorific value
Low ignition temperature and high calorific value

Question Number : 96 Question Id : 7614462506 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0 The best example of splash lubrication is Options :

7614469981. Wick feed lubricator

7614469982. Ring lubricator

7614469983. Grease Gun

7614469984. Pump lubricator

Question Number : 97 Question Id : 7614462507 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0 Saturated calomel electrode standard reduction potential value in Volts is Options :

7614469985. 0

7614469986. 0.6990
For the following cell reaction, $E^\circ$ for the cell is

$$Zn(s) + 2Fe^{3+}(aq) \rightleftharpoons 2Fe^{2+}(aq) + Zn^{2+}(aq)$$

(Standard Reduction potentials of Zn and Fe electrodes are $-0.76$V and $+0.77$V respectively)

Options:

7614469989. ✔ 1.53 V

7614469990. ✗ 0.01 V

7614469991. ✗ −1.53 V

7614469992. ✗ 0.78 V

The gas that is responsible for Bhopal gas tragedy is
7614469993. ✓ Methyl isocyanate

7614469994. ✗ Methyl chloroformate

7614469995. ✗ Methyl isopropyl ether

7614469996. ✗ Methyl isobutyrate

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**Question Number : 100**  
**Question Id : 7614462510**  
**Question Type : MCQ**  
**Option Shuffling : Yes**  
**Display Question Number : Yes**  
**Is Question Mandatory : No**  
**Calculator : None**  
**Response Time : N.A**  
**Think Time : N.A**  
**Minimum Instruction Time : 0**

**Correct Marks : 1**  
**Wrong Marks : 0**

Which of the following gases is largely responsible for acid – rain?

**Options :**

7614469997. ✗ CO and CO₂

7614469998. ✗ NO and NO₂

7614469999. ✓ SO₂ and NO₂

76144610000. ✗ N₂ and O₂

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**MINING ENGINEERING**

**Section Id :** 76144650

**Section Number :** 4
Purpose of Walling Scaffold is shaft sinking process

Options:

76144610001. ✗ Reaching the walls

76144610002. ✗ Drilling purpose

76144610003. ✔ Construction of brick wall

76144610004. ✗ Supply of ventilation
Question Number : 102 Question Id : 7614462512 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

Explosive performance depends only on___________

Options :

76144610005. ✗ The shock energy of the explosive

76144610006. ✗ The bubble energy of the explosive

76144610007. ✓ The velocity of detonation and detonation pressure

76144610008. ✗ The total energy

Question Number : 103 Question Id : 7614462513 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

A shock tube initiating system, such as Nonel,

Options :

76144610009. ✗ Does not need detonators for initiation

76144610010. ✗ It can not be used in under-water condition

76144610011. ✓ It is not affected by static electricity or strong currents
It creates a lot of noise

**Question Number : 104**  
**Question Id : 7614462514**  
**Question Type : MCQ**  
**Option Shuffling : Yes**  
**Display Question Number : Yes**  
**Is Question Mandatory : No**  
**Calculator : None**  
**Response Time : N.A**  
**Think Time : N.A**  
**Minimum Instruction Time : 0**  
**Correct Marks : 1**  
**Wrong Marks : 0**  
Which type of device is recommended for good core recovery from soft rock?

**Options :**

- Single tube core barrel
- Double tube core barrel
- Saw toothed crown
- Roller bits

**Question Number : 105**  
**Question Id : 7614462515**  
**Question Type : MCQ**  
**Option Shuffling : Yes**  
**Display Question Number : Yes**  
**Is Question Mandatory : No**  
**Calculator : None**  
**Response Time : N.A**  
**Think Time : N.A**  
**Minimum Instruction Time : 0**  
**Correct Marks : 1**  
**Wrong Marks : 0**  
Where is reserve station located

**Options :**

- Isolated Place
- Travelling road way
76144610019. ✗ Haulage road way

76144610020. ✗ Manhole

Question Number : 106 Question Id : 7614462516 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0
In metalliferrous deposit ,the ore minerals generally occur in association
with some non-metallic minerals known as_________

Options :
76144610021. ✗ Late magmatic mineral deposit

76144610022. ✗ Cap rock

76144610023. ✗ Ore shoots

76144610024. ✗ Gangue

Question Number : 107 Question Id : 7614462517 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0
In freezing method of shaft sinking which is used for

circulation?
Question Number : 108 Question Id : 7614462518 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

The safety device is provided in sinking shaft in case of over wind?

Options :

76144610029. ✅ spider

76144610030. ✗ kibble

76144610031. ✗ detaching hook

76144610032. ✗ rider

Question Number : 109 Question Id : 7614462519 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A
Flame safety lamp is used for testing

Options:

76144610033. ✗ CO

76144610034. ✗ CO₂

76144610035. ✓ CH₄

76144610036. ✗ H₂S

Question Number: 110 Question Id: 7614462520 Question Type: MCQ Option Shuffling: Yes Display Question Number: Yes Is Question Mandatory: No Calculator: None Response Time: N.A Think Time: N.A Minimum Instruction Time: 0 Correct Marks: 1 Wrong Marks: 0

Composition of inhaled air of human being in normal atmosphere

Options:

76144610037. ✓ N₂:79%  O₂:21%

76144610038. ✗ N₂:21%  O₂:79%

76144610039. ✗ N₂:0%  O₂:100%

76144610040. ✗ N₂:100%  O₂:0%
Question Number : 111 Question Id : 7614462521 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0
When excavating a useful mineral, the uneconomic rock or mineral associated with it, which has to be excavated and discarded is called

Options :

76144610041. ✗ Country rock
76144610042. ✓ Gangue
76144610043. ✗ Bed rock
76144610044. ✗ Ore

Question Number : 112 Question Id : 7614462522 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0
Correct order of Moh's scale of hardness is

Options :

76144610045. ✗ Talc, Calcite, Topaz, Quartz
76144610046. ✗ Talc, Topaz, Calcite, Quartz
76144610047. ✗ Calcite, Talc, Topaz, Quartz
Question Number : 113 Question Id : 7614462523 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0
The following mineral is not a Metallic mineral
Options :

76144610049. ✗ Platinum
76144610050. ✗ Copper
76144610051. ✗ Zinc
76144610052. ✔ Asbestos

Question Number : 114 Question Id : 7614462524 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0
The rocks formed by cooling of molten material (magma) at or relatively near the surface of the earth are:
Options :

76144610053. ✗ Metamorphic rocks
76144610054. ✗ Sedimentary rocks
Question Number : 115 Question Id : 7614462525 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0 The metamorphic rocks produced by Granite is
Options :

76144610057. ✗ Quartzite

76144610058. ✗ Shale

76144610059. ✗ Argillite

76144610060. ✓ Gneiss

Question Number : 116 Question Id : 7614462526 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0 Basic rocks contains Silica content in the range of
Options :

76144610061. ✗ More than 60%
76144610062. ✗ Between 55% to 60%

76144610063. ✔ Between 45% to 55%

76144610064. ✗ Less than 45%

**Question Number : 117 Question Id : 7614462527 Question Type : MCQ Option Shuffling : Yes  
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
Correct Marks : 1 Wrong Marks : 0**

Which of the following rock is not a Sedimentary rock

**Options :**

76144610065. ✗ Conglomerate

76144610066. ✗ Laterite

76144610067. ✗ Shale

76144610068. ✔ Gabbro

**Question Number : 118 Question Id : 7614462528 Question Type : MCQ Option Shuffling : Yes  
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
Correct Marks : 1 Wrong Marks : 0**

The weathered upper part of ore deposits, which outcrop at the surface undergo weathering in the outcrop zone and may compose is called as

**Options :**
Gossan

Washout

Metamorphism

Swilley

Question Number : 119 Question Id : 7614462529 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

The crest of a fold where the strata are bent up to form an arch is known as

Options :

A Syncline

A Outlier

An Inlier

An Anticline

Question Number : 120 Question Id : 7614462530 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0
According to Geological Time Scale, the Permian period belongs to the following era:

**Options:**

76144610077. ✔ Palaeozoic

76144610078. ✗ Keinozoic

76144610079. ✗ Mesozoic

76144610080. ✗ Archeans

**Question Number : 121 Question Id : 7614462531 Question Type : MCQ Option Shuffling : Yes**

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

**Correct Marks : 1 Wrong Marks : 0**

The most commonly used extraction line in caving panel is ____

**Options :**

76144610081. ✗ Straight

76144610082. ✔ Diagonal

76144610083. ✗ Step Diagonal

76144610084. ✗ Steep Diagonal

**Question Number : 122 Question Id : 7614462532 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**
Working in an underground coal mine are sectionalized into different districts for the purpose of __________

Options:

76144610085. ✔ Quick isolation in the event of a spontaneous heating or fire

76144610086. ✗ For better management and production control

76144610087. ✗ For effective strata control

76144610088. ✗ To contain methane emission in disused workings

Long wall mining method is best suitable for

Options:

76144610089. ✔ Flat & moderately flat seam

76144610090. ✗ Steeply inclined seam

76144610091. ✗ Fractured and geologically disturbed seam

76144610092. ✗ Steeply dipping and watery seams
Consider long wall mining of coal, identify the statement applicable to the advancing method.

Options:

76144610093. ✗ Easy maintenance of gate roads

76144610094. ✗ Superior ventilation

76144610095. ✗ Prior knowledge of geological disturbances

76144610096. ✔ Early production from the longwall face

Sand water mixture sent to underground coal depillaring district is known as ______

Options:

76144610097. ✗ Jigging operation

76144610098. ✗ Gravity separation operation

76144610099. ✔ Stowing operation
Question Number : 126 Question Id : 7614462536 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0 In “Hydraulic mining” coal is broken by ____________

Options :

76144610101. ✗ Coal drill
76144610102. ✓ Jet monitor
76144610103. ✗ Coal cutting machine
76144610104. ✗ blasting

Question Number : 127 Question Id : 7614462537 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0 In this method partial combustion of coal is done with an objective to extract energy from the coal seam

Options :

76144610105. ✗ Methane drainage
76144610106. ✓ Underground coal gasification
76144610107.  ✗ Vertical drilling or raising

76144610108.  ✗ Spontaneous heating

**Question Number : 128**  **Question Id : 7614462538**  **Question Type : MCQ**  **Option Shuffling : Yes**
**Display Question Number : Yes**  **Is Question Mandatory : No**  **Calculator : None**  **Response Time : N.A**  **Think Time : N.A**  **Minimum Instruction Time : 0**
**Correct Marks : 1**  **Wrong Marks : 0**

Between two panels, what is the minimum size of barrier?

**Options :**

76144610109.  ✗ Equal to width of gallery size

76144610110.  ✗ Equal to dimension of panel

76144610111.  ✔ Equal to pillar size

76144610112.  ✗ Equal to face dimension

**Question Number : 129**  **Question Id : 7614462539**  **Question Type : MCQ**  **Option Shuffling : Yes**
**Display Question Number : Yes**  **Is Question Mandatory : No**  **Calculator : None**  **Response Time : N.A**  **Think Time : N.A**  **Minimum Instruction Time : 0**
**Correct Marks : 1**  **Wrong Marks : 0**

The average number of faces in a district if number of headings are N.

**Options :**

76144610113.  ✗ (N-1)
Question Number : 130  Question Id : 7614462540  Question Type : MCQ  Option Shuffling : Yes  Display Question Number : Yes  Is Question Mandatory : No  Calculator : None  Response Time : N.A  Think Time : N.A  Minimum Instruction Time : 0  Correct Marks : 1  Wrong Marks : 0  

The roads driven parallel to the strike in horizon mining are called_____.

Options:

76144610117. ✔ Laterals

76144610118. ✗ Cross cuts

76144610119. ✗ levels

76144610120. ✗ Strike

Question Number : 131  Question Id : 7614462541  Question Type : MCQ  Option Shuffling : Yes  Display Question Number : Yes  Is Question Mandatory : No  Calculator : None  Response Time : N.A  Think Time : N.A  Minimum Instruction Time : 0  Correct Marks : 1  Wrong Marks : 0  

Continuous miner and shuttle car combination is NOT applicable in mining with
Options:

76144610121. ✗ Rib pillar extraction technique

76144610122. ✗ Wangawilli system

76144610123. ✗ Room and Pillar method

76144610124. ✔ Longwall method

Question Number : 132 Question Id : 7614462542 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0
Which type of drilling pattern is followed in Blasting Gallery Method?
Options:

76144610125. ✔ Ring pattern

76144610126. ✗ Burn cut pattern

76144610127. ✗ Wedge cut

76144610128. ✗ Coromant cut

Question Number : 133 Question Id : 7614462543 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
A method of surface mining involves mining and washing together of unconsolidated rock near ground surface is called as

Options:

1. **Placer mining**
2. **Strip mining**
3. **Open cut mining**
4. **Glory hole mining**

The limiting gradient of roads in quarries for tyred vehicular traffic is

Options:

1. **1 in 16**
2. **1 in 5**
3. **1 in 10**
4. **1 in 7**
Which of the following is not an excavator

Options:

76144610137. ✗ Dipper Shovel
76144610138. ✗ Dragline
76144610139. ✔ Dozer
76144610140. ✗ Front end Loader

Jackhammer drill works at a pressure of

Options:

76144610141. ✗ 3 kgf/cm²
76144610142. ✔ 6 kgf/cm²
76144610143. ✗ 9 kgf/cm²
76144610144.
Question Number : 137 Question Id : 7614462547 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

A non-electric delay detonating relay does not contain

Options :

76144610145. ✗ Delay element

76144610146. ✗ Fuse head

76144610147. ✔ Metal sleeve

76144610148. ✗ Neoprene connecting tube

Question Number : 138 Question Id : 7614462548 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

A magazine construction should be approved by the

Options :

76144610149. ✗ Chief Inspector of Mines

76144610150. ✗ Regional Inspector of Mines
Question Number : 139 Question Id : 7614462549 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0
The minimum distance between the free face to the blast hole is known as
Options :

76144610153. **Spacing**

76144610154. ✔ Burden

76144610155. ✗ Bench height

76144610156. ✗ Bench width

Question Number : 140 Question Id : 7614462550 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0
Periodical assessment of impact of opencast mining operations on environment are carried out by
Options :

76144610157. ✗ Environmental management plan (EMP)
Environmental Impact assessment (EIA)

Disaster management plan

Risk assessment plan

Question Number : 141 Question Id : 7614462551 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0
Which one of the following term is not related to opencast mining?
Options :

Crest

Winze

Highwall

Boxcut

Question Number : 142 Question Id : 7614462552 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0
The machine used to carryout selective mining operations in surface mining is
Options :
Dipper Shovel

Dragline

Hydraulic Shovel

Rope Shovel

Question Number : 143 Question Id : 7614462553 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0
In case of an opencast blasting the danger zone comprises of area within the radius of
Options :
300 meters from the place of firing
400 meters from the place of firing
500 meters from the place of firing
600 meters from the place of firing

Question Number : 144 Question Id : 7614462554 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0
Given bench height is 12m; burden: 4m; spacing: 5m; explosive per hole is 120kg; density of rock is 2600 kg/cu.m; the powder factor in tonne/kg is

Options:

76144610173. ✗ 2.0

76144610174. ✗ 4.6

76144610175. ✅ 5.2

76144610176. ✗ 7.3

Question Number : 145 Question Id : 7614462555 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0
The shear stress on a plane on which the major principal stress acts is

Options:

76144610177. ✗ Half the major principal stress

76144610178. ✗ Twice the major principal stress

76144610179. ✅ Shear stress is absent

76144610180. ✗ Equal to the major principal stress
Question Number : 146 Question Id : 7614462556 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0
If lateral strain is 0.0025 and longitudinal strain is 0.01, then the value of Poisson’s ratio is _______

Options :

76144610181. ✔ 0.25

76144610182. ✗ 0.50

76144610183. ✗ 4.0

76144610184. ✗ 1.0

Question Number : 147 Question Id : 7614462557 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0
Rock mass rating does not make use of__________

Options :

76144610185. ✗ Compressive strength of rock

76144610186. ✗ Drill core quality

76144610187. ✔ Shear strength of rock

76144610188. ✗ Ground water condition
Question Number : 148 Question Id : 7614462558 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

Rock quality Designation (RQD) is a technique for evaluating cavability characteristics of Mining operations, in which the percentage of intact core is measure, where in all cores that are equal to or greater than_________ length are considered.

Options :

76144610189. ✗ 25 cm
76144610190. ✗ 20 cm
76144610191. ✗ 15 cm
76144610192. ✓ 10 cm

Question Number : 149 Question Id : 7614462559 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

Griffith, Coulomb, Navier theories are related to______

Options :

76144610193. ✗ Pillar Strength
76144610194. ✓ Rock failure
76144610195. ☉ Subsidence

76144610196. ☉ Slope stability

Question Number : 150 Question Id : 7614462560 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0
Geo-mechanical classification also called__________

Options :

76144610197. ☉ RQD

76144610198. ☉ DQR

76144610199. ✔ RMR

76144610200. ☉ Q-System

Question Number : 151 Question Id : 7614462561 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0
Ratio of change in length to original length is__________

Options :

76144610201. ☉ Stress
76144610202. ✗ Strength

76144610203. ✗ UCS

76144610204. ✓ Strain

**Question Number : 152**  
Question Id : 7614462562  
Question Type : MCQ  
Option Shuffling : Yes  
Display Question Number : Yes  
Is Question Mandatory : No  
Calculator : None  
Response Time : N.A  
Think Time : N.A  
Minimum Instruction Time : 0  
Correct Marks : 1  
Wrong Marks : 0

The instrument used to measure the deformation between the layers of the strata

**Options :**

76144610205. ✗ Flat Jack

76144610206. ✗ Bore hole extensometer

76144610207. ✓ Tel- Tale extensometer

76144610208. ✗ Loadcell

**Question Number : 153**  
Question Id : 7614462563  
Question Type : MCQ  
Option Shuffling : Yes  
Display Question Number : Yes  
Is Question Mandatory : No  
Calculator : None  
Response Time : N.A  
Think Time : N.A  
Minimum Instruction Time : 0  
Correct Marks : 1  
Wrong Marks : 0

Radius of the mohrs circle given major and minor principal stresses $\sigma_1$ and $\sigma_3$ respectively
"A crack will extend only when the total potential energy of the system of applied forces and material decreases or remain constant with an increase in crack length". Who has given this concept?

Options:

76144610213. ☒ Coulomb

76144610214. ☒ Terzaghi

76144610215. ☒ Bieniawski

76144610216. ✓ Griffith
Question Number : 155 Question Id : 7614462565 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

The ground in the central portion of the subsidence trough is subjected to ________

Options :

76144610217. ✗ Lateral tension

76144610218. ✓ Vertical compression

76144610219. ✗ Lateral compression

76144610220. ✗ Depth of Opening

Question Number : 156 Question Id : 7614462566 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

At prop free front face, the roof support is provided by_________

Options :

76144610221. ✗ Hydraulic chocks

76144610222. ✓ Cantilever bar
Triangular chocks

Steel prop

Question Number : 157 Question Id : 7614462567 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0
The carbon percentage in the wire rope is
Options :

76144610225. ✗ 0.44

76144610226. ✓ 0.5

76144610227. ✗ 0.03

76144610228. ✗ 0.75

Question Number : 158 Question Id : 7614462568 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0
A wire rope, round stranded with fibre core, has a diameter of 2.54cm. Determine the mass of rope if the values of constants k = 0.36 and s = 52.
Options :

76144610229. ✓ 2.32 kg/m
Question Number : 159 Question Id : 7614462569 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0
Which of the following is not an Electrical braking system on winder?
Options :

76144610233. ✗ Counter current braking

76144610234. ✗ Dynamic braking

76144610235. ✔ Suspended caliper braking

76144610236. ✗ Regenerative braking

Question Number : 160 Question Id : 7614462570 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0
The Direct rope haulage can be deployed up a gradient of steeper than
Options :
Question Number : 161 Question Id : 7614462571 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

The sequence of attachments between the winding rope and the cage is

Options :

76144610241. ✗ Triangular plate, Capel, Detaching hook

76144610242. ✗ Detaching hook, Triangular plate, Capel

76144610243. ✗ Triangular plate, Detaching hook, Capel

76144610244. ✔ Capel, Detaching hook, Triangular plate

Question Number : 162 Question Id : 7614462572 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0
The following safety device is not associated with the endless rope haulage.

**Options:**

76144610245. ✗ Monkey catch

76144610246. ✗ Back stay

76144610247. ✗ Jazz rails

76144610248. ✔ Drop warrick

**Question Number:** 164 **Question Id:** 7614462574 **Question Type:** MCQ **Option Shuffling:** Yes

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

**Correct Marks:** 1 **Wrong Marks:** 0

The tractive effort of a locomotive depends on

**Options:**

76144610249. ✗ Velocity of locomotive

76144610250. ✔ Weight of locomotive

76144610251. ✗ Rolling friction of locomotive

76144610252. ✗ Drawbar pull
Exhaust conditioner is associated with

Options:

76144610253. ✗ Belt conveyor

76144610254. ✗ Diesel Locomotives

76144610255. ✗ Battery Locomotives

76144610256. ✗ Rope haulage

In Belt Conveyor, the drum drives the belt by friction, the pulleys used to increase the area of contact are

Options:

76144610257. ✗ Idler rollers

76144610258. ✗ Tension pulleys

76144610259. ✗ Snub pulleys

76144610260. ✗ Return rollers
The purpose of retaining valve in pump fittings is

Options:

76144610261. ✔ To hold the water in delivery column

76144610262. ✗ To discharge the water into delivery column

76144610263. ✗ To enable the pump to be primed with water from delivery column

76144610264. ✗ To release the air when priming the pump

The power required to run a pump is varies

Options:

76144610265. ✗ Directly proportional to the peripheral speed of the impeller

76144610266. ✗ Directly proportional to the square of peripheral speed of the impeller

76144610267. ✔ Directly proportional to the cube of peripheral speed of the impeller
Inversely proportional to the peripheral speed of the impeller

Question Number : 168 Question Id : 7614462578 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

Options :

76144610269. ✗ For earth continuity

76144610270. ✔ For remote operations

76144610271. ✗ For over current protection

76144610272. ✗ For overload protection

Question Number : 169 Question Id : 7614462579 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

Options :

76144610273. ✗ Working from part to the whole

76144610274. ✔ Working from whole to the part
Question Number : 170 Question Id : 7614462580 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

The art of determining the relative heights or elevations of points or objects on the earth's surface is known as ________-

Options:

76144610277. Levelling

76144610278. reconnoassing

76144610279. staffing

76144610280. checking

Question Number : 171 Question Id : 7614462581 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

The elevation and depressions of the surface of the ground are shown on a map by means of any one of the following lines. Which is the line?

Options:

76144610281. object
76144610282. ✗ collimation

76144610283. ✔ contour

76144610284. ✗ Back sight

**Question Number : 172**  **Question Id : 7614462582**  **Question Type : MCQ**  **Option Shuffling : Yes**

**Display Question Number : Yes**  **Is Question Mandatory : No**  **Calculator : None**

**Response Time : N.A**  **Think Time : N.A**  **Minimum Instruction Time : 0**

**Correct Marks : 1**  **Wrong Marks : 0**

Every line has two bearings e.g. fore bearing and back bearing. If fore bearing is less than 180°, then what will be the back bearing?

**Options :**

76144610285. ✗ Back bearing = fore bearing - 180°

76144610286. ✔ Back bearing = fore bearing + 180°

76144610287. ✗ Back bearing = fore bearing

76144610288. ✗ Back bearing = 180° - fore bearing

**Question Number : 173**  **Question Id : 7614462583**  **Question Type : MCQ**  **Option Shuffling : Yes**

**Display Question Number : Yes**  **Is Question Mandatory : No**  **Calculator : None**

**Response Time : N.A**  **Think Time : N.A**  **Minimum Instruction Time : 0**

**Correct Marks : 1**  **Wrong Marks : 0**
Which of the following statement in respect of theodolite is true

Options:

76144610289. ✗ It measures horizontal angle only

76144610290. ✗ It measures vertical angle only

76144610291. ✔ It measures both horizontal and vertical angles

76144610292. ✗ It does not measure any angle at all

Question Number: 174 Question Id: 7614462584 Question Type: MCQ Option Shuffling: Yes Display Question Number: Yes Is Question Mandatory: No Calculator: None Response Time: N.A Think Time: N.A Minimum Instruction Time: 0 Correct Marks: 1 Wrong Marks: 0

A sum of interior angles in the closed travers of pentagonal is

Options:

76144610293. ✔ 540°

76144610294. ✗ 720°

76144610295. ✗ 900°

76144610296. ✗ 360°

Question Number: 175 Question Id: 7614462585 Question Type: MCQ Option Shuffling: Yes Display Question Number: Yes Is Question Mandatory: No Calculator: None Response Time: N.A
The latitude of a line is obtained by multiplying its length by ______ (Where θ is the reduced bearing)

Options:

76144610297. \( \tan \theta \)

76144610298. \( \sin \theta \)

76144610299. \( \cos \theta \)

76144610300. \( \cot \theta \)

The levelling station over which two readings are taken is known as

Options:

76144610301. Benchmark

76144610302. Intermediate station

76144610303. Change point

76144610304. Levelling point
Question Number: 177  Question Id: 7614462587  Question Type: MCQ  Option Shuffling: Yes  Display Question Number: Yes  Is Question Mandatory: No  Calculator: None  Response Time: N.A  Think Time: N.A  Minimum Instruction Time: 0  Correct Marks: 1  Wrong Marks: 0

The length of the tangent of a simple circular curve of radius R and angle of deflection θ is given by________

Options:

- $R \cos (\theta /2)$
- $R \sin (\theta /2)$
- $R \tan (\theta /2)$
- $R \cot (\theta /2)$

Question Number: 178  Question Id: 7614462588  Question Type: MCQ  Option Shuffling: Yes  Display Question Number: Yes  Is Question Mandatory: No  Calculator: None  Response Time: N.A  Think Time: N.A  Minimum Instruction Time: 0  Correct Marks: 1  Wrong Marks: 0

If the bedding plane full dip $= \alpha$, apparent dip $= \beta$, angle between full dip and apparent dip $= \theta$, then relation between Apparent and full dip __________

Options:

- $\tan \beta = \tan \theta \times \cos \alpha$
- $\tan \alpha = \tan \theta \times \cos \beta$
- $\cot \beta = \cot \alpha \times \sec \theta$
\[ \cot \beta = \cot \theta \times \sec \alpha \]

**Question Number : 179**
**Question Id : 7614462589**
**Question Type : MCQ**
**Option Shuffling : Yes**
**Display Question Number : Yes**
**Is Question Mandatory : No**
**Calculator : None**
**Response Time : N.A**
**Think Time : N.A**
**Minimum Instruction Time : 0**
**Correct Marks : 1**
**Wrong Marks : 0**

Which of the following survey instruments is designed to work based on the satellite___

**Options :**

- EDM
- Gyro
- GPS
- Eidograph

**Question Number : 180**
**Question Id : 7614462590**
**Question Type : MCQ**
**Option Shuffling : Yes**
**Display Question Number : Yes**
**Is Question Mandatory : No**
**Calculator : None**
**Response Time : N.A**
**Think Time : N.A**
**Minimum Instruction Time : 0**
**Correct Marks : 1**
**Wrong Marks : 0**

The full form GIS is___________

**Options :**

- Geological information system
Geodetic information system

Geographic information system

Global information system

Question Number : 181 Question Id : 7614462591 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

A Shaft is sunk always in the ------ in a metal mine

Options :

Hanging wall

Foot wall

Vein

Drift

Question Number : 182 Question Id : 7614462592 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

Open raising method adoptable at an Inclination of ------ with the horizontal

Options :
Question Number : 183 Question Id : 7614462593 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0
For massive ore bodies, weak ore, weak or strong walls which method is suitable from the following
Options :

76144610329. ✗ Shrinkage

76144610330. ✗ Room and Pillar

76144610331. ✗ Cut and Fill

76144610332. ✔ Square-set

Question Number : 184 Question Id : 7614462594 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
For massive ore bodies, strong ore, strong walls which method is suitable from the following

**Options:**

- **76144610333.** Shrinkage
- **76144610334.** Room and Pillar
- **76144610335.** Block caving
- **76144610336.** Square-set

For thin ore bodies, flat and strong ore, strong walls which method is suitable from the following

**Options:**

- **76144610337.** Longwall
- **76144610338.** Room and Pillar
- **76144610339.** Block caving
- **76144610340.** Square-set
Question Number : 186 Question Id : 7614462596 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

Alimak Raise Climber is used for drivage of

Options :

76144610341. ✗ Short raises

76144610342. ✗ Medium raises

76144610343. ✔ Long raises

76144610344. ✗ Zero raises

Question Number : 187 Question Id : 7614462597 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

VCR means in metal mines

Options :

76144610345. ✔ Vertical Crater Retreat

76144610346. ✗ Vertical Column Retreat

76144610347. ✗ Vertical Crater Return

76144610348. ✗ Vertical Column Return
Question Number : 188 Question Id : 7614462598 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

Why deep mining will become common in the future for coal and metals.

Options :

76144610349. ✓ Resources at shallow depths gradually become exhausted

76144610350. ✗ Demand of minerals increased

76144610351. ✗ Technology availability

76144610352. ✗ Human resources availability

Question Number : 189 Question Id : 7614462599 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

Major challenges with deep mining are

Options :

76144610353. ✗ High in situ stress

76144610354. ✗ High-temperature heat hazard

76144610355. ✗ High water pressure
Deep lithology deterioration, Deep hoisting, High water pressure, High in situ stress and temperatures

Question Number : 190 Question Id : 7614462600 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

The following is not a sampling method for collections of samples

Options :

76144610357. ✗ Chip Sampling and Drill Sampling

76144610358. ✗ Channel or Groove Sampling

76144610359. ✗ Face sampling, Muck sampling and Bulk Sampling

76144610360. ✔ Drag Sampling

Question Number : 191 Question Id : 7614462601 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

When the air and mineral flow are in the same direction the ventilation is called as

Options :

76144610361. ✔ Homotropal

76144610362. ✗ Ascential ventilation
76144610363. ✗ Antiripal

76144610364. ✗ Descential ventilation

**Question Number : 192** Question Id : 7614462602 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

Natural ventilation can be caused by_______

**Options :**

76144610365. ✗ Auto-compression in downcast shaft

76144610366. ✓ Differences in air densities in upcast and downcast shafts

76144610367. ✗ Auto-expansion in upcast shaft

76144610368. ✗ Moisture content in the mine

**Question Number : 193** Question Id : 7614462603 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

The instrument used for measuring humidity is called

**Options :**

76144610369. ✓ Hygrometer
76144610370. Methanometer

76144610371. Galvanometer

76144610372. Thermometer

7614462604 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

Which diagram explain the limits of explosibility of CH₄___________

Options :

76144610373. Coward

76144610374. Le chetelier

76144610375. Grahams

76144610376. Palvalov

7614462605 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

Which of the following system is adopted for continuous miner headings?
Options:

76144610377. ✗ Duct less auxiliary ventilation

76144610378. ✓ Overlap system of ventilation

76144610379. ✗ Exhaust type of ventilation without ducting

76144610380. ✗ Forcing type of ventilation

Question Number : 196 Question Id : 7614462606 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0
Ventilation survey usually means __________

Options:

76144610381. ✗ Quantity survey of air in the mine

76144610382. ✗ Quality survey in the mine

76144610383. ✓ Both quantity and pressure survey in the mine

76144610384. ✗ Pressure survey in the mine

Question Number : 197 Question Id : 7614462607 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
In the centrifugal fan smooth flow air and conversion of velocity energy into pressure energy takes place _________.

Options:

- 76144610385. ✗ In spiral casing
- 76144610386. ✗ In the blades
- 76144610387. ✗ At the tip of the blades
- 76144610388. ✓ In the evasee

What do you understand by Power of ventilation?

Options:

- 76144610389. ✗ Leakage of ventilation path
- 76144610390. ✗ Air flow through a duct of varying cross-section
- 76144610391. ✗ Size of regulators
- 76144610392. ✓ Rate at which work is done to maintain the air flow through a system
Question Number: 199

Correct Marks: 1 Wrong Marks: 0

In the rescue apparatus, pulmotor is

Options:

- 76144610393. ✗ Escape apparatus
- 76144610394. ✓ Reviving apparatus
- 76144610395. ✗ Breathing apparatus
- 76144610396. ✗ Emergency apparatus

Question Number: 200

Correct Marks: 1 Wrong Marks: 0

The main function of self rescuer is ______

Options:

- 76144610397. ✗ To supply 2 lit/min oxygen to wearer,
- 76144610398. ✓ To convert Co to CO₂,
- 76144610399. ✗ CO₂ To supply 30 lit/min of oxygen to wearer

76144610400.
To convert CO₂ to O₂