

Question Paper Preview

Question Paper Name :	Mining Engineering 14th Sep 2020 S2
Subject Name :	Mining Engineering
Duration :	180
Total Marks :	200
Display Marks:	No
Share Answer Key With Delivery Engine :	Yes
Actual Answer Key :	Yes
Is this Group for Examiner? :	No

Mathematics

Section Number :	1
Mandatory or Optional :	Mandatory
Number of Questions :	50
Number of Questions to be attempted :	50
Section Marks :	50
Display Number Panel :	Yes
Group All Questions :	Yes
Mark As Answered Required? :	Yes

**Question Number : 1 Question Id : 61097515229 Question Type : MCQ Display Question
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation : Vertical**

If $A = \begin{bmatrix} 3 & 1 \\ 1 & 4 \end{bmatrix}$ and $A^2 - kA - 4I_2 = 0$ then $k =$

Options :

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

Question Number : 2 Question Id : 61097515230 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If $A = \begin{bmatrix} 0 & 2 & 1 \\ -2 & 0 & -2 \\ -1 & x & 0 \end{bmatrix}$ is a skew-symmetric matrix , then x is

Options :

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

Question Number : 3 Question Id : 61097515231 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If $a+b+c=0$, one root of $\begin{vmatrix} a-x & c & b \\ c & b-x & a \\ b & a & c-x \end{vmatrix} = 0$ is

Options :

1. $x=0$

2. $x=1$

3. $x=2$

4. $x=a^2+b^2+c^2$

Question Number : 4 Question Id : 61097515232 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The co-factors of the elements 2,-5 in the matrix $\begin{pmatrix} -1 & 0 & 5 \\ 1 & 2 & -2 \\ -4 & -5 & 3 \end{pmatrix}$ is

Options :

1. 16, 3

2. 17, -3

3. 17, 3

4. -17, -3

Question Number : 5 Question Id : 61097515233 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The solution of a system of linear equations $2x-y+3z=9$, $x+y+z=6$, $x-y+z=2$ is

Options :

1. $x = -1, y = -2, z = -3$
2. $x = -1, y = -2, z = 3$
3. $x = -1, y = 2, z = -3$
4. $x = 1, y = 2, z = 3$

Question Number : 6 Question Id : 61097515234 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If $\frac{2x+4}{(x-1)^3} = \frac{S_1}{(x-1)} + \frac{S_2}{(x-1)^2} + \frac{S_3}{(x-1)^3}$ Then $\sum_{j=1}^3 S_j$ is equal to

Options :

1. S_2
2. $2S_2$

3. $4S_2$

4. $4S_1$

Question Number : 7 Question Id : 61097515235 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

If $\frac{3x^3 - 2x^2 - 1}{x^4 + x^2 + 1} = \frac{Ax + B}{x^2 + x + 1} + \frac{Cx + D}{x^2 + kx + 1}$ then k =

Options :

1. 0

2. 1

3. -1

4. 2

Question Number : 8 Question Id : 61097515236 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

If $\sin 780^\circ \sin 480^\circ - \cos 120^\circ \sin 330^\circ = k$ then k is

Options :

1. 0

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

Question Number : 9 Question Id : 61097515237 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If A,B,C,D are the angles of cyclic quadrilateral taken in order, then

$$\cos A + \cos B + \cos C + \cos D =$$

Options :

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

Question Number : 10 Question Id : 61097515238 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

$$\text{If } \tan \theta = \frac{4}{3} \text{ then } \sqrt{\frac{1 - \sin \theta}{1 + \sin \theta}} =$$

Options :

- 1.

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

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

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

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

Question Number : 11 Question Id : 61097515239 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The period of the function $f(x) = |\sin x|$ is

Options :

1. 2π

2. π

3. 3π

4. 4π

Question Number : 12 Question Id : 61097515240 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

The value of $\tan 1^\circ \tan 2^\circ \tan 3^\circ \dots \tan 89^\circ$ is

Options :

1. 1

2. 0

3. -1

4. ∞

Question Number : 13 Question Id : 61097515241 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

If $f(x) = \cos^2 x + \sec^2 x$ then its value always is

Options :

1. $f(x) < 1$

2. $f(x) = 1$

3. $2 > f(x) < 1$

4. $f(x) \geq 2$

Question Number : 14 Question Id : 61097515242 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

If n is odd, then $\left(\frac{\cos x + \cos y}{\sin x - \sin y}\right)^n + \left(\frac{\sin x + \sin y}{\cos x - \cos y}\right)^n =$

Options :

1. -1

2. 1

3. 0

4. 2

Question Number : 15 Question Id : 61097515243 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

The value of $\tan^{-1}(2) + \tan^{-1}(3)$ is

Options :

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

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

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

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

Question Number : 16 Question Id : 61097515244 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The trigonometric equation $\sin^{-1}x=2\sin^{-1} a$, has a solution for

Options :

1. $|a| < \frac{1}{2}$

2. $|a| \geq \frac{1}{\sqrt{2}}$

3. $\frac{1}{2} < |a| < \frac{1}{\sqrt{2}}$

4. $|a| \leq \frac{1}{\sqrt{2}}$

Question Number : 17 Question Id : 61097515245 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The solution set of the system of equations $x + y = \frac{2\pi}{3}$ and $\cos x + \cos y = \frac{3}{2}$ is

Options :

1.

ϕ

2. $\left\{ n\pi + \frac{2\pi}{3}, n = 1, 2, 3, \dots \right\}$

3. $\left\{ n\pi - \frac{2\pi}{3}, n = 1, 2, 3, \dots \right\}$

4. 0

**Question Number : 18 Question Id : 61097515246 Question Type : MCQ Display Question
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation : Vertical**

if $z = \frac{7-i}{3-4i}$ then z^{14} is

Options :

1. 2^7

2. $2^7 i$

3. $-2^7 i$

4. -2^7

Question Number : 19 Question Id : 61097515247 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

$i^2+i^4+i^6+\dots+(2n+1)$ terms is

Options :

1. 0

2. -1

3. $-i$

4. i

Question Number : 20 Question Id : 61097515248 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

The equation of the polar of $(-2,3)$ with respect to $x^2+y^2-4x-6y+5=0$ is

Options :

1. $x=y$

2. $x+y=0$

3. $x=0$

4. $y=0$

Question Number : 21 Question Id : 61097515249 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A parabolic arc has a height of 12m and a span of 20m. The height of the arc, 5m away on either side of the centre is

Options :

1. 2m
2. 3m
3. 6m
4. 9m

Question Number : 22 Question Id : 61097515250 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The eccentricity of the ellipse whose latus-rectum is one third of its minor axis is

Options :

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

4. $2\sqrt{\frac{2}{3}}$

Question Number : 23 Question Id : 61097515251 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A conic with eccentricity $\frac{3}{2}$ is

Options :

1. Parabola
2. Ellipse
3. hyperbola
4. Circle

Question Number : 24 Question Id : 61097515252 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The focus of the parabola $(y-1)^2=8(x-3)$ is

Options :

1. (4,2)
2. (3,5)

3. (5,1)

4. (2,1)

Question Number : 25 Question Id : 61097515253 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

The tangents drawn from the point P(-2,19) to the parabola $y^2=8x$ are perpendicular to each other. Then the point P lies on the parabola at

Options :

1. Tangent at the vertex

2. directrix

3. latus-rectum

4. diameter through the focus

Question Number : 26 Question Id : 61097515254 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

$$\lim_{n \rightarrow \infty} \left(\frac{n}{n+1} \right)^{2n} \text{ is}$$

Options :

1. 0

2. e

3. e^2

4. $1/e^2$

Question Number : 27 Question Id : 61097515255 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If $x=y\log xy$ then $\frac{dy}{dx} =$

Options :

1. $\frac{x-y}{1+\log xy}$

2. $\frac{x-y}{x(1+\log xy)}$

3. $\frac{x+y}{x(1+\log xy)}$

4. $\frac{x+y}{x \log y}$

Question Number : 28 Question Id : 61097515256 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If $f(x) = \frac{x}{1+|x|}$, $x \in R$ then $f'(0) =$

Options :

1. 0

2. 1

3. 2

4. 4

Question Number : 29 Question Id : 61097515257 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

If $y = (x^x)^x$ then $\frac{dy}{dx} =$

Options :

1. $x.x^x(1+2\log x)$

2. $(1+2\log x)x^{(x^2+1)}$

3. $(1+2\log x)x^{x^2}$

4. $x.x^x(1-2\log x)$

Question Number : 30 Question Id : 61097515258 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

If $x=e^{3t}\cos 3t$ then $\frac{d^2x}{dt^2}$ at $t=\frac{\pi}{2}$ is

Options :

1. $6e^\pi$
2. $12e^\pi$
3. $-12e^\pi$
4. $-6e^\pi$

Question Number : 31 Question Id : 61097515259 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

The maximum area of a rectangle with perimeter 176cm is

Options :

1. 1936cm^2
2. 1854cm^2
3. 2110cm^2
4. 1735cm^2

Question Number : 32 Question Id : 61097515260 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Two positive numbers whose sum is 64 and sum of whose cubes is minimum are given by

Options :

1. 32,32
2. 48,16
3. 40,24
4. 32, 24

Question Number : 33 Question Id : 61097515261 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If u be a homogeneous function of degree n , then $x \frac{\partial^2 u}{\partial x^2} + y \frac{\partial^2 u}{\partial y^2} =$

Options :

1. nu
2. $n \frac{\partial u}{\partial x}$
3. $(n-1) \frac{\partial u}{\partial x}$

$$4. \quad n(n-1) \frac{\partial u}{\partial x}$$

Question Number : 34 Question Id : 61097515262 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If $u=f(x-y, y-z, z-x)$ then $\frac{\partial u}{\partial x} + \frac{\partial u}{\partial y} + \frac{\partial u}{\partial z}$ is

Options :

1. 3
2. -3
3. u
4. 0

Question Number : 35 Question Id : 61097515263 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A stone is dropped into a quite lake and waves move in a circle at a speed of 6cm/sec. At the instant when the radius of the circular wave is 16cm , the enclosed area increases at the rate

Options :

1. $100 \pi \text{ cm}^2 / \text{sec}$

2. $32 \pi \text{ cm}^2 / \text{sec}$

3. $192 \pi \text{ cm} / \text{sec}$

4. $192 \pi \text{ cm}^2 / \text{sec}$

Question Number : 36 Question Id : 61097515264 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

$$\int \frac{dx}{1 + \sin x + \cos x} =$$

Options :

1. $\log \left(\tan \left(\frac{x}{2} \right) \right) + c$

2. $\log \left(1 + \tan \left(\frac{x}{2} \right) \right) + c$

3. $\frac{1}{2} \log \left(1 + \tan \left(\frac{x}{2} \right) \right) + c$

4. $\log \left(1 + \sec \left(\frac{x}{2} \right) \right) + c$

Question Number : 37 Question Id : 61097515265 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

$$\int_0^1 \frac{\log(1+x)}{x} dx \text{ is}$$

Options :

1. 0

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

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

4. $\frac{\pi^2}{12}$

Question Number : 38 Question Id : 61097515266 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. $2\log(e^x+1)+c$

2. $\log(e^{2x}-1)+c$

3. $2\log(e^x+1)-x+c$

4. $\log(e^{2x}+1)+c$

Question Number : 39 Question Id : 61097515267 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The mean value of the ordinate of a semi circle of radius a taken along the diameter is

Options :

1. $\frac{a\pi}{2}$
2. $2a\pi$
3. $\frac{a\pi}{4}$
4. $24a\pi$

Question Number : 40 Question Id : 61097515268 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The area enclosed by the curve $|x| + |y| = 1$ is

Options :

1. 2
2. π
3. π^2

4. 1

Question Number : 41 Question Id : 61097515269 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

$$\int_a^b f(x) dx \text{ represents}$$

Options :

1. The area bounded by the curve and the x-axis
2. The area bounded by the curve and the ordinates $x=a, x=b$
3. The area bounded by the curve, the x-axis and the ordinates $x=a, x=b$
4. The area not bounded by the curve

Question Number : 42 Question Id : 61097515270 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

$$\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \sin |x| dx \text{ is}$$

Options :

1. 0

2. 2

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

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

Question Number : 43 Question Id : 61097515271 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

Mean value of $\frac{1}{1+x^2}$ on $[-1,1]$ is

Options :

1. 0

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

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

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

Question Number : 44 Question Id : 61097515272 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

The order and degree of the differential equation $y = x \frac{dy}{dx} + \frac{3}{\frac{dy}{dx}}$ is

Options :

1. 1,2
2. 2,1
3. 1,1
4. 2,2

Question Number : 45 Question Id : 61097515273 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The differential equation $y \frac{dy}{dx} + x = a$ represents

Options :

1. a set of circles whose centers are on the x-axis
2. a set of circles whose centers are on the y-axis
3. a set of parabolas
4. a set of ellipses

Question Number : 46 Question Id : 61097515274 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Solution of $\frac{dy}{dx} + \sqrt{\frac{1-y^2}{1-x^2}} = 0$ is

Options :

1. $\sin^{-1}x + \sin^{-1}y = c$
2. $\sin^{-1}x - \sin^{-1}y = c$
3. $\sinh^{-1}x + \sinh^{-1}y = c$
4. $\tan^{-1}x + \sin^{-1}y = c$

Question Number : 47 Question Id : 61097515275 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Particular solution of $(D^2 - D - 2)y = \sin 2x$ is

Options :

1. $\frac{\cos 2x - 3 \sin 2x}{20}$
2. $\frac{\cos x}{2}$
- 3.

$$\frac{\sin x}{2}$$

4. $\frac{x \sin 2x}{8}$

Question Number : 48 Question Id : 61097515276 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The integrating factor of $y(xy+2x^2y^2)dx+x(xy-x^2y^2)=0$ is

Options :

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

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

3. $\frac{1}{y^3}$

4. $\frac{3}{x^3y^3}$

Question Number : 49 Question Id : 61097515277 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If $y=Ae^x+Be^{2x}$, where A and B are arbitrary constants, then the differential equation is

Options :

1. $y_2 + 3y_1 + 2y = 0$

2. $y_2 - 3y_1 - 2y = 0$

3. $y_2 + 3y_1 - 2y = 0$

4. $y_2 - 3y_1 + 2y = 0$

Question Number : 50 Question Id : 61097515278 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The length of the sub normal at any point on $y^2=4ax$ is

Options :

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

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

3. a

4. $2a$

Physics

Section Number :	2
Mandatory or Optional :	Mandatory
Number of Questions :	25
Number of Questions to be attempted :	25
Section Marks :	25
Display Number Panel :	Yes
Group All Questions :	Yes
Mark As Answered Required? :	Yes

Question Number : 51 Question Id : 61097515279 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The dimensional formula for magnetic flux is

Options :

1. $[ML^2T^{-2}A^{-1}]$
2. $[ML^3T^{-2}A^{-2}]$
3. $[M^0L^{-2}T^{-2}A^{-2}]$
4. $[ML^2T^{-1}A^2]$

Question Number : 52 Question Id : 61097515280 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The unit for angular frequency is

Options :

1. Hertz

2. Newton
3. Degrees (or) radians per second
4. Steradian

Question Number : 53 Question Id : 61097515281 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The sum of two vectors A and B is at right angles to their difference. Then

Options :

1. $A = B$
2. $A = 2B$
3. $B = 2A$
4. A and B have the same direction

Question Number : 54 Question Id : 61097515282 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The resultant of two forces, one double the other in magnitude, is perpendicular to the smaller of the two forces. The angle between the two forces is

Options :

1. 120°
2. 60°

3. 90^0

4. 150^0

Question Number : 55 Question Id : 61097515283 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A body starts from rest travels a distance x in first two seconds and a distance y in next two seconds. The relation between x and y is

Options :

1. $y = 4x$

2. $y = x$

3. $y = 3x$

4. $y = 2x$

Question Number : 56 Question Id : 61097515284 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Two bodies are projected from the ground with the same speed. If the angles of their projection from the ground are 45^0 and 15^0 respectively, the ratio of their ranges is

Options :

1. $1 : 2$

2. $2 : 1$

3. $\sqrt{3} : 2$

4. $1 : \sqrt{2}$

Question Number : 57 Question Id : 61097515285 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Two bodies of different masses are dropped from heights of 2 m and 8 m respectively, then the ratio of the time taken by them is _____.

Options :

1. $1 : 4$

2. $1 : 1$

3. $1 : 2$

4. $1 : 3$

Question Number : 58 Question Id : 61097515286 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The angle of projection of a projectile for which the horizontal range and maximum height are equal is

Options :

1. $\sin^{-1}(4)$

2. $\tan^{-1}(4)$

3. $\cos^{-1}(4)$

4. $\tan^{-1}(8)$

Question Number : 59 Question Id : 61097515287 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If μ_k is the coefficient of kinetic friction, μ_r is the coefficient of rolling friction and μ_s is the coefficient of static friction, then

Options :

1. $\mu_s > \mu_k > \mu_r$

2. $\mu_s < \mu_k < \mu_r$

3. $\mu_s < \mu_r < \mu_k$

4. $\mu_s > \mu_r > \mu_k$

Question Number : 60 Question Id : 61097515288 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A boy of mass 40 kg is climbing a vertical pole at a constant speed. If the coefficient of friction between his palms and the pole is 0.8 and $g = 10 \text{ m/s}^2$, the horizontal force that he is applying on the pole is

Options :

1. 300 N
2. 400 N
3. 500 N
4. 600 N

Question Number : 61 Question Id : 61097515289 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

How many 2.5 kg bricks can a man carry up a 3.6 meter staircase in one hour if he works at an average rate of 9.8 watt?

Options :

1. 800
2. 200
3. 600
4. 400

Question Number : 62 Question Id : 61097515290 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

A spring of force constant 800 N m^{-1} has an extension of 5 cm. The work done in extending it from 5 cm to 15 cm is

Options :

1. 16 J
2. 8 J
3. 32 J
4. 24 J

Question Number : 63 Question Id : 61097515291 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

Among the following sources of energy, for which source, sun is not a chief source of energy

Options :

1. Hydroelectric power plant
2. Ocean thermal energy
3. Tidal energy
4. Biomass

Question Number : 64 Question Id : 61097515292 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A particle executes simple harmonic motion along a straight line so that its period is 12 seconds .
The time it takes in traversing a distance equal to half of its amplitude from its equilibrium position is

Options :

1. 6 seconds
2. 4 seconds
3. 2 seconds
4. 1 second

Question Number : 65 Question Id : 61097515293 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A particle executes simple harmonic motion with a frequency f . The frequency with which the potential energy oscillates is

Options :

1. f
2. $f/2$
3. $2f$
4. zero

Question Number : 66 Question Id : 61097515294 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

A tuning fork A of frequency 512 Hz produces 4 beats per second when sounded with a tuning fork B. Due to filing of the prongs of the tuning fork B, the number of the beats per second becomes 6. The actual frequency of B is

Options :

1. 516 Hz
2. 508 Hz
3. 512 Hz
4. 500 Hz

Question Number : 67 Question Id : 61097515295 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

A car sounding a horn of frequency 1000 Hz passes an observer. The ratio of frequencies of the horn noted by the observer before and after passing of car is 11: 9. If the speed of sound is v , then the speed of the car is

Options :

1. $v/10$
2. $v/20$
3. $v/2$

4. $v/5$

Question Number : 68 Question Id : 61097515296 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

The reverberation time is

Options :

1. Directly proportional to sound absorption
2. Inversely proportional to volume
3. Inversely proportional to sound absorption
4. Directly proportional to pressure

Question Number : 69 Question Id : 61097515297 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

The pressure P_1 and density d_1 of a diatomic gas ($\gamma = 7/5$) change to P_2 and d_2 during an

adiabatic operation. If $\frac{d_2}{d_1} = 32$, then $\frac{P_2}{P_1}$ is

Options :

1. 125
2. 128
3. 32

4. 256

Question Number : 70 Question Id : 61097515298 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

The first law of thermodynamics is concerned with conservation of

Options :

1. No. of molecules
2. No. of moles
3. Energy
4. Temperature

Question Number : 71 Question Id : 61097515299 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

When ice cube melts into water,

Options :

1. Entropy decreases and internal energy decreases
2. Entropy decreases and internal energy increases
3. Entropy increases and internal energy increases
4. Entropy increases and internal energy decreases

Question Number : 72 Question Id : 61097515300 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

For nitrogen, $C_P - C_V = x$ and for argon, $C_P - C_V = y$. The relation between x and y is

Options :

1. $x = y$
2. $x = 7y$
3. $y = 7x$
4. $x = y/2$

Question Number : 73 Question Id : 61097515301 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A Carnot's engine extracts 1.5×10^3 kilocalories of heat from a reservoir at 627°C and exhausts it to a sink maintained at 27°C . The work performed by the engine is

Options :

1. 4.2 J
2. 4.2×10^2 J
3. 4.2×10^{-6} J
4. 4.2×10^6 J

Question Number : 74 Question Id : 61097515302 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

At critical angle, the angle of refraction is

Options :

1. 45°
2. 90°
3. 180°
4. 60°

Question Number : 75 Question Id : 61097515303 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Superconductivity is due to the formation of

Options :

1. Domain walls
2. Electron-hole pairs
3. Hysteresis
4. Cooper pairs

Chemistry

Section Number :	3
Mandatory or Optional :	Mandatory
Number of Questions :	25
Number of Questions to be attempted :	25
Section Marks :	25
Display Number Panel :	Yes
Group All Questions :	Yes
Mark As Answered Required? :	Yes

Question Number : 76 Question Id : 61097515304 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The atomic weight and atomic number of an element are A and Z respectively.

The number of neutrons in the atom of that element is.

Options :

1. A
2. Z
3. $Z + A$
4. $A - Z$

Question Number : 77 Question Id : 61097515305 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The two electrons present in an orbital are distinguished by :

Options :

1. Principal Quantum number
2. Spin Quantum number
3. Magnetic Quantum number
4. Azimutal Quantum number

Question Number : 78 Question Id : 61097515306 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

The order of increasing energies of the orbitals follows:

Options :

1. 3s, 3p, 3d, 4s, 4p
2. 3s, 3p, 4s, 4p, 3d
3. 3s, 3p, 4s, 3d, 4p
4. 3s, 3p, 3d, 4p, 4s

Question Number : 79 Question Id : 61097515307 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

Ionic bond is formed by

Options :

1. Sharing of electrons
2. Donating of electron
3. Transfer of Electrons
4. Donating of electron pair

Question Number : 80 Question Id : 61097515308 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The total number of electrons that take part in forming bonds in N_2 is

Options :

1. 2
2. 4
3. 10
4. 6

Question Number : 81 Question Id : 61097515309 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Sum of mole fractions of the two components of a solution is always

Options :

1. more than one

2. less than one
3. exactly one
4. not fixed

Question Number : 82 Question Id : 61097515310 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A 10N Solution stands for

Options :

1. Normal solution
2. Decanormal solution
3. Decinormal solution
4. Seminormal solution

Question Number : 83 Question Id : 61097515311 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The molarity of pure water is

Options :

1. 55.6
2. 50

3. 100

4. 18

Question Number : 84 Question Id : 61097515312 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

According to Bronsted –Lowry theory which one of the following is considered as an acid?

Options :

1. OH^-

2. HSO_4^-

3. H_3O^+

4. Cl^-

Question Number : 85 Question Id : 61097515313 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The pH of a solution containing 10^{-6} HCl is

Options :

1. 4

2. 6

3. 8

4. 10

Question Number : 86 Question Id : 61097515314 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

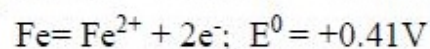
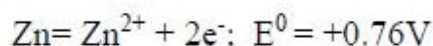
Calculate the quantity of electricity that will be required for liberating 710g of chlorine gas by the electrolysis of a concentrated solution of NaCl.

Options :

1. 10 faradys
2. 20 faradays
3. 5 faradays
4. 18 faradays

Question Number : 87 Question Id : 61097515315 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The standard reduction potentials (E^0) for the half reactions are as given below



The EMF for the cell reaction $\text{Fe}^{2+} + \text{Zn} \rightarrow \text{Zn}^{2+} + \text{Fe}$ is

Options :

1. -0.35 V

2. +0.35 V

3. +1.17 V

4. -1.17 V

Question Number : 88 Question Id : 61097515316 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The best electronic conductor is

Options :

1. Copper

2. Aluminium

3. Zinc

4. Silver

Question Number : 89 Question Id : 61097515317 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The electric charge for electrode deposition of one gram equivalent of a substance is

Options :

1. Charge on one mole of electrons

2. One ampere per second

3. 96500 coulombs per second

4. One ampere for one hour

Question Number : 90 Question Id : 61097515318 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

Hardness of water is expressed in terms of ----- equivalents

Options :

1. MgCO_3

2. CaCO_3

3. Na_2CO_3

4. K_2CO_3

Question Number : 91 Question Id : 61097515319 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

Which of the following is a powerful disinfectant?

Options :

1. O_2

2. Cl_2

3. CaOCl_2

4. N₂

Question Number : 92 Question Id : 61097515320 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The process of killing pathogenic bacteria in water is called

Options :

1. Softening
2. Osmosis
3. Sterilization
4. Reverse osmosis

Question Number : 93 Question Id : 61097515321 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The metal oxide film that can easily undergo corrosion is

Options :

1. Stable
2. Porous
3. Volatile
4. Unstable

Question Number : 94 Question Id : 61097515322 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

In galvanised articles, which metal protects the base metal?

Options :

1. Fe
2. Cu
3. Zn
4. Pb

Question Number : 95 Question Id : 61097515323 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following is thermosetting plastic?

Options :

1. PVC
2. Bakelite
3. Polystyrene
4. Teflon

Question Number : 96 Question Id : 61097515324 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Natural rubber is a polymer of:

Options :

1. Isoprene
2. Ethylene
3. Vinyl chloride
4. Styrene

Question Number : 97 Question Id : 61097515325 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Ebonite is a :

Options :

1. PVC
2. Synthetic rubber
3. Highly vulcanised rubber
4. Polystyrene

Question Number : 98 Question Id : 61097515326 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

The coal having the highest ranking is

Options :

1. Anthracite
2. Peat
3. Lignite
4. Bituminous

Question Number : 99 Question Id : 61097515327 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

Which of the following causes Minamata disease

Options :

1. Argan
2. Sulphur
3. Mercury
4. Nitrogen

Question Number : 100 Question Id : 61097515328 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

Which of the following is not a green house gas?

Options :

1. Carbon dioxide
2. Methane gas
3. Water vapour
4. Nitrogen gas

Mining Engineering

Section Number :	4
Mandatory or Optional :	Mandatory
Number of Questions :	100
Number of Questions to be attempted :	100
Section Marks :	100
Display Number Panel :	Yes
Group All Questions :	Yes
Mark As Answered Required? :	Yes

Question Number : 101 Question Id : 61097515329 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A Non electric detonating relay does not contain

Options :

1. Delay element

2. Fuse head
3. Metal sleeve
4. Neoprene connecting tube

Question Number : 102 Question Id : 61097515330 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The tool used to correct borehole deviation is

Options :

1. String shot
2. Kelly
3. Whipstock
4. Ratchet

Question Number : 103 Question Id : 61097515331 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Low shock and high gas pressure explosive is generally used for the blasting of

Options :

1. Hard and brittle rock mass

2. Soft and joint rock mass
3. Hard and massive intact rock mass
4. Soft and massive intact rock mass

Question Number : 104 Question Id : 61097515332 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

For a 25 mm diameter spherical charge, the maximum allowable charge length in cm is

Options :

1. 15
2. 25
3. 30
4. 150

Question Number : 105 Question Id : 61097515333 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The angle of draw in a trough subsidence helps in determining the

Options :

- 1.

Maximum subsidence

2. Extent of surface subsidence

3. Plane of failure

4. Critical width of opening

Question Number : 106 Question Id : 61097515334 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Among the following options, the specific energy for rock drilling is lowest in

Options :

1. Rotary diamond drilling

2. Rotary roller drilling

3. Percussive drilling

4. Jet piercing

Question Number : 107 Question Id : 61097515335 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The safety device is provided in sinking shaft in case of overwind?

Options :

1. Spider
2. Kibble
3. Detaching hook
4. Rider

Question Number : 108 Question Id : 61097515336 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The process of treating holes with chemicals in cementation method is called?

Options :

1. Defreezing
2. Silicatisation
3. Presilicatisation
4. Thawing

Question Number : 109 Question Id : 61097515337 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The method of sinking used through any fissured water bearing strata except in running sand is:

Options :

1. Pneumatic caisson
2. Cementation
3. Forced drop
4. Piling system

Question Number : 110 Question Id : 61097515338 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A detonating fuse like CORDTEX is generally used in:

Options :

1. Blasting in underground coal face
2. Tunnelling
3. Drift
4. Deep hole blasting

Question Number : 111 Question Id : 61097515339 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

In solid blasting practice which of the following type of initiation is preferred

Options :

1. Direct
2. Inverse
3. Direct and inverse
4. Split

Question Number : 112 Question Id : 61097515340 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The drilling process in which the holes can be drilled from surface to underground . working at any angle to the horizontal and used mainly for coring is:

Options :

1. Churn drilling
2. Percussive drilling by rods
3. Diamond drilling
4. Tubular drilling

Question Number : 113 Question Id : 61097515341 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following agent is used to give sheath in a permitted sheathed explosive?

Options :

1. Nacl
2. NG
3. NaHCO₃
4. Charcoal

Question Number : 114 Question Id : 61097515342 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Protodyakonov strength number is used to denote

Options :

1. Rock designation
2. Hardness of rocks
3. Rock specific gravity
4. Rock luster

Question Number : 115 Question Id : 61097515343 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If sandstone is the original rock then what is its metamorphic rock?

Options :

1. Slate
2. Gneiss
3. Quartzite
4. Marble

Question Number : 116 Question Id : 61097515344 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

In respect of fault, the vertical displacement of the fractured bed is called:

Options :

1. Heave
2. Hade
3. Throw of fault
4. Fault plane

Question Number : 117 Question Id : 61097515345 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

As per sized gradation of coal, the size of rubble coal is:

Options :

1. 51mm to 200mm
2. 25mm to 50mm
3. 0mm to 24mm
4. Any unscreened size

Question Number : 118 Question Id : 61097515346 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The process of wear and tear of the exposed country rocks is defined as:

Options :

1. Attrition
2. Abrasion
3. Deflation
4. suspension

Question Number : 119 Question Id : 61097515347 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The nature of eruption of volcano is principled and guided by

Options :

1. Size of conduit
2. Physical and chemical character of magma
3. Crater
4. Volcanic cones

Question Number : 120 Question Id : 61097515348 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The mineral deposit in solid rock is called:

Options :

1. Ore
2. Lode
3. Gangue
4. Lithology

Question Number : 121 Question Id : 61097515349 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Dune is:

Options :

1. Wind borne particle
2. Wind formed deposits of sand
3. Pedestal rock masses
4. Transverse oasis

Question Number : 122 Question Id : 61097515350 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following reserve is least in quantity

Options :

1. Proved
2. Indicated
3. Inferred
4. Mineable

Question Number : 123 Question Id : 61097515351 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The crest of the fold where strata are bent up to form an arch is called:

Options :

1. Syncline
2. Anticline
3. Outlier
4. Swilley

Question Number : 124 Question Id : 61097515352 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Parent rock of mica is:

Options :

1. Amphibole
2. Sandstone
3. Orthoclase
4. Feldspar

Question Number : 125 Question Id : 61097515353 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Carboniferous system falls in the group of :

Options :

1. Keinozic
2. Mesozoic
3. Azoic
4. Palaeozic

Question Number : 126 Question Id : 61097515354 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Pocket and wing technique of pillar extraction is related to

Options :

1. Bord and pillar method
2. Wongawilli method
3. Room and pillar
4. Short wall method

Question Number : 127 Question Id : 61097515355 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following occurs first in depillaring panel in underground coal mines?

Options :

1. Perodic fall
2. Main fall
3. Local fall
4. Air blast

Question Number : 128 Question Id : 61097515356 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Incubation period is not related to:

Options :

1. Crossing point temperature of coal
2. Panel size
3. Seam thickness
4. Explosibility of coal dust

Question Number : 129 Question Id : 61097515357 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

In Indian longwall mines, support resistance is calculated with due consideration to:

Options :

1. Convergence of the strata above coal seam
2. Face length
3. Panel length
4. Height of the immediate roof

Question Number : 130 Question Id : 61097515358 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

What should be the water requirement in hydraulic mining method, if the dip of the seams is more than 45° ?

Options :

1. $1 \text{ m}^3/\text{ton}$ of coal
2. $2 \text{ m}^3/\text{ton}$ of coal
3. $4 \text{ m}^3/\text{ton}$ of coal
4. $6 \text{ m}^3/\text{ton}$ of coal

Question Number : 131 Question Id : 61097515359 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

For what depth of coal seam from surface, the distance between centres of adjacent pillars shall not be less than 45m for a gallery width of maximum 4.8 m

Options :

1. 60-90 m
2. 90 – 150 m
3. 150 -240 m
4. 240 – 340 m

Question Number : 132 Question Id : 61097515360 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The draw point spacing in caving method is dependent on:

Options :

1. Mechanisation used
2. Length of the stope
3. Area of influence of the draw points
4. Size of the ore broken

Question Number : 133 Question Id : 61097515361 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

Every man hole shall be kept clean & clear of obstruction, white washed for a distance of not less than:

Options :

1. 0.3 m
2. 0.6 m
3. 0.9 m
4. 1.2 m

Question Number : 134 Question Id : 61097515362 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

The effective position of box cut for a deposit, where ratio of OVERBURDEN:ORE is least should be:

Options :

1. At boundary of mineral
2. At the middle of the boundary
3. At high seam slope end

4. At any place

Question Number : 135 Question Id : 61097515363 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Quick production can be achieved from

Options :

1. Longwall advancing method
2. Longwall Retreating method
3. Jankowice method
4. Both advancing and retreating methods

Question Number : 136 Question Id : 61097515364 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The rock mass classification system that considers active stress factor is:

Options :

1. Q-system
2. RMR
3. RQD

4. GSI

Question Number : 137 Question Id : 61097515365 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Radial stress on the excavation boundary of circular tunnel is:

Options :

1. Always zero
2. Always positive
3. Always negative
4. Positive in some area and negative in some area

Question Number : 138 Question Id : 61097515366 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

In a cut and fill stope, the main purpose of back filling is to:

Options :

1. Reduce ore dilution
2. Prevent high stress concentrations in for field domain
3. Prevent displacement due to dilution of fractured wall rock

4. Improve ore handling

Question Number : 139 Question Id : 61097515367 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Long hole drilling with crater blasting is used for the construction of:

Options :

1. Winze

2. Shaft

3. Raise

4. Decline

Question Number : 140 Question Id : 61097515368 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Rill stoping method is a form of:

Options :

1. Block caving

2. Artificially supported stoping

3. Underhand stoping
4. Overhand stoping

Question Number : 141 Question Id : 61097515369 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Extraction to a small sized, irregular and unsystematic underground working is called:

Options :

1. Sublevel stoping
2. Gophering
3. Room and pillar mining
4. Sublevel caving

Question Number : 142 Question Id : 61097515370 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following methods is known as vertical crater retreat, VCR(patented) method:

Options :

1. Bord and pillar mining
2. Blasting gallery

3. Sublevel stoping

4. Shrinkage stoping

Question Number : 143 Question Id : 61097515371 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Top slicing is an underhand caving method which is a variation of :

Options :

1. Breast stoping

2. Shrinkage stoping

3. Sublevel stoping

4. Cut and fill stoping

Question Number : 144 Question Id : 61097515372 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following belongs to hard rock mining?

Options :

1. Potash

2. Salt

3. Trona

4. Iron

Question Number : 145 Question Id : 61097515373 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The process of under water mining of sand, clay, tin and placer deposits of gold is known as:

Options :

1. Hydraulicking

2. Dredging

3. Placer mining

4. Leaching

Question Number : 146 Question Id : 61097515374 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following gas is not considered as chief harmful gas?

Options :

1. CH₄

2. CO

3. CO₂

4. SO₂

Question Number : 147 Question Id : 61097515375 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

In which of the following colliery, Methane drainage was first tried?

Options :

1. Ruhr Coalfield in Germany

2. Amlabed Colliery of India

3. Santa Lucia mine of Spain

4. Lorraine Coal field of France

Question Number : 148 Question Id : 61097515376 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The instrument used for measuring humidity is called:

Options :

1. Thermometer

2. Galvanometer

3. Methanometer

4. Hygrometer

Question Number : 149 Question Id : 61097515377 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Gas chromatography separates & analyze components of gas mixture by:

Options :

1. Absorbent

2. Molecular species

3. Boiling water

4. Catalyst

Question Number : 150 Question Id : 61097515378 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Why more than one auxiliary fan is not used in one ventilating district?

Options :

1. It recirculates air containing dust & noxious gases

2. Deposits of dust on the fan moving parts

3. Chances of electrostatic sparking
4. It affects the air quantity being circulated

Question Number : 151 Question Id : 61097515379 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The pressure inside a sealed vessel shown by a manometer is called:

Options :

1. Velocity pressure
2. Static pressure
3. Barometric pressure
4. Mean atmospheric pressure

Question Number : 152 Question Id : 61097515380 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Hygrometric survey is carried out to check and control environmental conditions in mines. This is done by:

Options :

1. Whirling hygrometer

2. Assman psychrometer
3. Fixed hygrometer
4. Manometer

Question Number : 153 Question Id : 61097515381 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If the mean barometric pressure of the down cast air column is higher than that of the up cast air column, then what will happen?

Options :

1. There is no flow of air in the mine
2. Maximum leakage of air in the district
3. It will help natural ventilation
4. It will create differences in air densities

Question Number : 154 Question Id : 61097515382 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

When will be there a chance of reversal of air current of natural ventilation ?

Options :

1. In shallow mines during summer to winter
2. In deeper mines during summer
3. In shallow mines during spring
4. In deeper mines during autumn

Question Number : 155 Question Id : 61097515383 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Ventilation survey usually means:

Options :

1. Quantity survey of air in the mine
2. Quality survey in the mine
3. Both quantity and pressure survey in the mine
4. pressure survey in the mine

Question Number : 156 Question Id : 61097515384 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

What do you mean by specific capacity in relation to a fan?

Options :

1. It is the dimensionless characteristic describing the performance of an impeller
2. That is an important design factor used as type number of grouping impellers hydraulically
3. It is the dimensionless design constant used to form a continuous function of specific speed of fan
4. It is the ratio used to determine the design of the volute casing

Question Number : 157 Question Id : 61097515385 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Eddy losses for fan are significant when:

Options :

1. Fan runs at its full capacity
2. Fan operates at low volumes
3. The fan drift cross-section is very high
4. The fan drift cross-section is very less

Question Number : 158 Question Id : 61097515386 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

In a depleting percentage of oxygen, persons suffer in different degree. At what percentage a person will face instant loss of sense?

Options :

1. 15

2. 12

3. 10

4. 7

Question Number : 159 Question Id : 61097515387 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Major source of heat in underground coal mines is:

Options :

1. From lights

2. From men

3. Due to oxidation

4. From machinery

Question Number : 160 Question Id : 61097515388 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. Duct less auxiliary ventilation
2. Overlap system of ventilation
3. Exhaust type of ventilation without ducting
4. Forcing type of ventilation

Question Number : 161 Question Id : 61097515389 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which shape of the plotting of the measurements collected during chain surveying is preferred?

Options :

1. Equilateral triangle
2. Obtuse angled triangle
3. Square
4. Rhombus

Question Number : 162 Question Id : 61097515390 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

How the building that is considerably oblique to the chain lines is located?

Options :

1. Check line
2. Range tie
3. Range and check ties
4. Fencing

Question Number : 163 Question Id : 61097515391 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Preliminary inspection of the area to be surveyed is called:

Options :

1. Triangulation
2. Reconnaissance
3. Staffing
4. Marking

Question Number : 164 Question Id : 61097515392 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

In which levelling the change in atmospheric pressure is recorded?

Options :

1. Trigonometrical levelling
2. Profile levelling
3. Differential levelling
4. Barometric levelling

Question Number : 165 Question Id : 61097515393 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Name the method which is particularly suitable when a contoured map of the hill is required:

Options :

1. By squares method
2. Tacheometric method
3. Cross section
4. In-direct method

Question Number : 166 Question Id : 61097515394 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The method of levelling adopted to determine the difference of level between two points at a considerable distance apart with great precision is known as:

Options :

1. Reciprocal levelling
2. Cross-sectioning
3. Check levelling
4. Differential levelling

Question Number : 167 Question Id : 61097515395 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The points selected on the main survey lines are called:

Options :

1. Temporary stations
2. Main stations
3. Subsidiary stations
4. Auxiliary stations

Question Number : 168 Question Id : 61097515396 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A tacheometer survey is mainly conducted for the purpose of:

Options :

1. Contouring and filling in detail
2. Calculating the deflection angles with the help of theodolite and chain
3. Chaining in a smooth ground more accurately
4. Setting the curve rough ground with theodolite

Question Number : 169 Question Id : 61097515397 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

In relation to subsidence; it is obvious that the angle of draw determines the:

Options :

1. Volume of coal extracted from below the ground
2. Depth of coal extracted at that point of surface
3. Size of the area of influence
4. Effect of strains on the surface structures

Question Number : 170 Question Id : 61097515398 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following survey instrument is designed to work hard on the satellite?

Options :

1. EDM
2. GYRO
3. GPS
4. Eidograph

Question Number : 171 Question Id : 61097515399 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The main principle of surveying should be:

Options :

1. Working from part of the whole
2. Working from whole to the part
3. Working through check lines

4. Working through tie lines

Question Number : 172 Question Id : 61097515400 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

It is the method of levelling in which the heights of mountains are found by observing the temperature at which water boils. The method is called:

Options :

1. Profile levelling
2. Check levelling
3. Hypsometry
4. Techeometry

Question Number : 173 Question Id : 61097515401 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A 100 m tape is held 1.5m out of the line. What is the true length?

Options :

1. 98.98 m
2. 98.89 m

99.89 m

3.

99.98 m

4.

Question Number : 174 Question Id : 61097515402 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

The bearing of a line AB is $146^{\circ} 20'$ and the angle ABC is $132^{\circ} 24'$ then what is the bearing of BC?

Options :

1. $88^{\circ} 44'$

2. $92^{\circ} 44'$

3. $98^{\circ} 44'$

4. $108^{\circ} 44'$

Question Number : 175 Question Id : 61097515403 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

Fixed hair and movable hair methods are the classification of which method of tacheometry?

Options :

1. Tangential method

2. Stadia method

3. Inclined sights
4. Vernier scaling method

Question Number : 176 Question Id : 61097515404 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Jigging or reciprocating movement is associated with:

Options :

1. Shaker conveyer
2. Belt conveyer
3. Diesel locomotive
4. Cable belt conveyer

Question Number : 177 Question Id : 61097515405 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following has little or no effect on the development of head in a pump:

Options :

1. Design of diffuser
2. Curvature of impeller

3. Delivery pipe range

4. Speed of impeller

Question Number : 178 Question Id : 61097515406 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

Exhaust conditioner is used with:

Options :

1. Battery locomotive

2. Diesel locomotive

3. Overhead locomotive

4. Compressed locomotive

Question Number : 179 Question Id : 61097515407 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

In which of the following haulages, any derailment shall cause a heavy damage?

Options :

1. Endless haulage

2. Tail rope haulage

3. Main and tail rope haulage

4. Direct rope haulage

Question Number : 180 Question Id : 61097515408 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following process eliminates the initial stretch in a wire rope?

Options :

1. Pre-forming

2. Pre-stressing

3. Galvanizing

4. Tempering

Question Number : 181 Question Id : 61097515409 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Removal of metals from outer wires in a rope is a type of:

Options :

1. Plastic wear

2. Abrasive wear

3. Differential wear
4. Temporary wear

Question Number : 182 Question Id : 61097515410 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

In belt conveyor, the belt is the load carrying media and bonded together with various layers. These are known as:

Options :

1. Woven fabric
2. Carcass
3. PVC fabric
4. Nylon fabric

Question Number : 183 Question Id : 61097515411 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Name the device that protects electric winding engines from excessive speed, overwinding, and rapid acceleration:

Options :

1. Depth indicator

2. Lilly controller
3. Slow breaker
4. Solenoid thruster

Question Number : 184 Question Id : 61097515412 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Factor of safety required for Koepe winding is:

Options :

1. 1
2. 3
3. 5
4. 7

Question Number : 185 Question Id : 61097515413 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The decking difficulties in Koepe winder is overcome by providing:

Options :

1. Keps
2. Hinged platform
3. Rope guide
4. Flexible guide

Question Number : 186 Question Id : 61097515414 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

What type of ventilation is recommended for SDL / LHD?

Options :

1. $1 \text{ m}^3 / \text{minute} / \text{kW}$ of motor power
2. $5 \text{ m}^3 / \text{minute} / \text{kW}$ of motor power
3. $10 \text{ m}^3 / \text{minute} / \text{kW}$ of motor power
4. $15 \text{ m}^3 / \text{minute} / \text{kW}$ of motor power

Question Number : 187 Question Id : 61097515415 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following is not a main parameter to be considered for a mine car?

Options :

1. Tare - load ratio
2. stability of car
3. Length of haul
4. Co-efficient of space utilization

Question Number : 188 Question Id : 61097515416 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Detaching hook is a safety device which acts when

Options :

1. The cage is at pit bottom
2. The cage is at pit top
3. Over wind takes place
4. The cage is at mid-landing position

Question Number : 189 Question Id : 61097515417 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following drum is employed for hoisting in deep mines as it reduces the net starting torque?

Options :

1. Cylindro conical
2. Bi-cylindro conical
3. Cylindrical
4. Balancing cylindrical

Question Number : 190 Question Id : 61097515418 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

As per mining regulations, for every shaft exceeding 100 m depth and during hoisting of men the speed should not exceed:

Options :

1. 0.5 m/s
2. 1 m/s
3. 1.5 m/s
4. 5 m/s

Question Number : 191 Question Id : 61097515419 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Why lime is sprinkled on the accumulation of black damp?

Options :

1. It absorbs CO₂ in the black damp
2. It resists coal dust explosion
3. It resists gas explosion
4. It gives off H₂O to extinguish fire

Question Number : 192 Question Id : 61097515420 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

How many instructors should be there in a rescue station

Options :

1. 2
2. 4
3. 6
4. 8

Question Number : 193 Question Id : 61097515421 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following apparatus, or equipment is not recommended to keep at rescue room?

Options :

1. Breathing apparatus
2. Reviving apparatus
3. Smoke helmets
4. Scissors

Question Number : 194 Question Id : 61097515422 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

In case of any difference in opinion between workmen's inspector & the owner, agent, manager, the matter should be sent to:

Options :

1. Director (Technical/ Operation)
2. CMD of that subsidiary
3. Chief inspector
4. Chairman of the company

Question Number : 195 Question Id : 61097515423 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

In which form, the standards of the initial medical examinations of all people seeking employment are laid down?

Options :

1. Form P
2. Form P-I
3. Form O
4. Form O-I

Question Number : 196 Question Id : 61097515424 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Identify the department from which workmen's inspector is not considered:

Options :

1. Mining
2. Civil
3. Electrical

4. Mechanical

Question Number : 197 Question Id : 61097515425 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which section of The Mines Act, 1952 & CMR, 2017 impose bindings to give notice of accidents in mines?

Options :

1. 30 of The Mines Act 1952 and 11 of CMR, 2017
2. 23 of The Mines Act 1952 and 8 of CMR, 2017
3. 52 of The Mines Act 1952 and 122 of CMR, 2017
4. 71 of The Mines Act 1952 and 125 of CMR, 2017

Question Number : 198 Question Id : 61097515426 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following earnings is not included in the ordinary rate of wages of mine employees?

Options :

1. Basic wages
2. Dearness allowance

3. Bonus excluding incentive for production

4. Compensation in cash

Question Number : 199 Question Id : 61097515427 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following disease is not declared in the official gazette of India as a disease connected with mining operation?

Options :

1. Silicosis

2. Pneumoconiosis

3. Ankylostomiosis

4. Manganese poisoning nervous type

Question Number : 200 Question Id : 61097515428 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following is the facilitative class of welfare measures?

Options :

1. Paid holidays

2. Sports

3. Social get-together

4. Transport