

Question Paper Preview

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|---|---|
| Question Paper Name: | Mining Engineering 11th May 2019 Shift1 |
| Subject Name: | Mining Engineering |
| Duration: | 180 |
| Total Marks: | 200 |
| Display Marks: | No |
| Share Answer Key With Delivery Engine: | Yes |
| Actual Answer Key: | Yes |

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|------------------------------|-------------|
| | Mathematics |
| Number of Questions: | 50 |
| Display Number Panel: | Yes |
| Group All Questions: | No |

Question Number : 1 Question Id : 8946584609 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Let $M = (a_{ij})$ be a 10×10 matrix such that $a_{ij} = \begin{cases} 1, & \text{if } i+j=11 \\ 0, & \text{otherwise} \end{cases}$. Then, the determinant of M is _____.

Options :

1. 0
2. 1
3. -1
4. 11

Question Number : 2 Question Id : 8946584610 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Let A and B be two square matrices of order n . If $AB = A$, $BA = B$ then $A^2 + B^2 = \underline{\hspace{2cm}}$.

Options :

1. AB
2. $A - B$
3. 0
4. $A + B$

Question Number : 3 Question Id : 8946584611 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Consider the system of linear equations $x + y + z = 3, x - y - z = 4, x - 5y + \alpha z = 6$. Then, the value of α for which this system has an infinite number of solutions is _____.

Options :

1. -5
2. 5
3. 3
4. 1

Question Number : 4 Question Id : 8946584612 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $A(\alpha, \beta) = \begin{pmatrix} \cos \alpha & \sin \alpha & 0 \\ -\sin \alpha & \cos \alpha & 0 \\ 0 & 0 & e^\beta \end{pmatrix}$, then the inverse of the matrix $A(\alpha, \beta)$ is _____.

Options :

1. $A(\alpha, \beta)$
2. $A(\alpha, -\beta)$

3. $A(-\alpha, -\beta)$

4. $A(-\alpha, \beta)$

Question Number : 5 Question Id : 8946584613 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The rational fraction $\frac{x^2 + 1}{(x^2 + 4)(x - 2)}$ is equal to _____

Options :

1. $\frac{3x + 6}{8(x^2 + 4)} + \frac{5}{4(x - 2)}$

2. $\frac{3x + 6}{4(x^2 + 4)} + \frac{5}{8(x - 2)}$

3. $\frac{3x + 6}{8(x^2 + 4)} + \frac{5}{8(x - 2)}$

4. $\frac{3x + 6}{(x^2 + 4)} + \frac{5}{(x - 2)}$

Question Number : 6 Question Id : 8946584614 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $\log_2 3 = a, \log_3 5 = b, \log_7 2 = c$, then $\log_{140} 63 =$ _____.

Options :

1. $\frac{1 - 2ac}{2c + abc + 1}$

2. $\frac{1 - 2ac}{2c - abc - 1}$

$$3. \frac{1+2ac}{2c-abc-1}$$

$$4. \frac{1+2ac}{2c+abc+1}$$

Question Number : 7 Question Id : 8946584615 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

$$\cos \frac{2\pi}{7} + \cos \frac{4\pi}{7} + \cos \frac{6\pi}{7} = \underline{\hspace{2cm}}.$$

Options :

$$1. 1$$

$$2. \frac{1}{2}$$

$$3. \frac{-1}{2}$$

$$4. 0$$

Question Number : 8 Question Id : 8946584616 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If the angles A, B and C of a triangle are in an arithmetic progression and if a, b and c denote the lengths of the sides opposite to A, B and C respectively, then the value of the

expression $\frac{a}{c} \sin 2C + \frac{c}{a} \sin 2A$ is $\underline{\hspace{2cm}}$.

Options :

$$1. \sqrt{3}$$

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

3. 1

4. $\frac{1}{2}$

Question Number : 9 Question Id : 8946584617 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $\sin x + \sin y = \frac{1}{4}$ and $\cos x + \cos y = \frac{1}{3}$, then $\cot(x + y) =$ _____.

Options :

1. $\frac{7}{24}$

2. $\frac{24}{7}$

3. $\frac{3}{4}$

4. 1

Question Number : 10 Question Id : 8946584618 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $\sin(x^\circ + 28^\circ) = \cos(3x^\circ - 78^\circ)$ and $0^\circ < x^\circ < 90^\circ$, then, which of the following is the value of x° ?

Options :

1. 50°

2. 30°

3. 16°

4. 8°

Question Number : 11 Question Id : 8946584619 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $x = \tan\left(\operatorname{Cosec}^{-1}\frac{65}{63}\right)$ and $y = \sec^2\left(\operatorname{Cot}^{-1}\frac{1}{2}\right) + \operatorname{cosec}^2\left(\operatorname{Tan}^{-1}\frac{1}{3}\right)$, then $(x, y) =$ _____.

Options :

1. $\left(\frac{63}{16}, 15\right)$

2. $\left(\frac{16}{63}, 15\right)$

3. $\left(\frac{63}{16}, 5\right)$

4. $\left(\frac{16}{63}, 5\right)$

Question Number : 12 Question Id : 8946584620 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The equation $\operatorname{Tan}^{-1}\left(\frac{x+1}{x-1}\right) + \operatorname{Tan}^{-1}\left(\frac{x-1}{x}\right) = \operatorname{Tan}^{-1}(-7)$ has _____.

Options :

1. unique solution $x = 2$

2. two solutions $x = 1, 2$

3. no solution

4. infinite number of solutions

Question Number : 13 Question Id : 8946584621 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In a triangle ABC , let a, b and c denote the lengths of the sides opposite to

A, B and C respectively. If $\frac{1}{a+c} + \frac{1}{b+c} = \frac{3}{a+b+c}$, then the angle C is _____.

Options :

1. 30°
2. 90°
3. 60°
4. 45°

Question Number : 14 Question Id : 8946584622 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $\sin hx = 3$ then $x =$ _____.

Options :

1. $\log(3 + \sqrt{10})$
2. $\log(3 - \sqrt{10})$
3. $\log(6 + \sqrt{10})$
4. 1

Question Number : 15 Question Id : 8946584623 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which of the following is NOT true for the complex numbers z_1 and z_2 ?

Options :

1. $\frac{z_1}{z_2} = \frac{z_1 \bar{z}_2}{|z_2|^2}$

2. $|z_1 + z_2| \leq |z_1| + |z_2|$

3. $|z_1 + z_2| \leq ||z_1| - |z_2||$

4. $|z_1 + z_2|^2 + |z_1 - z_2|^2 = 2|z_1|^2 + 2|z_2|^2$

Question Number : 16 Question Id : 8946584624 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If a complex number $z = \frac{\sqrt{3}}{2} + i\frac{1}{2}$, then z^4 is _____.

Options :

1. $2\sqrt{2} + 2i$

2. $\frac{-1}{2} + i\frac{\sqrt{3}}{2}$

3. $\frac{\sqrt{3}}{2} - i\frac{1}{2}$

4. $\frac{\sqrt{3}}{8} - i\frac{1}{8}$

Question Number : 17 Question Id : 8946584625 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The equation of the straight line which makes intercepts r and s on the coordinate axes

such that $r + s = 5$ and $rs = 6$ is $ax + by + c = 0$, then $a + b + c =$ ____.

Options :

1. 11

2. 5

3. -7

4. -1

Question Number : 18 Question Id : 8946584626 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If a straight line $ax + by + \sqrt{5} = 0$ touches the circle $x^2 + y^2 = 5$, then which of the following is TRUE?

Options :

1. $5(a^2 + b^2) = 1$

2. $a^2 + b^2 = \sqrt{5}$

3. $a^2 + b^2 = 1$

4. $\sqrt{a^2 + b^2} = 5$

Question Number : 19 Question Id : 8946584627 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If a chord of length 12 cm is at a distance of $4\sqrt{10}$ cm from the centre of the circle, then the radius of the circle is _____.

Options :

1. 14 cm

2. $\sqrt{304}$ cm

3. 4 cm

4. $\sqrt{124}$ cm

Question Number : 20 Question Id : 8946584628 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The 2019th derivative of the function $(x-1)e^{-x}$ is _____

Options :

1. $\frac{x-2019}{e^x}$

2. $\frac{2019-x}{e^x}$

3. $\frac{x-2020}{e^x}$

4. $\frac{2020-x}{e^x}$

Question Number : 21 Question Id : 8946584629 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $z = f(x+ct) + \varphi(x-ct)$, then $\frac{\partial^2 z}{\partial t^2} =$ _____.

Options :

1. $c^2 \frac{\partial^2 z}{\partial x^2}$

2. $-c^2 \frac{\partial^2 z}{\partial x^2}$

3. $\frac{1}{c^2} \frac{\partial^2 z}{\partial x^2}$

4. $-\frac{1}{c^2} \frac{\partial^2 z}{\partial x^2}$

Question Number : 22 Question Id : 8946584630 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $x = r \cos \theta$, $y = r \sin \theta$ and $U = \frac{f(\theta)}{r}$ then $x \frac{\partial U}{\partial x} + y \frac{\partial U}{\partial y} =$ _____.

Options :

1. 0
2. U
3. $-U$
4. $2U$

Question Number : 23 Question Id : 8946584631 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Let $f(x+y) = f(x)f(y)$, $\forall x, y$ and $f'(0) = 5$, $f(2019) = 15$. Then the value of $f'(2019)$ is _____.

Options :

1. 3
2. 75
3. $\frac{1}{3}$
4. $\frac{1}{75}$

Question Number : 24 Question Id : 8946584632 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The set of values of x for which the function $f(x) = 2x^3 - 9x^2 + 12x + 4$ is increasing is _____.

Options :

1. $1 < x < 2$

2. all $x \in \mathbb{R}$

3. $\mathbb{R} - [1, 2]$

4. $x \geq 2$

Question Number : 25 Question Id : 8946584633 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

$$\lim_{x \rightarrow \infty} x \left(\log \left(1 + \frac{x}{2} \right) - \log \left(\frac{x}{2} \right) \right) = \underline{\hspace{2cm}}.$$

Options :

1. e^2

2. ∞

3. 1

4. 2

Question Number : 26 Question Id : 8946584634 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $f(x, y, z) = x^3 + xz^2 + y^3 + xyz$, $x = e^t$, $y = \cos t$, $z = t^3$ then $\frac{df}{dt}$ at $t = 0$ is $\underline{\hspace{2cm}}$.

Options :

1. 2

2. 4

3. e

4. 3

Question Number : 27 Question Id : 8946584635 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which of the following is the value of $5050 \times \frac{\int_0^1 (1 - (1-x)^{50})^{100} x^{49} dx}{\int_0^1 (1-x^{50})^{101} x^{49} dx}$?

Options :

1. 5100

2. 1

3. 5050

4. $\frac{1}{2}$

Question Number : 28 Question Id : 8946584636 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

$$\int_0^1 \max \left\{ x, \frac{1}{2} - x \right\} dx = \underline{\hspace{2cm}}$$

Options :

1. 0

2. $\frac{1}{2}$

3. $\frac{9}{16}$

4. $\frac{9}{8}$

Question Number : 29 Question Id : 8946584637 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

$$\lim_{n \rightarrow \infty} \frac{1}{n^6} \sum_{k=1}^n k^5 = \underline{\hspace{2cm}}$$

Options :

1. $\frac{1}{6}$

2. $\frac{1}{5}$

3. 1

4. 6

Question Number : 30 Question Id : 8946584638 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

$$\int_{-1}^1 \frac{x^{15}(1-x^2)^{12}}{(1+x^2)^8} dx = \underline{\hspace{2cm}}.$$

Options :

1. 0

2. $\frac{22}{7} - \pi$

3. $\frac{2}{105}$

4. $\frac{71}{15} - \frac{3\pi}{4}$

Question Number : 31 Question Id : 8946584639 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The area of the region bounded by the curves $y = 2 - x^2$ and $y = -x$ is _____.

Options :

1. 1

2. $\frac{8}{19}$

3. $\frac{35}{4}$

4. $\frac{27}{6}$

Question Number : 32 Question Id : 8946584640 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The volume of the solid obtained by revolving the region bounded by the curves

$y = x^3$, $y = 8$ and $x = 0$ about the y -axis is _____

Options :

1. $\frac{96}{5}$

2. $\frac{96\pi}{5}$

3. $\frac{32\pi}{5}$

4. $\frac{32}{5}$

Question Number : 33 Question Id : 8946584641 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The value of $\int_0^{\pi} \theta \sin^2 \theta \cos^4 \theta d\theta$ is _____.

Options :

1. $\frac{\pi^2}{32}$

2. $\frac{\pi}{32}$

3. $\frac{\pi^2}{16}$

4. $\frac{\pi}{16}$

Question Number : 34 Question Id : 8946584642 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The average value of the function $f(x) = 4 - x^2$ over the interval $[-1, 3]$ is _____.

Options :

1. 5

2. $\frac{20}{3}$

3. $\frac{5}{3}$

4. 1

Question Number : 35 Question Id : 8946584643 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The differential equation $x \frac{dy}{dx} = y + x^2$, $x > 0$ satisfying $y(0) = 0$ has _____.

Options :

1. infinitely many solutions

2. no solution

3. a unique solution

4. exactly two solutions

Question Number : 36 Question Id : 8946584644 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The differential equation $(axy^3 + y \cos x)dx + (x^2y^2 + b \sin x)dy = 0$ is an exact differential equation for _____.

Options :

1. $a = 1, b = \frac{3}{2}$

2. $a = \frac{3}{2}, b = 1$

3. $a = \frac{2}{3}, b = 1$

4. $a = 1, b = \frac{2}{3}$

Question Number : 37 Question Id : 8946584645 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $\sin x$ is a solution of the differential equation $\frac{d^4 y}{dx^4} + 2\frac{d^3 y}{dx^3} + 6\frac{d^2 y}{dx^2} + 2\frac{dy}{dx} + 5y = 0$,

then the general solution is _____.

Options :

1. $y = c_1 \sin x + c_2 \cos x + e^{-x}(c_3 \sin 2x + c_4 \cos 2x)$

2. $y = c_1 \sin x + c_2 \cos x + c_3 \sin 2x + c_4 \cos 2x$

3. $y = c_1 \sin x + c_2 \cos x + c_3 e^{-3x} + c_4 e^{-2x}$

4. $y = c_1 \sin x + c_2 \cos x + c_3 e^{3x} + c_4 e^{2x}$

Question Number : 38 Question Id : 8946584646 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $D \equiv \frac{d}{dx}$, then $\frac{1}{D^2 - 4D + 13}(6e^{2x} \sin 3x)$ is _____.

Options :

1. $-xe^{2x} \cos 3x$

2. $xe^{2x} \cos 3x$

3. $-xe^{2x} \sin 3x$

4. $xe^{2x} \sin 3x$

Question Number : 39 Question Id : 8946584647 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The general solution of $\left(\frac{e^{-2\sqrt{x}}}{\sqrt{x}} - \frac{y}{\sqrt{x}}\right) \frac{dx}{dy} = 1$ is _____.

Options :

1. $y = e^{2\sqrt{x}} (2\sqrt{x} + c)$

2. $y = 2\sqrt{x} e^{2\sqrt{x}} + c$

3. $y = 2\sqrt{x} e^{-2\sqrt{x}} + c$

4. $y = e^{-2\sqrt{x}} (2\sqrt{x} + c)$

Question Number : 40 Question Id : 8946584648 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Let y be the solution of the differential equation $\frac{dy}{dx} + y = x$, $x \in \mathbb{R}$ and $y(-1) = 0$.

Then, $y(1)$ is equal to _____.

Options :

1. $\frac{2}{e} - \frac{2}{e^2}$

2. $2e^{-2}$

3. $2 - \frac{2}{e}$

4. $2 - 2e$

Question Number : 41 Question Id : 8946584649 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If the substitution $x = X + h$, $y = Y + k$ transforms the differential equation $(y - x + 1)dy - (y + x + 2)dx = 0$ into a homogeneous equation, then the value of (h, k) is _____.

Options :

1. $\left(\frac{1}{2}, \frac{3}{2}\right)$

2. $\left(\frac{-1}{2}, \frac{-3}{2}\right)$

3. $\left(\frac{3}{2}, \frac{1}{2}\right)$

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

Question Number : 42 Question Id : 8946584650 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The general solution of $\frac{dy}{dx} - y = y^2(\sin x + \cos x)$ is _____.

Options :

1. $y = \frac{1}{ce^x - \sin x}$

2. $y = ce^{-x} - e^x \sin x$

3. $y = ce^{-x} - \sin x$

4. $y = \frac{1}{ce^{-x} - \sin x}$

Question Number : 43 Question Id : 8946584651 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The Laplace transform of the function $f(t) = \begin{cases} \sin t, & \text{for } 0 \leq t \leq \pi \\ 0, & \text{for } t > \pi \end{cases}$

is _____.

Options :

1. $\frac{1}{(1+s^2)}$ for all $s > 0$

2. $\frac{1}{(1+s^2)}$ for all $s < \pi$

3. $\frac{(1+e^{-\pi s})}{(1+s^2)}$ for all $s > 0$

4. $\frac{e^{-\pi s}}{(1+s^2)}$ for all $s > 0$

Question Number : 44 Question Id : 8946584652 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The inverse Laplace transform of $\frac{5}{s} - \frac{3e^{-3s}}{s} - \frac{2e^{-7s}}{s}$ is _____.

Options :

1. $f(x) = \begin{cases} 5, & 0 < x < 3 \\ 0, & 3 < x < 7 \\ 2, & x > 7 \end{cases}$

2.
$$f(x) = \begin{cases} 5, & 0 < x < 7 \\ 2, & x > 7 \end{cases}$$

3.
$$f(x) = \begin{cases} 5, & 0 < x < 3 \\ 2, & 3 < x < 7 \\ 0, & x > 7 \end{cases}$$

4.
$$f(x) = \begin{cases} 5, & 0 < x < 7 \\ 0, & x > 7 \end{cases}$$

Question Number : 45 Question Id : 8946584653 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The Laplace transform of a function $f(x)$ is $F(s) = \frac{1}{s^3 + 2s^2 + 2s}$ Then, $\lim_{x \rightarrow 0} f(x) =$

_____.

Options :

1. 0

2. 3

3. ∞

4. $\frac{1}{2}$

Question Number : 46 Question Id : 8946584654 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The Laplace transform of the solution of the differential equation $\frac{dy}{dx} - 2y = e^{5x}$ with the

initial condition $y(0) = 3$ is _____.

Options :

1. $\frac{1}{3(s-2)} + \frac{1}{3(s-5)}$

2. $\frac{8}{3(s-2)} + \frac{1}{s-5}$

3. $\frac{8}{3(s-2)} + \frac{1}{3(s-5)}$

4. $\frac{8}{s-2} + \frac{1}{3(s-5)}$

Question Number : 47 Question Id : 8946584655 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $L(y(x)) = Y(s)$ and $y(x) = x^3 + \int_0^x \sin(x-t)y(t)dt$ then $\frac{1}{6}Y(s) = \underline{\hspace{2cm}}$.

Options :

1. $\left(\frac{1}{s^4} + \frac{1}{s^6}\right)$

2. $\left(\frac{1}{s^3} + \frac{1}{s^5}\right)$

3. $\left(\frac{1}{s^3} + \frac{1}{s^7}\right)$

4. $\left(\frac{1}{s} + \frac{1}{s^3}\right)$

Question Number : 48 Question Id : 8946584656 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

For $x > 0$, $\int_0^\infty \frac{\sin xt}{t} dt$ is $\underline{\hspace{2cm}}$.

Options :

1. 0

2. $\frac{\pi}{2x}$

3. $\frac{1}{x}$

4. $\frac{\pi}{2}$

Question Number : 49 Question Id : 8946584657 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $f(x) = \frac{1}{2}a_0 + \sum_{n=1}^{\infty} (a_n \cos nx + b_n \sin nx)$ is the Fourier series of the function

$$f(x) = \begin{cases} 0, & -\pi \leq x < 0 \\ \pi, & 0 \leq x \leq \pi \end{cases} \text{ then, which of the following is TRUE?}$$

Options :

1. $a_n = 0$, for all $n \geq 0$

2. $a_0 = \frac{\pi}{2}$ and $a_n = 0$, for all $n \geq 1$

3. $b_n \neq 0$, for all $n \geq 1$

4. $a_0 = \pi$ and $a_n = 0$, for all $n \geq 1$

Question Number : 50 Question Id : 8946584658 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A function $f(x)$ is such that $f(x + 2\pi) = f(x)$ and $f(x) = x$, $-\pi \leq x \leq \pi$. The Fourier series of $f(x)$ is _____.

Options :

1. $2(\sin x - \frac{1}{2} \sin 2x + \frac{1}{3} \sin 3x - \dots)$

2. $2(\sin x + \frac{1}{2} \sin 2x + \frac{1}{3} \sin 3x + \dots)$

3. $2(\cos x - \frac{1}{2} \cos 2x + \frac{1}{3} \cos 3x - \dots)$

4. $2(\cos x + \frac{1}{2} \cos 2x + \frac{1}{3} \cos 3x + \dots)$

Physics

Number of Questions:

25

Display Number Panel:

Yes

Group All Questions:

No

Question Number : 51 Question Id : 8946584659 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The dimensional formula for gravitational constant is _____.

Options :

1. $L^3T^{-2}M^{-1}$

2. $L^3T^2M^{-1}$

3. $L^2T^3M^{-2}$

4. $L^3T^1M^{-3}$

Question Number : 52 Question Id : 8946584660 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The dimensions of the quantities in one of the following pairs are same. Identify the pairs.

Options :

1. torque and work
2. angular momentum and work
3. energy and Young's modules
4. light year and wavelength

Question Number : 53 Question Id : 8946584661 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which of the following is not correct?

Options :

1. $\mathbf{j} \times \mathbf{i} = -\mathbf{k}$
2. $\mathbf{k} \times \mathbf{j} = -\mathbf{i}$
3. $\mathbf{i} \times \mathbf{k} = -\mathbf{j}$
4. $\mathbf{k} \times \mathbf{i} = -\mathbf{j}$

Question Number : 54 Question Id : 8946584662 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $0.5\mathbf{i} + 0.8\mathbf{j} + c\mathbf{k}$ is a unit vector then c is _____.

Options :

1. $\sqrt{0.89}$
2. 0.2
3. 0.3
4. $\sqrt{0.11}$

Question Number : 55 Question Id : 8946584663 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which of the following is correct?

Options :

1. $A.B \neq B.A$
2. $A.(B+C) = A.B + C.A$
3. $A.B = A.B - A.C$
4. $A.B = -B.A$

Question Number : 56 Question Id : 8946584664 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The acceleration due to gravity on the surface of the earth is given by _____

Options :

1. G
2. GM/R^2
3. GM/R
4. GM

Question Number : 57 Question Id : 8946584665 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The value of g is maximum at _____.

Options :

1. equator
2. Pole
3. higher altitudes

4. at the centre of the earth

Question Number : 58 Question Id : 8946584666 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

When the speed of rotation of earth increases your weight _____

Options :

1. increases
2. decreases
3. remains constant
4. becomes zero

Question Number : 59 Question Id : 8946584667 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The value of G is zero at _____

Options :

1. nowhere
2. the centre of the earth
3. surface of the earth
4. pole

Question Number : 60 Question Id : 8946584668 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If the linear momentum is increased by 50%, the kinetic energy will be increased
by _____

Options :

1. 50%

2. 100%
3. 125%
4. 25%

Question Number : 61 Question Id : 8946584669 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A metallic block slides down a smooth inclined plane when released from the top, while the other falls freely from the same point, then _____

Options :

1. both will reach the ground with the same velocity
2. both will reach the ground together
3. both will reach the ground travelling with same acceleration
4. the block sliding down the plane will strike earlier

Question Number : 62 Question Id : 8946584670 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A long spring is stretched by 2 cm and its potential energy is u . If the spring is stretched by 10 cm, then the potential energy stored in it will be _____.

Options :

1. $u/24$
2. $u/5$
3. $5u$
4. $25u$

Question Number : 63 Question Id : 8946584671 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Two masses of 1 gm and 4 gm are moving with equal kinetic energies. The ratio of the magnitudes of their linear momentum is _____

Options :

1. 4:1
2. $\sqrt{2}:1$
3. 1:2
4. 1:16

Question Number : 64 Question Id : 8946584672 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A body is dropped from rest at height 0.5 m. What will be its velocity when it just strikes the ground?

Options :

1. 7 m/s
2. 9.8 m/s
3. 4.9 m/s
4. $\sqrt{9.8}$ m/s

Question Number : 65 Question Id : 8946584673 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A particle moves such that its acceleration a is given by $a = -bx$ where x is the displacement from equilibrium and b is a constant. The period of Oscillation is _____ .

Options :

1. $2\pi b$

2. $2\pi\sqrt{b}$

3. $2\pi/b$

4. $2\sqrt{\pi}/b$

Question Number : 66 Question Id : 8946584674 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A particle is vibrating in simple harmonic motion with amplitude of 4 cm. At what displacement from the equilibrium position is its energy half potential and half kinetic?

Options :

1. 1 cm

2. $\sqrt{2}$ cm

3. 2 cm

4. $2\sqrt{2}$ cm

Question Number : 67 Question Id : 8946584675 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

When a star approaches the earth, the waves are shifted towards _____

Options :

1. green colour

2. yellow colour

3. blue end

4. red end

Question Number : 68 Question Id : 8946584676 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If a tuning fork of frequency 90 is sounded and moved towards an observer with a velocity equal to one tenth the velocity of sound, then the note heard by the observer will have frequency_____.

Options :

1. 100
2. 90
3. 80
4. 900

Question Number : 69 Question Id : 8946584677 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

What is the most important factor which helps to recognise a person by his/her voice alone_____

Options :

1. quality
2. pitch
3. intensity
4. quality, pitch and intensity

Question Number : 70 Question Id : 8946584678 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The quality of tone_____

Options :

1. decreases with loudness
2. varies inversely as amplitude

3. varies directly as pitch
4. depends on the overtones present

Question Number : 71 Question Id : 8946584679 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The conduction of heat from hot body to cold body is an example of _____.

Options :

1. reversible process
2. irreversible process
3. isothermal process
4. isobaric process

Question Number : 72 Question Id : 8946584680 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

From the isothermal drawn from Andrews experiment, it can be inferred that _____

Options :

1. CO₂ is a perfect gas
2. there is continuity of state
3. there is discontinuity of state
4. gases like CO₂ and H₂ cannot be liquefied

Question Number : 73 Question Id : 8946584681 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A diesel cycle works at _____

Options :

1. constant volume
2. constant pressure
3. constant temperature
4. both constant volume and constant temperature

Question Number : 74 Question Id : 8946584682 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The transition temperature of most low temperature superconducting elements is in the
range of _____

Options :

1. zero to 10 k
2. 10 k to 20 k
3. 20 k to 50 k
4. 50 k alone

Question Number : 75 Question Id : 8946584683 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Propagation of light through fiber core is due to _____

Options :

1. diffraction
2. interference
3. total internal reflection
4. reflection

| | |
|-----------------------|-----|
| Number of Questions: | 25 |
| Display Number Panel: | Yes |
| Group All Questions: | No |

Question Number : 76 Question Id : 8946584684 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which of the following energy orders is correct?

Options :

1. $6s < 4f < 5d < 6p$
2. $4f < 5d < 6s < 6p$
3. $4f < 6s < 6p < 5d$
4. $6s < 6p < 5d < 4f$

Question Number : 77 Question Id : 8946584685 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

An element A of atomic number 11 combines with an element B of atomic number 17. The compound formed is _____.

Options :

1. Covalent AB
2. Ionic AB
3. Covalent AB₂
4. Ionic AB₂

Question Number : 78 Question Id : 8946584686 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The oxidation number of 'S' in S₈, S₂F₂, H₂S respectively are _____.

Options :

1. 0, +1 and -2

2. +2, +1 and -2
3. 0, +1 and +2
4. -2, +1 and -2

Question Number : 79 Question Id : 8946584687 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The elements A, B, C and D have the following electronic configurations:

A: $1S^2, 2S^2, 2P^1$

B: $1S^2, 2S^2, 2P^6, 3S^2, 3P^1$

C: $1S^2, 2S^2, 2P^6, 3S^2, 3P^3$

D: $1S^2, 2S^2, 2P^6, 3S^2, 3P^5$

The elements that belong to same group are _____.

Options :

1. A and C
2. C and D
3. A and D
4. A and B

Question Number : 80 Question Id : 8946584688 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

4.9 gm of H_2SO_4 is present in 2 lit of its solution. The molarity of the solution is

_____.

Options :

1. 0.1 M

2. 0.025 M
3. 0.25 M
4. 0.01 M

Question Number : 81 Question Id : 8946584689 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The molecular weight of H_3PO_4 is 98. The equivalent weight is _____ gram / equivalents.

Options :

1. 98
2. 49
3. 32.66
4. 24.5

Question Number : 82 Question Id : 8946584690 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which of the following is the Bronsted acid?

Options :

1. Cl^-
2. NH_2^-
3. CH_3COO^-
4. NH_4^+

Question Number : 83 Question Id : 8946584691 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The pH of 1 M KOH is _____.

Options :

1. 12
2. 11
3. 14
4. 13

Question Number : 84 Question Id : 8946584692 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Froth floatation process is used for the _____.

Options :

1. Oxide ores
2. Sulphide ores
3. Chloride ores
4. Oxide ores and Chloride ores

Question Number : 85 Question Id : 8946584693 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The composition of brass is _____.

Options :

1. Cu and Zn
2. Cu and Ni
3. Cu and Mn

4. Cu and Fe

Question Number : 86 Question Id : 8946584694 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which of the following statements is correct?

Options :

1. Cathode is positive terminal in an electrolytic cell
2. Cathode is negative terminal in a galvanic cell
3. Reduction occurs at cathode in either of cells
4. Oxidation occurs at cathode in either of cells

Question Number : 87 Question Id : 8946584695 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In the electrolysis of CuCl_2 solution using copper electrode, if 2.5 gm of Cu is deposited at cathode, then at anode _____.

Options :

1. 890 mL of Cl_2 at STP is liberated
2. 445 mL of O_2 at STP is liberated
3. 2.5 gm of copper is deposited
4. a decrease of 2.5 gm of mass takes place

Question Number : 88 Question Id : 8946584696 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The unit of resistivity is _____.

Options :

1. Ω

2. $\Omega \text{ m}$

3. Ω / m

4. $\Omega \text{ m}^2$

Question Number : 89 Question Id : 8946584697 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which of the following metals provide cathodic protection to iron?

Options :

1. Cu and Ni

2. Al and Zn

3. Al and Cu

4. Co and Ni

Question Number : 90 Question Id : 8946584698 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The chemical composition of rust is _____.

Options :

1. Fe_3O_4

2. Fe_3O_3

3. $\text{Fe}_2\text{O}_3 \cdot n\text{H}_2\text{O}$

4. $\text{Fe}_3\text{O}_3 \cdot x\text{H}_2\text{O}$

Question Number : 91 Question Id : 8946584699 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

1 ppm of hardness of water is equal to _____.

Options :

1. 1 part of CaCO_3 hardness in 10^6 parts of water
2. 1 part of CaCO_3 hardness in 10^8 parts of water
3. 1 part of CaCO_3 hardness in 10^7 parts of water
4. 1 part of CaCO_3 hardness in 10^5 parts of water

Question Number : 92 Question Id : 8946584700 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The temporary hardness of water is due to the presence of _____.

Options :

1. MgCl_2 and CaCl_2
2. $\text{Ca}(\text{NO}_3)_2$ and $\text{Mg}(\text{NO}_3)_2$
3. CaSO_4 and MgSO_4
4. $\text{Ca}(\text{HCO}_3)_2$ and $\text{Mg}(\text{HCO}_3)_2$

Question Number : 93 Question Id : 8946584701 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The basic buffer solution is a mixture of _____.

Options :

1. $\text{NH}_3 + \text{NH}_4\text{Cl}$
2. $\text{HCl} + \text{NH}_4\text{Cl}$
3. $\text{NaCl} + \text{NH}_4\text{Cl}$
4. $\text{KOH} + \text{NH}_4\text{Cl}$

Question Number : 94 Question Id : 8946584702 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which of the following polymers has amide linkage?

Options :

1. Terylene
2. Bakelite
3. Nylon
4. PVC

Question Number : 95 Question Id : 8946584703 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The monomer of natural rubber is _____.

Options :

1. Butadiene
2. Chloroprene
3. 2-methyl 1,2 butadiene
4. 2-methyl 1,3 butadiene

Question Number : 96 Question Id : 8946584704 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which of the following is a thermo setting?

Options :

1. Bakelite
2. Polyethylene
3. Nylon-6
4. Natural rubber

Question Number : 97 Question Id : 8946584705 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The composition of water gas is _____.

Options :

1. CO and H₂ are combustible gases and CO₂ and N₂ are non-combustible gases
2. CO + CO₂ are combustible gases and H₂O and N₂ non-combustible gases
3. CO + N₂ are combustible gases and H₂O and H₂ are non-combustible gases
4. N₂+H₂ are combustible gases and CO + H₂O are non-combustible gases

Question Number : 98 Question Id : 8946584706 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Earth is protected from UV radiation by _____.

Options :

1. Nitrogen layer
2. Ozone layer
3. Carbon dioxide layer
4. Oxygen layer

Question Number : 99 Question Id : 8946584707 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which of following statements is not correct?

Options :

1. CO is the main air pollutant
2. All pollutants are not wastes
3. Water is polluted by dissolved Oxygen

4. Lichens are pollution indicators

Question Number : 100 Question Id : 8946584708 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Minamata disease is caused due to the presence of _____.

Options :

1. Cd

2. Pb

3. As

4. Hg

Mining Engineering

| | |
|-----------------------|-----|
| Number of Questions: | 100 |
| Display Number Panel: | Yes |
| Group All Questions: | No |

Question Number : 101 Question Id : 8946584709 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

1. The vertical approach made for extraction of the deposit is _____.

Options :

1. Shaft

2. Incline

3. Decline

4. Adit

Question Number : 102 Question Id : 8946584710 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

During the exploration operation, the bore hole is deviated for certain angle from the actual target. The measurement for the deviation of the bore hole is known as _____.

Options :

1. Exploration
2. Reconnaissance
3. Bore hole survey
4. Levelling

Question Number : 103 Question Id : 8946584711 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The shaft diameter is 6.6 m and depth of the drill hole is 1.5 m. What will be the blasted material if pull per blast is 1.2 m?

Options :

1. 41 m³
2. 41 t
3. 20.5 m³
4. 20.5 t

Question Number : 104 Question Id : 8946584712 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The piling system is used for a depth of _____.

Options :

1. 40 m
2. 20 m

3. 30 m

4. 25 m

Question Number : 105 Question Id : 8946584713 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The mineral body is excavated with small opencast mining and the excavated mineral is transported to the surface through underground mine is known as _____.

Options :

1. Glory mining

2. Rat hole mining

3. Longwall mining

4. Leaching

Question Number : 106 Question Id : 8946584714 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Match the following:

| Mining method | Stripping ratio |
|------------------------------|-----------------|
| p. Manual quarrying | i. 10:1 |
| q. Semi mechanized quarrying | ii. 5:1 |
| r. Shove-dumper combination | iii. 1.5:1 |
| s. Dragline | iv. 2:1 |

Options :

1. p-iv; q-i; r-iii; s-ii

2. p-iii; q-i; r-iv; s-ii

3. p-iii; q-i; r-ii; s-iv

4. p-iii; q-iv; r-ii; s-i

Question Number : 107 Question Id : 8946584715 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Match the following:

UG method

- p. Longwall
- q. BG
- r. Bord and pillar
- s. Continuous miner

Types of support

- i. GRP bolts
- ii. Hydraulic prop
- iii. Shield support
- iv. Wooden chock

Options :

- 1. p-iv; q-i; r-iii; s-ii
- 2. p-iii; q-ii; r-iv; s-i
- 3. p-iii; q-i; r-ii; s-iv
- 4. p-iii; q-iv; r-ii; s-i

Question Number : 108 Question Id : 8946584716 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The roof bolt of 1.8 m long column installed at a grid pattern of 1m x 1m and carries a load of 25 tonne. What will be the safety factor of the bolt if the rock load is 50 tonne per m² ?

Options :

- 1. 2
- 2. 0.5
- 3. 100
- 4. 4

Question Number : 109 Question Id : 8946584717 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Composition of delay element in long delay detonators is _____

Options :

1. Antimony
2. LMNR
3. PETN
4. Silica

Question Number : 110 Question Id : 8946584718 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The cores of length 5 cm, 10 cm, 15 cm, 25 cm, 50 cm, 75 cm, 8cm and 2 cm are recorded for a bore hole lagging of 2 m depth. Then core recovery is _____.

Options :

1. 95%
2. 87.5%
3. 90%
4. 100%

Question Number : 111 Question Id : 8946584719 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The second largest coal producer of India is _____.

Options :

1. CIL
2. SCCL

3. NLC

4. Tata Steel

Question Number : 112 Question Id : 8946584720 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The middle part of the earth is _____.

Options :

1. Crust

2. Mantle

3. Core

4. Outer core

Question Number : 113 Question Id : 8946584721 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The RL of each point on a particular line is maintained as the same. Then this line is _____.

Options :

1. Dip

2. Apparent dip

3. Strike

4. Winze

Question Number : 114 Question Id : 8946584722 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If volume of material is V_m , volume of solid is V_s and volume of void is V_v . Then porosity of a material is _____.

Options :

1. V_m/V_s
2. V_v/V_s
3. $V_v \times V_s$
4. V_v/V_m

Question Number : 115 Question Id : 8946584723 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If the limbs of the fold are lifted up, then the fold is known as _____.

Options :

1. Anticline
2. Syncline
3. Joint
4. Fold

Question Number : 116 Question Id : 8946584724 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In a fault, if the part of the coal seam is displaced to 10 m downward and 2 m horizontal, then the throw of the fault is _____.

Options :

1. 12 m
2. 10 m
3. 20 m
4. 5 m

Question Number : 117 Question Id : 8946584725 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Match the following:

| Mineral | Hardness |
|----------------|-----------------|
| p. Talc | i. 9 |
| q. Gypsum | ii. 7 |
| r. Quartz | iii. 1 |
| s. Corundum | iv. 2 |

Options :

1. p-ii; q-i; r-iv; s-iii
2. p-iii; q-ii; r-iv; s-i
3. p-iii; q-ii; r-i; s-iv
4. p-iii; q-iv; r-ii; s-i

Question Number : 118 Question Id : 8946584726 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Match the following:

| Mineral/ Ore | Area/Mine |
|---------------------|------------------|
| p. Diamond | i. Jaduguda |
| q. Chromite | ii. Panna |
| r. Uranium | iii. Neyveli |
| s. Lignite | iv. Sukinda |

Options :

1. p-ii; q-i; r-iv; s-iii
2. p-iii; q-ii; r-iv; s-i
3. p-ii; q-iv; r-i; s-iii

4. p-iii; q-iv; r-ii; s-i

Question Number : 119 Question Id : 8946584727 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Determine the powder factor for a mine gallery of 4.8 m width and 3m height. If the pull is obtained as 1 m per blast; specific gravity of coal is 1.5 t/m³ and charge per hole is 450 gms.

Options :

1. 48 t/kg
2. 0.02 t/kg
3. 21.6 t/kg
4. 10.8 kg/t

Question Number : 120 Question Id : 8946584728 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Full form of SDL is _____

Options :

1. Side Dumping Loader
2. Side Discharge Loader
3. Swing Discharge Loader
4. Swing Dump Loader

Question Number : 121 Question Id : 8946584729 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Match the following:

Operation/Method

- p. LW
- q. BG
- r. CM
- s. B&P

Machineries

- i. LHD
- ii. Shearer
- iii. Jumbo drill
- iv. Quad bolter

Options :

- 1. p-ii; q-i; r-iv; s-iii
- 2. p-iii; q-ii; r-iv; s-i
- 3. p-ii; q-iii; r-iv; s-i
- 4. p-iii; q-iv; r-ii; s-i

Question Number : 122 Question Id : 8946584730 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Match the following:

Slope failure

- p. Circular
- q. Planar
- r. Toppling
- s. Wedge

Associated with

- i. Heavily jointed area
- ii. Two or more joints meets
- iii. Open pit
- iv. Weak material

Options :

- 1. p-ii; q-i; r-iv; s-iii
- 2. p-iii; q-ii; r-iv; s-i
- 3. p-iv; q-iii; r-i; s-ii

4. p-iii; q-iv; r-ii; s-i

Question Number : 123 Question Id : 8946584731 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

During the splitting operation, the pillar is divided into two parts. These parts of the pillar are said to be _____.

Options :

1. Pillar
2. Stook
3. Barrier
4. Rib

Question Number : 124 Question Id : 8946584732 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The high load concentration area of the pillar is _____.

Options :

1. Centre of the pillar
2. Corner of the pillar
3. Sides of the pillar
4. Bottom portion of the pillar

Question Number : 125 Question Id : 8946584733 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The size of the pillar (centre to centre) is 45 m x 45 m. If the gallery is driven for a width of 5 m during development operation, then percentage of extraction is _____.

Options :

1. 21
2. 10.5
3. 42
4. 30

Question Number : 126 Question Id : 8946584734 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The optimum hydraulic gradient (H/L) followed in the mine is _____.

Options :

1. $1/7$
2. $7/1$
3. $10/1$
4. $1/20$

Question Number : 127 Question Id : 8946584735 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The high subsidence is associated with _____.

Options :

1. B&P
2. BG
3. LW
4. CM

Question Number : 128 Question Id : 8946584736 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A coal bench of 100 m length, 20 m width and 10 m height is blasted and the muck is generated after blasting operation is 25000 m^3 . Then the Swell Factor is _____.

Options :

1. 0.95
2. 0.8
3. 0.7
4. 0.75

Question Number : 129 Question Id : 8946584737 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A shovel of 5 m^3 is deployed in the open cast coal mine, fill factor is 0.7, swell factor is 0.5, specific gravity is 1.3 and cycle time of the shovel is 30 sec per pass.

What will be material to be handled per hour?

Options :

1. 273 T
2. 252 T
3. 300 T
4. 285 T

Question Number : 130 Question Id : 8946584738 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A coal seam thickness of 6 m is deployed with DERD shearer for extraction of 3m height, web cut of shearer is 0.85 m, diameter of drum is 1.8 m, face length is 250 m, sp.gr of coal is 1.5 T/m^3 and length of panel is 4 kms. The production per cut is _____.

Options :

1. 573.75 T

2. 100 T

3. 956.25 T

4. 976 T

Question Number : 131 Question Id : 8946584739 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The incline approach in the form of spiral made for the exploitation of the metal deposit is _____

Options :

1. Incline

2. Decline

3. Shaft

4. Punch entry

Question Number : 132 Question Id : 8946584740 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The vertical stress on a coal pillar is 10 MPa and Poisson's ratio is 0.25. Then horizontal stress is _____

Options :

1. 3.33 MPa

2. 2.5 MPa

3. 40 MPa

4. 0.33 MPa

Question Number : 133 Question Id : 8946584741 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

What will be the depth of hole for a blast hole dia of 165 mm in VCR method?

Options :

1. 990 mm
2. 825 mm
3. 1155 mm
4. 1320 mm

Question Number : 134 Question Id : 8946584742 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In a 2D body; the stress components are $\sigma_{xx} = 5$ MPa, $\sigma_{yy} = 2$ MPa, $\sigma_{xy} = 0.5$ MPa.

What will be the normal stress acting on a plane making an angle of 45° with horizontal?

Options :

1. 1.5 MPa
2. 3.5 MPa
3. 2.5 MPa
4. 5 MPa

Question Number : 135 Question Id : 8946584743 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Match the following:

Type of ore bodies

- p. Thin bodies
- q. Thick bodies
- r. Narrow veins
- s. Massive

Suitable method

- i. Shrinkage stope
- ii. Resuing
- iii. Longwall
- iv. Room and pillar

Options :

1. p-iii; q-iv; r-ii; s-i
2. p-iii; q-ii; r-iv; s-i
3. p-iv; q-iii; r-i; s-ii
4. p-iii; q-iv; r-i; s-ii

Question Number : 136 Question Id : 8946584744 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The ore of lead is _____

Options :

1. Sphalerite
2. Galena
3. Bauxite
4. Chalcopyrite

Question Number : 137 Question Id : 8946584745 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The force acts in the cyclone for separation of particles is _____

Options :

1. Cohesive force
2. Tensile force
3. Centrifugal force
4. Compressive force

Question Number : 138 Question Id : 8946584746 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Match the following:

| Tests | Purpose |
|---------------------|---------------------------|
| p. Brazilian test | i. C and Φ |
| q. Protodyknov test | ii. Durability |
| r. Triaxial test | iii. Compressive strength |
| s. SDI test | iv. Tensile strength |

Options :

1. p-iv; q-iii; r-ii; s-i
2. p-iv; q-iii; r-i; s-ii
3. p-iii; q-ii; r-iv; s-i
4. p-ii; q-iv; r-i; s-iii

Question Number : 139 Question Id : 8946584747 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The temperature at the pit A and pit B are 30 and 45 degrees centigrade respectively.

Then the air flow due to NVP is _____

Options :

1. No air flow
2. A to B
3. B to A
4. Storm

Question Number : 140 Question Id : 8946584748 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The motive column is 10m, density of air is 1.2 kg/m^3 and gravity force is 9.81 m/s^2 .

Then NVP is _____.

Options :

1. 117.72 N
2. 117.72 MPa
3. 117.72 KPa
4. 117.72 Pa

Question Number : 141 Question Id : 8946584749 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The size of road way is $4\text{m} \times 3\text{m} \times 1000\text{m}$ and coefficient resistance is $0.003 \text{ N s}^2/\text{m}^4$. Then the resistance of the road way in $\text{N s}^2/\text{m}^8$ is _____

Options :

1. 0.024
2. 0.0165
3. 0.03125
4. 3125

Question Number : 142 Question Id : 8946584750 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A fan is running with a speed of 100 rpm delivers a quantity of $12000 \text{ m}^3/\text{min}$ and what will be the speed of the fan in rpm, if the same delivers a quantity of $100 \text{ m}^3/\text{s}$?

Options :

1. 100
2. 400

3. 200

4. 50

Question Number : 143 Question Id : 8946584751 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The gas which reacts with the haemoglobin and forms as carboxyhemoglobin _____.

Options :

1. O₂

2. CO

3. N₂4. CH₄

Question Number : 144 Question Id : 8946584752 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Match the following:

| Gases | Specific gravity |
|--------------------|------------------|
| p. CH ₄ | i. 1.52 |
| q. CO | ii. 1.105 |
| r. O ₂ | iii. 0.56 |
| s. CO ₂ | iv. 0.967 |

Options :

1. p-iii; q-iv; r-ii; s-i

2. p-iii; q-ii; r-iv; s-i

3. p-iv; q-iii; r-i; s-ii

4. p-iii; q-iv; r-i; s-ii

Question Number : 145 Question Id : 8946584753 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The bord and pillar panel producing 200 tons per day, the circulation of quantity is $120 \text{ m}^3/\text{min}$ and the methane emission is 20%. Then the degree of seam is _____.

Options :

1. Deg I
2. Deg II
3. Deg III
4. Deg IV

Question Number : 146 Question Id : 8946584754 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The resistance of the regulator in the gallery of $4.2\text{m} \times 3\text{m}$ size is $4 \text{ NS}^2 / \text{m}^8$. Then the size of regulator is _____.

Options :

1. 0.2975 m^2
2. 0.595 m^2
3. 4.76 m^2
4. 3.57 m^2

Question Number : 147 Question Id : 8946584755 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A mine consists of two splits A and B and the quantity flowing in the splits is $10 \text{ m}^3/\text{s}$ and $25 \text{ m}^3/\text{s}$ respectively. What is to be fitted in split B to reduce the quantity of B split?

Options :

1. Booster

2. Regulator
3. Main fan
4. Fans in series

Question Number : 148 Question Id : 8946584756 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

What is the pressure gained by the evasee if the air velocities are 5 m/s and 3 m/s at the inlet and outlet respectively? (Assume $g = 10 \text{ m/s}^2$)

Options :

1. 0.8 m
2. 1.6 m
3. 3.2 m
4. 32 m

Question Number : 149 Question Id : 8946584757 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A mine air sample has the composition of $\text{O}_2=17\%$, $\text{CO}_2= 2.5\%$, $\text{N}_2=76.5\%$ and $\text{CO} = 4\%$, what will be the CO/O_2 ratio?

Options :

1. 10.12
2. 1.012
3. 0.1012
4. 101.2

Question Number : 150 Question Id : 8946584758 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A mine air sample has the composition of $O_2=17\%$, $CO_2= 2.5\%$, $N_2=76.5\%$ and $CO=4\%$. Then white damp is _____.

Options :

1. 4 %
2. 19.5%
3. 79%
4. 100%

Question Number : 151 Question Id : 8946584759 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

For plotting the Coward's diagram, the values of _____ gas are considered on X-axis.

Options :

1. Oxygen
2. Methane
3. Nitrogen
4. Carbon monoxide

Question Number : 152 Question Id : 8946584760 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The heating of coal without application of any heat source is known as _____.

Options :

1. Spontaneous heating
2. Incubation period
3. Lagon ignition

4. Delay period

Question Number : 153 Question Id : 8946584761 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The mine air composition consists of $\text{CH}_4 = 7\%$; $\text{O}_2 = 14\%$; $\text{N}_2 = 74\%$
 $\text{CO}_2 = 5\%$. Then the mine air is _____

Options :

1. Not capable of forming explosible
2. Explosible
3. Not explosible
4. Capable of forming explosible

Question Number : 154 Question Id : 8946584762 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Match the following:

Gases

- p. CH_4
- q. CO
- r. H_2S
- s. $\text{CO}_2 + \text{CH}_4$

Damp

- i. Black damp
- ii. Fire damp
- iii. Stink damp
- iv. White damp

Options :

1. p-iii; q-iv; r-ii; s-i
2. p-ii; q-iv; r-iii; s-i
3. p-iv; q-iii; r-i; s-ii
4. p-iii; q-iv; r-i; s-ii

Question Number : 155 Question Id : 8946584763 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Match the following:

Fire type

Associated with

- p. Class A
- q. Class B
- r. Class C
- s. Class D

- i. Liquids
- ii. Timber
- iii. Metal
- iv. Gas

Options :

- 1. p-iii; q-iv; r-ii; s-i
- 2. p-ii; q-i; r-iv; s-iii
- 3. p-iv; q-iii; r-i; s-ii
- 4. p-iii; q-iv; r-i; s-ii

Question Number : 156 Question Id : 8946584764 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The number of miners killed in Chasnala mine inundation disaster is _____.

Options :

- 1. 375
- 2. 275
- 3. 175
- 4. 475

Question Number : 157 Question Id : 8946584765 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The lung governing value automatically adjusts when the wearer requirement of O₂ is higher than _____.

Options :

1. 2 lit/min
2. 1.5 lit/min
3. 3 lit/min
4. 4 lit/min

Question Number : 158 Question Id : 8946584766 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The disease resulted due to insufficient light is _____.

Options :

1. Nystagmus
2. Pneumoconiosis
3. Silicosis
4. Siderosis

Question Number : 159 Question Id : 8946584767 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The whole circle bearing of a line AB is 145° , then quadrantal bearing is ____.

Options :

1. S 35° E
2. N 35° E
3. S 35° W

4. N 35° W

Question Number : 160 Question Id : 8946584768 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If the fore bearing of a line is 45° , then back bearing is _____.

Options :

1. 225°
2. 185°
3. 180°
4. 45°

Question Number : 161 Question Id : 8946584769 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If bearing of a line is 60° and declination is east 10° . Then true bearing
is _____.

Options :

1. 50°
2. 70°
3. 170°
4. 45°

Question Number : 162 Question Id : 8946584770 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

What will be the included angle for a traverse of having 4 sides?

Options :

1. 63°
2. 31°

3. 126°

4. 18°

Question Number : 163 Question Id : 8946584771 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The full form of EDM is _____.

Options :

1. Electronic Distance Music
2. Electronic Distance Measurement
3. Electrode Distance Measurement
4. Electrode Distance Music

Question Number : 164 Question Id : 8946584772 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Match the following:

Survey instrument

- p. Chain
- q. Compass
- r. Theodolite
- s. Dumpy level

Measurements

- i. Horizontal angles
- ii. Distance
- iii. RL
- iv. Horizontal and vertical angles

Options :

1. p-iii; q-iv; r-ii; s-i
2. p-ii; q-i; r-iv; s-iii
3. p-iv; q-iii; r-i; s-ii

4. p-iii; q-iv; r-i; s-ii

Question Number : 165 Question Id : 8946584773 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

RL of the bench mark is 100 m; readings of back sight and fore sight are 2.5 m and 1.5 m respectively. Then height of the instrument is _____.

Options :

1. 101.5 m
2. 102.5 m
3. 104 m
4. 96 m

Question Number : 166 Question Id : 8946584774 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The process of setting the theodolite over or under station mark is _____.

Options :

1. Centering
2. Transiting
3. Face left
4. Face right

Question Number : 167 Question Id : 8946584775 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If the latitude and departure of the traverse are 50 m and 50 m respectively, then length of the closing line is _____.

Options :

1. 70.71 m

2. 25 m
3. 50 m
4. 100.71 m

Question Number : 168 Question Id : 8946584776 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A radius of curve is 30 m and angle subtended by the chord is 90° . Then chord length is _____.

Options :

1. 42.42 m
2. 50 m
3. 30 m
4. 60.32 m

Question Number : 169 Question Id : 8946584777 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Resistance to impact loading is known as _____

Options :

1. Toughness
2. Hardness
3. Brittleness
4. Resilience

Question Number : 170 Question Id : 8946584778 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Detaching hook is placed just below the _____.

Options :

1. Rope capel
2. Triangular plate
3. Cage chain
4. Cage

Question Number : 171 Question Id : 8946584779 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The standing ropes are used in _____.

Options :

1. Haulage
2. Shaft
3. Shovel
4. Dragline

Question Number : 172 Question Id : 8946584780 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The central wire in the strand is known as _____.

Options :

1. Queen
2. King
3. Conquer
4. Pawn

Question Number : 173 Question Id : 8946584781 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The torque for a winder is 100 kNm, the cylindrical drum dia is 5 m and maximum speed of rope is 5 m/s. Then power of motor is _____

Options :

1. 200 kW
2. 100 kW
3. 150 kW
4. 300 kW

Question Number : 174 Question Id : 8946584782 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which of the following is not a part of the endless rope haulage.

Options :

1. Clifton pulley
2. Jig pulley
3. Lashing chain
4. Screw clip

Question Number : 175 Question Id : 8946584783 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A belt of $0.1 \text{ w}^2 \text{ m}^2$ area carries a load of 60 T/hr, speed of the belt is 60 m/min and density of coal is 1.5 t/m^3 . Then width of the belt is _____

Options :

1. 3 m
2. 0.33 m
3. 4 m

4. 0.25 m

Question Number : 176 Question Id : 8946584784 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A mine tub weighs 1.5 tonnes travels round a curve of 30 m radius at a speed of 72 km/hr. If the gauge is 1.2 m. The super elevation of outer rail is _____

Options :

1. 1.3 m
2. 1.63 m
3. 1.36 m
4. 2.45 m

Question Number : 177 Question Id : 8946584785 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Match the following:

Haulage/Transport system

Limiting gradient

- p. Endless
- q. Direct
- r. Locomotive
- s. ACC

- i. 1 in 6
- ii. 1 in 10
- iii. 1 in 1.5
- iv. 1 in 25

Options :

1. p-ii; q-i; r-iv; s-iii
2. p-iii; q-ii; r-i; s-iv
3. p-iv; q-i; r-iii; s-ii
4. p-i; q-ii; r-iii; s-iv

Question Number : 178 Question Id : 8946584786 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If the coal seam thickness is 1.5 m, then what is the height of the man hole?

Options :

1. 1.8 m
2. 2 m
3. 1.5 m
4. 2.5 m

Question Number : 179 Question Id : 8946584787 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Automatic contrivances should be provided for every shaft exceeding minimum
depth of _____.

Options :

1. 50 m
2. 80 m
3. 100 m
4. 150 m

Question Number : 180 Question Id : 8946584788 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Mechanical breaks are applied for a depth of _____

Options :

1. 100 m
2. 200 m
3. 300 m

4. 400 m

Question Number : 181 Question Id : 8946584789 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which of the following brakes is automatically applied if the power failure occurs?

Options :

1. Mechanical brake
2. Thrustor brake
3. Regenerative brake
4. Electric break

Question Number : 182 Question Id : 8946584790 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The fleet angle in keope winding system is _____

Options :

1. 5°
2. 10°
3. 0°
4. 15°

Question Number : 183 Question Id : 8946584791 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which of the following is not related to underground face machinery?

Options :

1. AM-50
2. Bolter miner

3. Shearer

4. Scraper

Question Number : 184 Question Id : 8946584792 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Face supports used in longwall method is _____

Options :

1. Shield support

2. Hydraulic prop

3. Roof stitching

4. Bamboo bolt

Question Number : 185 Question Id : 8946584793 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If the area of the leg is 0.125 m^2 , then the capacity of each hydraulic leg of 2 x 152T shield support is _____

Options :

1. 45 MPa

2. 46.08 MPa

3. 27 MPa

4. 31.5 MPa

Question Number : 186 Question Id : 8946584794 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The fleet angle maintained in drum winding system is _____

Options :

1. 1.5^0
2. 2.5^0
3. 6^0
4. 10^0

Question Number : 187 Question Id : 8946584795 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Match the following:

Technology

- p. B&P
- q. BG
- r. CM
- s. LW

Machine

- i. Shearer
- ii. Shuttle car
- iii. Jumbo drill
- iv. SDL

Options :

1. p-iii; q-iv; r-ii; s-i
2. p-ii; q-i; r-iv; s-iii
3. p-iv; q-iii; r-ii; s-i
4. p-iii; q-iv; r-i; s-ii

Question Number : 188 Question Id : 8946584796 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Safety catches are fitted at an interval of _____

Options :

1. 0.3 – 1 m
2. 0.5 – 5 m

3. 1 – 2 m

4. 2 – 5 m

Question Number : 189 Question Id : 8946584797 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The manager shall submit the annual return in respect of the previous year on or before

Options :

1. 1st Feb

2. 28th Feb

3. 1st March

4. 1st April

Question Number : 190 Question Id : 8946584798 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

How many attempts that any candidate is allowed to write examinations conducted by the board of examinations, DGMS Dhanbad?

Options :

1. 5

2. 7

3. 9

4. 10

Question Number : 191 Question Id : 8946584799 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The minimum velocity of air shall be maintained at longwall face for degree 2 gassy seam is _____

Options :

1. 60 m/min
2. 75 m/min
3. 10 m/min
4. 100 m/min

Question Number : 192 Question Id : 8946584800 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The percentage of O₂ in the air to be maintained at any part of the mine where the man power is required to work is _____

Options :

1. 15 %
2. 19 %
3. 20 %
4. 10 %

Question Number : 193 Question Id : 8946584801 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The maximum width of gallery is allowed to drive in the mine is _____

Options :

1. 4.2 m
2. 4.8 m
3. 5.6 m
4. 3 m

Question Number : 194 Question Id : 8946584802 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The qualification of mine manager for the mine producing 3000 tonnes of coal per month is _____

Options :

1. SMC
2. FMC
3. OMC
4. Tech

Question Number : 195 Question Id : 8946584803 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The work men inspector shall be appointed in the mine when the number of persons employed is _____.

Options :

1. 500
2. 450
3. 250
4. 400

Question Number : 196 Question Id : 8946584804 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The floor area of shelter is maintained as _____.

Options :

1. 10 sq.m
2. 14 sq.m

3. 25 sq.m

4. 5 sq.m

Question Number : 197 Question Id : 8946584805 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The quantity of water shall be provided with a scale of _____

Options :

1. 2 lit/ person

2. 4 lit/ person

3. 1 lit/ person

4. 5 lit/ person

Question Number : 198 Question Id : 8946584806 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The first aid room shall be provided at the mine when the manpower employed at any time in preceding year is _____

Options :

1. 100 persons

2. 150 persons

3. 200 persons

4. 300 persons

Question Number : 199 Question Id : 8946584807 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Anemometer is used for measuring the _____

Options :

1. Pressure
2. Quantity of air
3. Air velocity
4. Area of gallery

Question Number : 200 Question Id : 8946584808 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Dry bulb and wet bulb temperature in the underground mine area recorded as 35°C and 25°C respectively. Then relative humidity of air is _____.

Options :

1. 10 %
2. 30 %
3. 20 %
4. 40 %