Andhra Pradesh State Council of Higher Education

Notations :

1.Options shown in green color and with ✔ icon are correct.

2.Options shown in red color and with ✖ icon are incorrect.

Question Paper Name :	Mining Engineering 08th May 2024 Shift 2
Duration :	180
Total Marks :	200
Display Marks:	No
Share Answer Key With Delivery Engine :	Yes
Calculator :	None
Magnifying Glass Required? :	No
Ruler Required? :	No
Eraser Required? :	No
Scratch Pad Required? :	No
Rough Sketch/Notepad Required? :	No
Protractor Required? :	No
Show Watermark on Console? :	Yes
Highlighter :	No
Auto Save on Console?	Yes
Change Font Color :	No
Change Background Color :	No
Change Theme :	No
Help Button :	No
Show Reports :	No

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

Mathematics

Section Id :	210688186
Section Number :	1
Mandatory or Optional :	Mandatory
Number of Questions :	50
Section Marks :	50
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Is Section Default? :	null

Question Number : 1 Question Id : 2106889407 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $\begin{vmatrix} 15-x & 11 & 10 \\ 11-3x & 17 & 16 \\ 7-x & 14 & 13 \end{vmatrix}=0$ then the value of x is

Options :

1. ✔ 6

2. ✖ 5

3. ✖ 7

4. ✖ -6

Question Number : 2 Question Id : 2106889408 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The adjoint of $A = \begin{pmatrix} 1 & 4 & -2 \\ -2 & -5 & 4 \\ 1 & -2 & 1 \end{pmatrix}$ is

Options :

1. ✖ $\begin{pmatrix} 1 & 4 & -2 \\ -2 & -5 & 4 \\ 1 & -2 & 1 \end{pmatrix}$

2. ✖ $\begin{pmatrix} 1 & 4 & -2 \\ -2 & -5 & -4 \\ 1 & -2 & 1 \end{pmatrix}$

3. ✔ $\begin{pmatrix} 3 & 0 & 6 \\ 6 & 3 & 0 \\ 9 & 6 & 3 \end{pmatrix}$

4. ✖ $\begin{pmatrix} 3 & 2 & 1 \\ 4 & 1 & -1 \\ 0 & 3 & 4 \end{pmatrix}$

Question Number : 3 Question Id : 2106889409 Display Question Number : Yes Is Question

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

If $A = \begin{pmatrix} 3 & 2 & x \\ 4 & 1 & -1 \\ 0 & 3 & 4 \end{pmatrix}$ is a singular matrix then the value of x is

Options :

1. ✔ $11/12$

2. ✖ $-11/12$

3. ✖ $13/12$

4. ✖ $5/4$

Question Number : 4 Question Id : 2106889410 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The solution of the following simultaneous linear equations by using Cramer's rule 3x+4y+5z=18; 2x-y+8z=13; 5x-2y+7z=20 is

Options :

1. ✖ -3, -1,1

2. ✔ 3,1,1

3. ✖ 3,0,1

4. ✖ 3,1,-1

Question Number : 5 Question Id : 2106889411 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of $\begin{vmatrix} 441 & 442 & 443 \\ 445 & 446 & 447 \\ 449 & 450 & 451 \end{vmatrix}$ is

Options :

1. ✔ 0

2. ✖ 1

3. ✖ 4

4. ✖ 6

Question Number : 6 Question Id : 2106889412 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$\frac{3x-1}{(x-1)(x-2)(x-3)} =$$

Options :

1. ✖ $\frac{2}{x-1}+\frac{5}{x-2}-\frac{4}{x-3}$

2. ✖ $\frac{-1}{x-1}+\frac{5}{x-2}-\frac{4}{x-3}$

3. ✖ $\frac{1}{x-1}+\frac{5}{x-2}+\frac{4}{x-3}$

4. ✔ $\frac{1}{x-1}-\frac{5}{x-2}+\frac{4}{x-3}$

Question Number : 7 Question Id : 2106889413 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$\frac{5x+1}{(x+2)(x-1)} =$

Options :

1. ✔ $\frac{3}{x+2}+\frac{2}{x-1}$

2. ✖ $\frac{3}{x+2}-\frac{2}{x-1}$

3. ✖ $\frac{-3}{x+2}+\frac{2}{x-1}$

4. ✖ $\frac{3}{x-2}+\frac{2}{x+1}$

Question Number : 8 Question Id : 2106889414 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$cos100^0 cos40^0 + sin100^0 sin40^0 \ =$

Options :

1. ✔ $\frac{1}{2}$

2. ✖ $-\frac{1}{2}$

3. ✖ $\frac{1}{4}$

4. ✖ $\frac{1}{8}$

Question Number : 9 Question Id : 2106889415 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $sin\theta = \frac{3}{5}$, θ *is acute,* then $2tan\theta + 3sec\theta + 4sec\theta\ cosec\theta =$

Options :

1. ✖ -1

2. ✔ $\frac{163}{12}$

3. ✖ $\frac{-163}{12}$

4. ✖ $\frac{13}{12}$

Question Number : 10 Question Id : 2106889416 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $tan^{-1}x + tan^{-1}y + tan^{-1}z = \frac{\pi}{2}$ then $xy + yz + zx \ =$

Options :

1. ✖ -1

2. ✖ 3

3. ✖ 5

4. ✔ 1

Question Number : 11 Question Id : 2106889417 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $A = \frac{\pi}{6}$ and $B = \frac{\pi}{3}$ then $16\text{Sin}^3A + 8\text{Cos}^3B =$

Options :

1. ✔ 3

2. ✖ 1

3. ✖ -3

4. ✖ 0

Question Number : 12 Question Id : 2106889418 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $x + \frac{1}{x} = 2\cos\theta$ then $x^n + \frac{1}{x^n} =$

Options :

1. ✔ $2\cos n\theta$

2. ✖ $-2\cos n\theta$

3. ✖ $3\cos\theta$

4. ✖ $2\sin n\theta$

Question Number : 13 Question Id : 2106889419 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$\cos\left[\sin^{-1}\left(\frac{1}{2}\right)+\cos^{-1}\left(-\frac{\sqrt{3}}{2}\right)\right] =$$

Options :

1. ✖ 0

2. ✖ 1

3. ✖ 3

4. ✔ -1

Question Number : 14 Question Id : 2106889420 Display Question Number : Yes Is Question

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

If $sin\alpha = {}^{15}/_{17}\ , cos\beta = {}^{12}/_{13}$ then $sin(\alpha + \beta)\ =$

Options :

1. ✖ ${}^{110}/_{105}$

2. ✖ $-{}^{121}/_{152}$

3. ✔ ${}^{220}/_{221}$

4. ✖ ${}^{5}/_{4}$

Question Number : 15 Question Id : 2106889421 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If x is an acute angle and $sin(x + 10^0) = cos(3x - 68^0)$ then $x\ =$

Options :

1. ✖ 48^0

2. ✔ 37^0

3. ✖ 38^0

4. ✖ 10^0

Question Number : 16 Question Id : 2106889422 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$\tan^{-1}(2sin150^0) =$

Options :

1. ✖ π

2. ✖ 3π

3. ✖ $\frac{\pi}{2}$

4. ✔ $\frac{\pi}{4}$

Question Number : 17 Question Id : 2106889423 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The general solution of $4cos^2x - 3 = 0$ is

Options :

1. ✔ $2n\pi \pm \frac{\pi}{6}$

2. ✖ $2n\pi \pm \frac{7\pi}{6}$

3. ✖ $3n\pi \pm \frac{5\pi}{6}$

4. ✖ $2n\pi \pm \frac{11\pi}{6}$

Question Number : 18 Question Id : 2106889424 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$\left(\frac{\sqrt{3}}{2} + \frac{i}{2}\right)^5 - \left(\frac{\sqrt{3}}{2} - \frac{i}{2}\right)^5 =$

Options :

1. ✔ i

2. ✖ $-i$

3. ✖ $2i$

4. ✖ $-3i$

Question Number : 19 Question Id : 2106889425 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The modulus of the complex number $\left(-1-\sqrt{3}i\right)$ is

Options :

1. ✖ 1

2. ✖ 6

3. ✔ 2

4. ✖ 4

Question Number : 20 Question Id : 2106889426 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the line $2y = 5x + k$ is a tangent to the parabola $y^2 = 6x$ then $k =$

Options :

1. ✖ $\frac{2}{5}$

2. ✖ $\frac{3}{5}$

3. ✔ $\frac{6}{5}$

4. ✖ $\frac{7}{5}$

Question Number : 21 Question Id : 2106889427 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The length of the major axis of the ellipse: $4x^2 + 3y^2 = 48$ is

Options :

1. ✖ 10

2. ✖ 11

3. ✔ 8

4. ✖ 12

Question Number : 22 Question Id : 2106889428 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The eccentricity of the hyperbola $36x^2 - 25y^2 = 900$ is

Options :

1. ✔ $\frac{\sqrt{61}}{5}$

2. ✖ $\frac{9}{2}$

3. ✖ $\frac{3}{2}$

4. ✖ $\frac{5}{2}$

Question Number : 23 Question Id : 2106889429 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The length of the tangent from $(1,3)$ to the circle $x^2 + y^2 - 2x + 4y - 11 = 0$ is

Options :

1. ✖ 2

2. ✔ 3

3. ✖ 5

4. ✖ 4

Question Number : 24 Question Id : 2106889430 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the line $2x + \sqrt{6}\,y = 2$ touches the hyperbola $x^2 - 2y^2 = 4$ then the point of contact is

Options :

1. ✖ $(4, \sqrt{6})$

2. ✔ $(4, -\sqrt{6})$

3. ✖ $(-4,6)$

4. ✖ $(5,7)$

Question Number : 25 Question Id : 2106889431 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

The equation of the parabola with focus at (-3,2) and vertex (-2,2) is

Options :

1. ✖ $x^2 - 4x + 8y + 12 = 0$

2. ✖ $x^2 + 5x - 8y - 11 = 0$

3. ✔ $y^2 + 4x - 4y + 12 = 0$

4. ✖ $x^2 - 4x - 8y - 12 = 0$

Question Number : 26 Question Id : 2106889432 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$\lim_{x \to 0} \frac{a^x - b^x}{x} =$

Options :

1. ✖ $\log\left(\frac{b}{a}\right)$

2. ✖ $2\log\left(\frac{b}{a}\right)$

3. ✔ $\log\left(\frac{a}{b}\right)$

4. ✖ $2\log\left(\frac{a}{b}\right)$

Question Number : 27 Question Id : 2106889433 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $x = a\left[\cos t + log\left(tan\frac{t}{2}\right)\right]$, $y = a\sin t$ then $\frac{dy}{dx}$ is

Options :

1. ✖ $-\tan t$

2. ✔ $\tan t$

3. ✖ $\tan t + \sin t$

4. ✖ $\sin t$

Question Number : 28 Question Id : 2106889434 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If an error of 3% occurs in measuring the side of a cube then the percentage error in its volume is

Options :

1. ✖ 3

2. ✖ 7

3. ✖ 8

4. ✔ 9

Question Number : 29 Question Id : 2106889435 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The angle between the curves $y = x^2 + 3x - 7$ and $y^2 = 2x + 5$ at $(2,3)$ is

Options :

1. ✔ $\tan\theta = 2$

2. ✖ $\sec\theta = 2$

3. ✖ $\cos\theta = 1$

4. ✖ $\sin\theta = 3$

Question Number : 30 Question Id : 2106889436 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $u = \log\left(\frac{x^2+y^2}{x+y}\right)$ then $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} =$

Options :

1. ✖ 2

2. ✖ 4

3. ✖ 5

4. ✔ 1

Question Number : 31 Question Id : 2106889437 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The interval in which the function $f(x) = x^2 logx$ is a decreasing function is

Options :

1. ✖ $(1\ ,\ e^{-1/2}\ )$

2. ✖ $(2\ ,\ e^{-1/2}\ )$

3. ✖ $(-\infty, 0)$

4. ✔ $(0\ ,\quad e^{-1/2})$

Question Number : 32 Question Id : 2106889438 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $z = e^{(ax+by)} f(ax - by)$ then $b\frac{\partial z}{\partial x} + a\frac{\partial z}{\partial y} =$

Options :

1. ✖ $-2abz$

2. ✖ $3abz$

3. ✔ 2abz

4. ✖ 5abz

Question Number : 33 Question Id : 2106889439 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The volume of a spherical ball is increasing at the rate of 4π cc/s, then the rate of increase of the radius, when the volume is $288\pi\ cc$ is

Options :

1. ✖ 2 cm/sec

2. ✔ 1/36 cm/sec

3. ✖ 1/ 4 cm/sec

4. ✖ 6 cm/sec

Question Number : 34 Question Id : 2106889440 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The slope of the tangent to the curve $y = 5x^2$ at the point $x = -1$ is

Options :

1. ✖ 10

2. ✖ 7

3. ✔ -10

4. ✖

-9

Question Number : 35 Question Id : 2106889441 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The extreme values of the function $f(x) = x^3 - 9x^2 + 15x - 1$ are

Options :

1. ✔ 6,-26

2. ✖ 3,-26

3. ✖ 6,26

4. ✖ -6,-26

Question Number : 36 Question Id : 2106889442 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$\int_0^2 \sqrt{4 - x^2}\, dx =$

Options :

1. ✖ $\frac{\pi}{2}$

2. ✖ $-\frac{\pi}{2}$

3. ✔ π

4. ✖ $-\pi$

Question Number : 37 Question Id : 2106889443 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of $\int x\sqrt{x}\,dx$ on $[0,\infty)$ is

Options :

1. ✔ $\frac{2}{5}x^{5/2}+c$

2. ✖ $-\frac{2}{5}x^{5/2}+c$

3. ✖ $\frac{2}{5}x^{-5/2}+c$

4. ✖ $\frac{2}{3}x^{3/2}+c$

Question Number : 38 Question Id : 2106889444 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The area enclosed between the curve $y^2 = 4x$ and the line $x = 2y$ is

Options :

1. ✖ $\frac{64}{5}$ sq. units

2. ✔ $\frac{64}{3}$ sq. units

3. ✖ $\frac{65}{4}$ sq. units

4. ✖ $\frac{63}{4}$ sq. units

Question Number : 39 Question Id : 2106889445 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$\int \frac{dx}{\sqrt{4x^2-4x+2}} =$$

Options :

1. ✖ $-\frac{1}{2}\sinh^{-1}(x-1)+c$

2. ✖ $\frac{1}{2}\sinh^{-1}(2x+1)+c$

3. ✔ $\frac{1}{2}\sinh^{-1}(2x-1)+c$

4. ✖ $\frac{1}{2}\sinh^{-1}(3x-1)+c$

Question Number : 40 Question Id : 2106889446 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$\int_0^{\pi/2}\frac{sinx}{1+cos^2x}dx =$

Options :

1. ✔ $\pi/4$

2. ✖ $-\pi/4$

3. ✖ $\pi/3$

4. ✖ $\pi/2$

Question Number : 41 Question Id : 2106889447 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The mean value of $\frac{1}{4+x^2}$ on $[-2,2]$ is

Options :

1. ✖ $\frac{\pi}{12}$

2. ✖ $-\frac{\pi}{2}$

3. ✖ $\frac{\pi}{2}$

4. ✔ $\frac{\pi}{16}$

Question Number : 42 Question Id : 2106889448 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$\int_0^{\pi/4} \sqrt{1+sin2x}\, dx =$

Options :

1. ✖ -1

2. ✖ -3

3. ✖ 3

4. ✔ 1

Question Number : 43 Question Id : 2106889449 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The area enclosed by the curves $y = 3x$ and $y = 6x - x^2$ is

Options :

1. ✖ $\frac{7}{2}$ square units

2. ✖ $\frac{5}{2}$ square units

3. ✖ $\frac{3}{2}$ square units

4. ✔ $\frac{9}{2}$ square units

Question Number : 44 Question Id : 2106889450 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of $\int \frac{e^x(1+x)}{(2+x)^2}\,dx$ on $I \in R \setminus\{-2\}$ is

Options :

1. ✔ $\frac{e^x}{2+x}+c$

2. ✖ $-\frac{e^x}{2+x}+c$

3. ✖ $\frac{e^x}{2-x}+c$

4. ✖ $\frac{e^{3x}}{2+x}+c$

Question Number : 45 Question Id : 2106889451 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The solution of the homogeneous differential equation $xy^2\,dy-(x^3+y^3)\,dx=0$ is

Options :

1. ✖ $y^3=-3x^3\log(xc)$

2. ✖ $y^3=3x^3\log(x/c)$

3. ✖

$y^3 = 3x^3\log(x^2c)$

4. $y^3 = 3x^3\log(xc)$ ✔

Question Number : 46 Question Id : 2106889452 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The order and degree of the differential equation $\left(\frac{dy}{dx}\right)^2 + 3\left(\frac{dy}{dx}\right) + 2 = 0$ is

Options :

1. Order=2, degree=2 ✖

2. Order=2, degree=1 ✖

3. order = 1, degree = 2 ✔

4. Order=3, degree=1 ✖

Question Number : 47 Question Id : 2106889453 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The necessary and the sufficient condition for the differential equation $M(x,y)dx + N(x,y)dy = 0$ to be an exact equation is

Options :

1. ✖ $\frac{\partial M}{\partial x}=\frac{\partial N}{\partial y}$

2. ✔ $\frac{\partial M}{\partial y}=\frac{\partial N}{\partial x}$

3. ✖ $\frac{\partial M}{\partial y}=-\frac{\partial N}{\partial x}$

4. ✖ $\frac{\partial M}{\partial x}=-\frac{\partial N}{\partial y}$

Question Number : 48 Question Id : 2106889454 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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

Options :

1. ✔ $\frac{1}{xy}=-x+c$

2. ✖ $\frac{-1}{xy}=-x+c$

3. ✖ $\frac{2}{xy}=x+c$

4. ✖ $\frac{1}{y} = -x + c$

Question Number : 49 Question Id : 2106889455 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The solution of $(D^2 + 10D + 25)y = 0$ is

Options :

1. ✔ $y = e^{-5x}\ (c_1 x + c_2)$

2. ✖ $y = e^{3x}(c_1 \cos 2x + c_2 \sin 2x)$

3. ✖ $y = e^{3x}(c_1 \cos 2x - c_2 \sin 2x)$

4. ✖ $y = e^{3x}(c_1 \cos 3x + c_2 \sin 3x)$

Question Number : 50 Question Id : 2106889456 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The complementary function of $(D^2 + 3D + 2)y = 8sin5x$ is

Options :

1. ✔ $c_1 e^{-x} + c_2 e^{-2x}$

2. $c_1e^x + c_2e^{2x}$ ✖

3. $c_1e^{-x} + c_2e^{2x}$ ✖

4. $c_1e^{2x} + c_2e^{3x}$ ✖

Physics

Section Id :	210688187
Section Number :	2
Mandatory or Optional :	Mandatory
Number of Questions :	25
Section Marks :	25
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Is Section Default? :	null

Question Number : 51 Question Id : 2106889457 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If we choose velocity **V**, acceleration **A** and force **F** as fundamental physical quantities then how would you express angular momentum in terms of **V**, **A** and **F**.

Options :

1.

✖ $F^1 A^{-1} V^1$

2. ✖ $F^1 A^0 V^1$

3. ✖ $F^1 A^{-1} V^2$

4. ✔ $F^1 A^{-2} V^3$

Question Number : 52 Question Id : 2106889458 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the velocity of a body at any time 't' is given by the equation $v = A t^2 + B t + C$, then the unit of A is

Options :

1. ✖ metre/sec

2. ✖ metre/sec^2

3. ✔ metre/sec^3

4. ✖ metre

Question Number : 53 Question Id : 2106889459 Display Question Number : Yes Is Question

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

If $|\mathbf{A}| + |\mathbf{B}| = |\mathbf{C}|$ and $\mathbf{A} + \mathbf{B} = \mathbf{C}$, then the angle between vectors $\mathbf{A}$ and $\mathbf{B}$ is

Options :

1. ✖ $90°$

2. ✖ $60°$

3. ✔ $0°$

4. ✖ $120°$

Question Number : 54 Question Id : 2106889460 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The area of triangle with sides as $\mathbf{A} = 2\mathbf{i} + 3\mathbf{j}$ and $\mathbf{B} = \mathbf{i} + 4\mathbf{j}$ is

Options :

1. ✖ 5 units

2. ✖ 10 units

3. ✔ 2.5 units

4. ✖ 20 units

Question Number : 55 Question Id : 2106889461 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the velocity of a body moving with uniform acceleration is doubled in t_1 sec and tripled in t_2 sec then

Options :

1. ✔ $t_2 = 2\ t_1$

2. ✖ $t_1 = 2\ t_2$

3. ✖ $t_1 t_2 = 2$

4. ✖ $t_2 = 3\ t_1$

Question Number : 56 Question Id : 2106889462 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If a body travels half of its total path in the last second of its fall from rest then the height of its fall is (take $g = 10\ ms^{-2}$)

Options :

1. ✔ 57.1m

2. ✖ 28.26m

3. ✖ 64m

4. ✖ 45m

Question Number : 57 Question Id : 2106889463 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In Olympics, a javelin thrown at an angle 45° attains a maximum height of 30m, then the horizontal distance covered by the javelin is

Options :

1. ✖ 60m

2. ✔ 120m

3. ✖ 100m

4. ✖ 90m

Question Number : 58 Question Id : 2106889464 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The coefficient of friction between the floor and the wooden cube of side length 0.5m is 0.2. The coefficient of friction for a wooden cube of side length 1m is

Options :

1. ✔ 0.2

2. ✖ 0.5

3. ✖ 0.1

4. ✖ 0.4

Question Number : 59 Question Id : 2106889465 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The force required just to move a body up an inclined plane is double the force required just to prevent the body sliding down it. If The coefficient of friction is $1/\sqrt{3}$, then the angle of the plane is

Options :

1. ✖ 45°

2. ✖ 30°

3. ✖ 53°

4. ✔ 60°

Question Number : 60 Question Id : 2106889466 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If an ice block of mass 42Kg moves with initial velocity 4m/s on a rough surface of coefficient of friction 0.1. then the amount of ice melted as a result of friction before the block comes to rest is

Options :

1. ✖ 0.5 gm.

2. ✔ 1 gm.

3. ✖ 8 gm.

4. ✖ 16 gm.

Question Number : 61 Question Id : 2106889467 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A ship of mass 3×10^7 Kg initially at rest is pulled by a force of 5×10^4 N through a distance of 3m. Assuming that the resistance due to water is negligible, the speed of the ship is

Options :

1. ✖ 2 m/s

2. ✔ 0.1 m/s

3. ✖ 0.2 m/s

4. ✖ 10 m/s

Question Number : 62 Question Id : 2106889468 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When a force $\mathbf{F} = 2\,\mathbf{i} + 4\,\mathbf{j} + 5\,\mathbf{k}$ newton acts on a body and produces a displacement of $\mathbf{S} = 3\,\mathbf{i} + 2\,\mathbf{j} + \mathbf{k}$ metre., then the work done by this force is

Options :

1. ✖ 13 J

2. ✖ 15 J

3. ✖ 17 J

4. ✔ 19 J

Question Number : 63 Question Id : 2106889469 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An engine expends 45 HP in propelling a car along a level track at 15m/s. The total retarding force acting on the car is

Options :

1. ✔ 2238 N

2. ✖ 3900 N

3. ✖ 3228 N

4. ✖ 4280 N

Question Number : 64 Question Id : 2106889470 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Two bodies A and B of equal masses are suspended from two separate massless springs of spring constants K_1 and K_2 respectively. If the two bodies oscillate such that their maximum velocities are equal, the ratio of amplitude of A to that of B is

Options :

1. ✖ $\frac{K_1}{K_2}$

2. ✖ $\frac{K_2}{K_1}$

3. ✔ $\sqrt{\frac{K_2}{K_1}}$

4. ✖

$\sqrt{\frac{K_1}{K_2}}$

Question Number : 65 Question Id : 2106889471 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A block is on a piston which is moving vertically with a SHM of period 1sec. The amplitude of the motion at which block and the piston will separate is (take $g = 10\,ms^{-2}$)

Options :

1. ✔ 0.25m

2. ✖ 0.5m

3. ✖ 0.75m

4. ✖ 1m

Question Number : 66 Question Id : 2106889472 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A seconds pendulum is working in a lift. If the lift begins to fall freely, then what will be the time period of the pendulum in this case

Options :

1. ✖ 2 sec

2. ✖ 1 sec

3. ✖ 0

4. ✔ infinity

Question Number : 67 Question Id : 2106889473 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A tuning fork of frequency 90 hertz is sounded and moving towards an observer with a velocity equal to one-tenth the velocity of sound; the frequency of the note heard by the observer is

Options :

1. ✔ 100 Hz

2. ✖ 90 Hz

3. ✖ 80 Hz

4. ✖ 110 Hz

Question Number : 68 Question Id : 2106889474 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the reverberation time of a class room of dimensions 100 x 30 x 10 m^3 is 1.5 sec. then the total absorption of the class room is

Options :

1. ✖ 2300 metric Sabine

2. ✔ 3400 metric Sabine

3. ✖ 1700 metric Sabine

4. ✖ 850 metric Sabine

Question Number : 69 Question Id : 2106889475 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The standard constant volume gas thermometer cannot use any vapour as working substance because

Options :

1. ✖ Vapours are likely to catch fire

2. ✔ Vapours are not perfect gases

3. ✖ It is difficult to obtain pure vapours

4. ✖ The properties are not constant over a long range of temperature

Question Number : 70 Question Id : 2106889476 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The equation of state corresponding to 14g of nitrogen(N_2) at pressure P and temperature T, when occupying a volume V, will be (R is universal gas constant)

Options :

1. ✖ $PV = 7RT$

2. ✔ $PV = \frac{1}{2} RT$

3. ✖ $PV = \frac{1}{4} RT$

4. ✖ $PV = 2\ RT$

Question Number : 71 Question Id : 2106889477 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A vessel contains certain quantity of gas at a pressure of 80 cm of Hg. If $2/5^{th}$ of the mass of gas leaks out at the same temperature, then the pressure of remaining gas is

Options :

1. ✖ 40 cm of Hg

2.

✖ 32 cm of Hg

3. ✔ 48 cm of Hg

4. ✖ 20 cm of Hg

Question Number : 72 Question Id : 2106889478 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An ideal diatomic gas is heated at constant pressure. The fraction of the heat energy supplied to increase the internal energy of the gas is

Options :

1. ✖ $\frac{2}{5}$

2. ✖ $\frac{3}{5}$

3. ✖ $\frac{3}{7}$

4. ✔ $\frac{5}{7}$

Question Number : 73 Question Id : 2106889479 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

The distance between the atoms of a diatomic gas remains constant. Then its molar specific heat at constant volume is

Options :

1. ✔ $\frac{5}{2}R$

2. ✖ $\frac{3}{2}R$

3. ✖ R

4. ✖ $\frac{1}{2}R$

Question Number : 74 Question Id : 2106889480 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In photo electric effect the energy of the emitted electrons is

Options :

1. ✖ Larger than that of incident photon

2. ✔ Smaller than that of incident photon

3. ✖ Same as that of incident photon

4. ✖ Proportional to the intensity of incident light

Question Number : 75 Question Id : 2106889481 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In water-air system for which colour the critical angle is maximum?

Options :

1. ✔ Red

2. ✖ Violet

3. ✖ Yellow

4. ✖ Same for all colours

Chemistry

Section Id :	210688188
Section Number :	3
Mandatory or Optional :	Mandatory
Number of Questions :	25
Section Marks :	25
Enable Mark as Answered Mark for Review and Clear Response :	Yes

Maximum Instruction Time : 0

Is Section Default? : null

Question Number : 76 Question Id : 2106889482 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The total number of 'm' values possible for a sublevel with l=3 is

Options :

1. ✖ 3

2. ✖ 5

3. ✔ 7

4. ✖ 9

Question Number : 77 Question Id : 2106889483 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of Rydberg constant for hydrogen atom (R_H) (in m^{-1}) is

Options :

1. ✖ 1.09×10^{-5}

2. ✖ 1.09×10^{-7}

3. ✖ 1.09×10^{5}

4. ✔ 1.09×10^{7}

Question Number : 78 Question Id : 2106889484 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In which of the following, the orbitals are correctly arranged in the order of increasing energy?

Options :

1. ✖ $3d < 4s < 4d < 5p$

2. ✔ $4s < 3d < 5p < 4d$

3. ✖ $4s < 5p < 3d < 4d$

4. ✖ $3d < 4d < 4s < 5p$

Question Number : 79 Question Id : 2106889485 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

Identify the molecule in which central atom has octet of electrons.

Options :

1. ✔ H_2O

2. ✖ $BeCl_2$

3. ✖ BCl_3

4. ✖ PCl_5

Question Number : 80 Question Id : 2106889486 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The incorrect statement about an ionic compound is

Options :

1. ✖ It is readily soluble in water

2. ✔ It is a conductor in solid state

3. ✖ It has non directional ionic bond

4. ✖ It has high melting point

Question Number : 81 Question Id : 2106889487 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The weight of 0.01 moles of $KClO_3$ (in g) is (K = 39u, Cl = 35.5 u, O = 16u)

Options :

1. ✔ 1.225

2. ✖ 2.45

3. ✖ 3.225

4. ✖ 1.205

Question Number : 82 Question Id : 2106889488 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

100 ml of 0.1M HCl is mixed with 100 ml of 0.1M H_2SO_4 and the solution is diluted to 1.0 L. the Molarity of the final solution is

Options :

1. ✖ 0.01 M

2. ✖ 0.02 M

3. ✔ 0.03 M

4. ✖ 0.04 M

Question Number : 83 Question Id : 2106889489 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The normality of 5.3% (w/v) solution of Na_2CO_3 is (Na = 23u, C = 12u, O = 16u)

Options :

1. ✖ 0.5 N

2. ✖ 3 N

3. ✖ 2 N

4. ✔ 1 N

Question Number : 84 Question Id : 2106889490 Display Question Number : Yes Is Question

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

Identify the substance which can act only as Lewis acid

Options :

1. ✖ HCl

2. ✔ $AlCl_3$

3. ✖ NH_3

4. ✖ H_2O

Question Number : 85 Question Id : 2106889491 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

At 25^0C, 4.0 g of NaOH is Present in 2.0 L solution. The ionic product of water (in mol^2/L^2) at that temperature is

Options :

1. ✔ 1×10^{-14}

2. ✖ 1×10^{-13}

3. ✖ 1×10^{-12}

4. ✖ 5×10^{-14}

Question Number : 86 Question Id : 2106889492 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is not a strong electrolyte?

Options :

1. ✖ HCl (aq)

2. ✖ $H_2SO_4(aq)$

3. ✖ $CH_3COONa(aq)$

4. ✔ $NH_4OH(aq)$

Question Number : 87 Question Id : 2106889493 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

How many grams of copper is deposited on cathode, when 0.5F current is passed through 100 ml of 0.1 M $CuSO_4$ solution? (Molecular Weight of $CuSO_4$ = 63.5u)

Options :

1. ✖ 63.5

2. ✖ 16.35

3. ✔ 15.875

4. ✖ 31.75

Question Number : 88 Question Id : 2106889494 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The electrolyte commonly used in salt bridge is

Options :

1. ✖ $ZnCl_2$

2. ✔ KCl

3. ✖ $MgCl_2$

4. ✖ $CaSO_4$

Question Number : 89 Question Id : 2106889495 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

At 25^0C, the emf of the cell $Zn|Zn^{2+}(1M)||Cu^{2+}(1M)|Cu$ is __

(Given: $E^0_{Zn^{2+}}|Zn = -0.76$ V & $E^0_{Cu^{2+}}|Cu = +0.34$ V)

Options :

1. ✔ 1.1 V

2. ✖ -0.46 V

3. ✖ -1.1 V

4. ✖ 1.5 V

Question Number : 90 Question Id : 2106889496 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Water gets permanent hardness due to

Options :

1. ✖ NaCl

2. ✖ KCl

3. ✔ $MgCl_2$

4. ✖ $AlCl_3$

Question Number : 91 Question Id : 2106889497 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

2.43 g of $Ca(HCO_3)_2$ (molecular weight is 162u) is present in 20L water sample.

The degree of hardness of water (in mg/l) is__

Options :

1. ✖ 150

2. ✔ 75

3. ✖ 200

4. ✖ 125

Question Number : 92 Question Id : 2106889498 Display Question Number : Yes Is Question

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

In softening of hardwater by ion exchange resin method, the cation exchange resin contains

Options :

1. ✔ -COOH group

2. ✖ -OH group

3. ✖ $-NH_3OH$ group

4. ✖ $-Al_2Si_2O_8$ group

Question Number : 93 Question Id : 2106889499 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Corrosion is

Options :

1. ✖ A chemical process

2. ✖ An electrical process

3. ✔

An electrochemical process

4. ✖ A physical process

Question Number : 94 Question Id : 2106889500 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Galvanization is applying a coating of

Options :

1. ✔ Zn

2. ✖ Pb

3. ✖ Cr

4. ✖ Cu

Question Number : 95 Question Id : 2106889501 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The hetero atom present in neoprene is

Options :

1. ✖ S

2. ✖ O

3. ✔ Cl

4. ✖ F

Question Number : 96 Question Id : 2106889502 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The monomer of Teflon is

Options :

1. ✖ C_2Cl_4

2. ✖ C_2Br_2

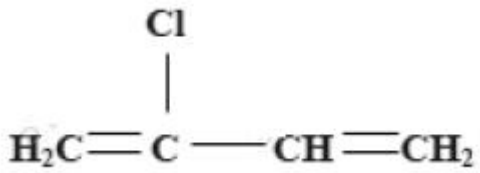
3. ✔ C_2F_4

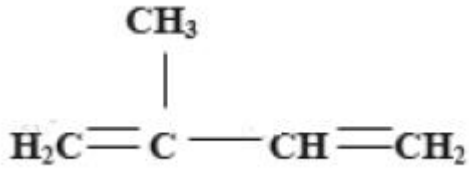
4. ✖ C_2F_6

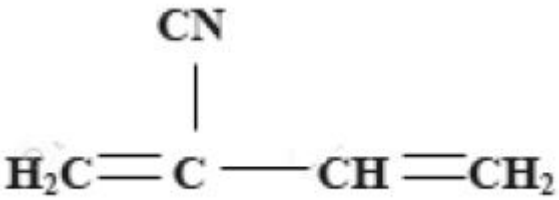
Question Number : 97 Question Id : 2106889503 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

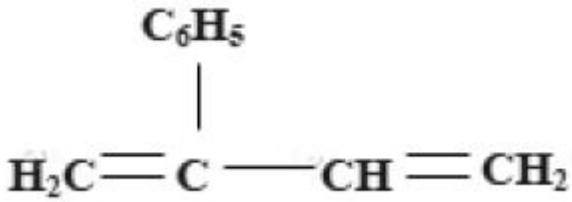
The structure of the monomer of natural rubber is

Options :

1. ✖ 

2. ✔ 

3. ✖ 

4. ✖ 

Question Number : 98 Question Id : 2106889504 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The major components of producer gas are

Options :

1. ✖ CO, H_2

2. ✔ CO, N_2

3. ✖ CH_4, CO

4. ✖ CH_4, N_2

Question Number : 99 Question Id : 2106889505 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Depletion of ozone layer causes

Options :

1. ✖ Forest fires

2. ✖ Eutrophication

3. ✖ Bio-Magnification

4. ✔ Skin Cancer

Question Number : 100 Question Id : 2106889506 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is a secondary pollutant?

Options :

1. ✖ CO_2

2. ✖ SO_2

3. ✔ Peroxyacetyl nitrate

4. ✖ NO_2

Mining Engineering

Section Id :	210688189
Section Number :	4
Mandatory or Optional :	Mandatory
Number of Questions :	100
Section Marks :	100

Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Is Section Default? :	null

Question Number : 101 Question Id : 2106889507 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In shaft sinking, the Pumps are generally used to deal the water if quantity exceeds

Options :

1. ✖ 72 lit/min

2. ✖ 80 lit/min

3. ✖ 15 lit/min

4. ✔ 100 lit/min

Question Number : 102 Question Id : 2106889508 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What capacity of forcing fan is used for ventilation, if the depth of sinking shaft exceeds 25m?

Options :

1. ✖ 250 m^3/min

2. ✖ $280\ m^3/min$

3. ✔ $300\ m^3/min$

4. ✖ $220\ m^3/min$

Question Number : 103 Question Id : 2106889509 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In Diamond drilling, what is the pressure acting on diamonds in drill bit?

Options :

1. ✖ $1\ to\ 1.5 kg/cm^2$

2. ✖ $2\ to\ 3\ kg/cm^2$

3. ✖ $3\ to\ 4.5\ kg/cm^2$

4. ✔ $1.5\ to\ 2\ kg/cm^2$

Question Number : 104 Question Id : 2106889510 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

On operation, what is the number of revolutions per minute for a saw toothed crown drill bit?

Options :

1. ✖ 25 to 30

2. ✔ 5 to 10

3. ✖ 20 to 25

4. ✖ 40 to 55

Question Number : 105 Question Id : 2106889511 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In opencast mine, no work shall be done within a distance of ____from mine boundary.

Options :

1. ✔ 7.5 m

2. ✖ 15 m

3. ✖ 30 m

4. ✖ 45 m

Question Number : 106 Question Id : 2106889512 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the concentration of Ammonium Nitrate in first commercial slurry explosive?

Options :

1. ✖ 20%

2. ✖ 80%

3. ✖ 15%

4. ✔ 65%

Question Number : 107 Question Id : 2106889513 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the Velocity of Detonation (VOD) of a detonating fuse?

Options :

1. ✔ 6500 m/sec

2. ✖ 2000 m/sec

3. ✖ 7000 m/sec

4. ✖ 5000 m/sec

Question Number : 108 Question Id : 2106889514 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For a degree II gassy seam, what is the maximum permissible P3- Permitted explosive charge per hole for solid blasting?

Options :

1. ✖ 500 g

2. ✔ 565 g

3. ✖ 765 g

4. ✖ 965 g

Question Number : 109 Question Id : 2106889515 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which science deals with the study of remnants of ancient animals and plants?

Options :

1. ✖

Zoology

2. ✔ Paleontology

3. ✖ Anthropology

4. ✖ Petrology

Question Number : 110 Question Id : 2106889516 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Up to what depth below the surface of earth, the Lithosphere is situated?

Options :

1. ✖ 105 km

2. ✖ 35 km

3. ✖ 140 km

4. ✔ 70 km

Question Number : 111 Question Id : 2106889517 Display Question Number : Yes Is Question

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

The volcanoes from which excessively gaseous products evolved are called

Options :

1. ✔ Fumaroles

2. ✖ Gaseoles

3. ✖ Fissures

4. ✖ Cascades

Question Number : 112 Question Id : 2106889518 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the name of the Minerals which can withstand high temperature?

Options :

1. ✖ Abrasive minerals

2. ✖ Inductive minerals

3. ✔ Refractory minerals

4. ✖ Conductive minerals

Question Number : 113 Question Id : 2106889519 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Laccoliths, lopoliths and phacoliths are

Options :

1. ✔ Forms of igneous rocks

2. ✖ Structure of igneous rocks

3. ✖ Texture of igneous rocks

4. ✖ Minerals of igneous rocks

Question Number : 114 Question Id : 2106889520 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An unconformity is a plane of

Options :

1. ✖ Continuity

2. ✔

Discontinuity

3. ✖ Volcanic activity

4. ✖ Alkalinity

Question Number : 115 Question Id : 2106889521 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

From which time period, the prominent life started?

Options :

1. ✖ Precambrian

2. ✖ Archaean

3. ✖ Ordovician

4. ✔ Cambrian

Question Number : 116 Question Id : 2106889522 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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

Options :

1. ✔ Tenor

2. ✖ Gangue

3. ✖ Gossan

4. ✖ Core

Question Number : 117 Question Id : 2106889523 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In which areas, the thickest coal seams are formed?

Options :

1. ✖ Raniganj

2. ✖ Giridih

3. ✔ Jharia

4. ✖ Talcher

Question Number : 118 Question Id : 2106889524 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Find the one from below that has high porosity and permeability

Options :

1. ✖ Sandstone

2. ✖ Shale

3. ✖ Clay

4. ✔ Sand

Question Number : 119 Question Id : 2106889525 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In Bord & Pillar mining, splitting is generally required in seams of depth beyond

Options :

1. ✖ 75 mts

2. ✖ 85 mts

3. ✔ 100 mts

4.

✖ 90 mts

Question Number : 120 Question Id : 2106889526 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The gradient of crosscut equipped with direct rope haulage in an inclined seam should not be less than _____.

Options :

1. ✖ 1 in 25

2. ✔ 1 in 12

3. ✖ 1 in 30

4. ✖ 1 in 18

Question Number : 121 Question Id : 2106889527 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the applicable inclination of seams, in which Longwall mining method is adopted?

Options :

1. ✖ 20° to 45°

2. ✖ 45° to 60°

3. ✖ 60° to 75°

4. ✔ flat to 20°

Question Number : 122 Question Id : 2106889528 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the name of the extended portion of gate roads slightly beyond the face in Longwall advancing for easy maneuvering of shearer?

Options :

1. ✖ Pack walls

2. ✖ Level

3. ✔ Stable

4. ✖ Connection Gallery

Question Number : 123 Question Id : 2106889529 Display Question Number : Yes Is Question

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

What is gap to be maintained between Longwall working face and pack walls for safe working?

Options :

1. ✔ 3 – 6 m

2. ✖ 1 – 2 m

3. ✖ 7 – 10 m

4. ✖ 2 – 3 m

Question Number : 124 Question Id : 2106889530 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the percentage of extraction in Bord & Pillar development, if the size of pillar is 22 mts (width) x 22 mts (breadth) and the galleries are 4.2 mts wider?

Options :

1. ✖ 33.12%

2. ✖ 26.56%

3.

30.82%

4. 29.49%

Question Number : 125 Question Id : 2106889531 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is used in slicing methods of descending order?

Options :

1. Wooden planks laying

2. Wire netting

3. Stowing goaf

4. Only timbering

Question Number : 126 Question Id : 2106889532 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Friction props are generally set in rows for supporting in slicing methods. What is the distance between row to row of props?

Options :

1. ✔ 1.25 m

2. ✖ 1 m

3. ✖ 2.5 m

4. ✖ 2 m

Question Number : 127 Question Id : 2106889533 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Upto what distance, the supports are erected from the face in Blasting Gallery method?

Options :

1. ✖ 55 m

2. ✖ 32 m

3. ✖ 30 m

4. ✔ 40 m

Question Number : 128 Question Id : 2106889534 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In which method of mining, the establishing linkages between bore wells activity adopted?

Options :

1. ✖ Hydraulic mining

2. ✔ Underground Coal gasification

3. ✖ Horizon mining

4. ✖ Sub-level caving

Question Number : 129 Question Id : 2106889535 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Mono rails are used in which of the following raising method ?

Options :

1. ✖ Three compartmental raising method

2. ✔ Alimak raise climber method

3. ✖ Two compartmental raising method

4. ✖ Jora hoist raise method

Question Number : 130 Question Id : 2106889536 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the percentage of ore that can be withdrawn during stope working and rest of ore is used for temporary supporting in shrinkage stoping method ?

Options :

1. ✖ 12 – 28%

2. ✔ 30 – 40%

3. ✖ 10 – 20%

4. ✖ 50 – 60%

Question Number : 131 Question Id : 2106889537 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Subsidence can be prevented by which stoping method?

Options :

1. ✖

Over hand stoping method

2. ✖ Underhand stoping method

3. ✔ Cut and fill stoping method

4. ✖ Breast stoping method

Question Number : 132 Question Id : 2106889538 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In sublevel caving, the ore body is divided by sublevels with _____ vertical spacing.

Options :

1. ✖ 10 – 12 m

2. ✖ 6 – 8 m

3. ✖ 12 – 15 m

4. ✔ 8 – 10 m

Question Number : 133 Question Id : 2106889539 Display Question Number : Yes Is Question

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

Which type of sampling method is preferred for sampling in 2500 sq.kms area of Bauxite deposit?

Options :

1. ✖ Chip sampling

2. ✖ Random sampling

3. ✖ Grab sampling

4. ✔ Bulk sampling

Question Number : 134 Question Id : 2106889540 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The ratio of mass of water vapor per m^3 of air to mass of water vapor required to saturate one m^3 of air is known as_____.

Options :

1. ✖ Humidity

2. ✔ Relative humidity

3. ✖ Absolute humidity

4. ✖ Water vapor

Question Number : 135 Question Id : 2106889541 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is not an oxidizing agent in explosives?

Options :

1. ✖ Sodium Nitrate

2. ✖ Potassium Chloride

3. ✔ Calcium Carbonate

4. ✖ Ammonium Perchlorate

Question Number : 136 Question Id : 2106889542 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When the part of explosive charge remains unblasted in the drill hole even after blasting

such charge of hole is known as _____.

Options :

1. ✖ Blown out shot

2.

✔ Socket

3. ✖ Blown through shot

4. ✖ Hang fire

Question Number : 137 Question Id : 2106889543 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the name of the narrow opening in mine workings through which ore is loaded in to mine cars?

Options :

1. ✖ Ore pass

2. ✖ Ore bin

3. ✔ Chute

4. ✖ Gate

Question Number : 138 Question Id : 2106889544 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

What is the applicable inclination for adoption of Sub-level stoping method in metal mining?

Options :

1. ✖ Below 15°

2. ✖ 85° – 90°

3. ✔ 40° – 85°

4. ✖ 20° – 35°

Question Number : 139 Question Id : 2106889545 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which type of centrifugal fan is designed to eliminate end thrust on fan shaft?

Options :

1. ✔ Backward bladed

2. ✖ Radial bladed

3. ✖ Forward bladed

4. ✖ Axial bladed

Question Number : 140 Question Id : 2106889546 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the manometric efficiency of air screw fan?

Options :

1. ✖ 70-80%

2. ✖ 50-60%

3. ✔ 20-30%

4. ✖ 35-55%

Question Number : 141 Question Id : 2106889547 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The depths of both upcast and downcast shafts are same and 465 mts. The temperature in upcast shaft and downcast shaft are 37°C and 30°C respectively. Then what is the height of Motive Column?

Options :

1. ✖ 10.3 m

2. ✖ 9.9 m

3. ✖ 9.75 m

4. ✔ 10.5 m

Question Number : 142 Question Id : 2106889548 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What type of ventilation system is especially used in ventilating sinking shaft?

Options :

1. ✖ Exhausting

2. ✖ Combination of forcing & exhausting

3. ✔ Reversible

4. ✖ Forcing

Question Number : 143 Question Id : 2106889549 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which device is the only one used in conducting both pressure survey and quantity survey?

Options :

1. ✔ Anemometer

2. ✖ Velometer

3. ✖ Pitot tube

4. ✖ Hygrometer

Question Number : 144 Question Id : 2106889550 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is another name of the Hydrogen Sulphide in mine environment?

Options :

1. ✖ White damp

2. ✔ Stink damp

3. ✖ Fire damp

4. ✖ After damp

Question Number : 145 Question Id : 2106889551 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

At what percentage of methane, a triangular cap with sharp apex of 12 mm height is formed in Flame safety lamp ?

Options :

1. ✖ 2.5%

2. ✖ 3.5%

3. ✖ 1%

4. ✔ 3%

Question Number : 146 Question Id : 2106889552 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In P.S. Detector, the light yellow color in glass tube turns into which of the following color when exposed to Carbon Monoxide?

Options :

1. ✔ Brown

2. ✖ Shades of Green

3. ✖ Pale Grey

4. ✖ Pink

Question Number : 147 Question Id : 2106889553 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Faint haze is the sign of spontaneous heating that belongs to which of the following stage ?

Options :

1. ✖ Heating approach ignition

2. ✔ Incipient heating

3. ✖ Intermediate

4. ✖ Cooling

Question Number : 148 Question Id : 2106889554 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The breathing of _____ % of Carbon Dioxide in air for 10 minutes at work or 30 minutes at rest can cause palpitations.

Options :

1. ✖ 1.0

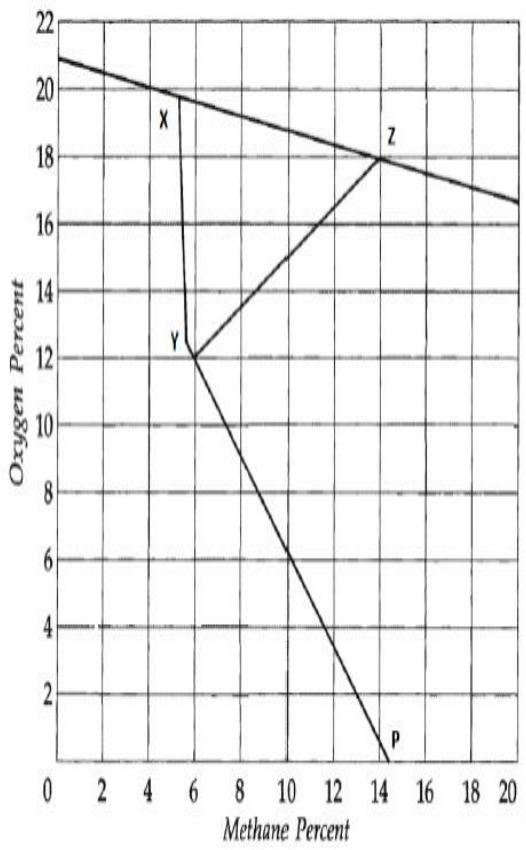
2. ✖ 0.02

3. ✖ 0.2

4. ✔ 0.12

Question Number : 149 Question Id : 2106889555 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In Coward's diagram of methane explosibility, all the mixtures lying _____ are neither explosive nor capable of forming explosive mixture with air.



Options :

1. ✖ Within XYZ

2. ✖ Right side to PYZ

3. ✔ left side to PYX

4. ✖ above the line XZ

Question Number : 150 Question Id : 2106889556 Display Question Number : Yes Is Question

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

Gas mask can be used to support life of wearer in an environment containing which percent of Carbon Monoxide?

Options :

1. ✖ more than 2%

2. ✔ less than 2%

3. ✖ exactly 3%

4. ✖ more than 3%

Question Number : 151 Question Id : 2106889557 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the lowest temperature at which, fine dry coal dust cloud can be ignited and cause flame to travel through dust air mixture?

Options :

1. ✖ 600-700 °C

2. ✖ 900-1000 °C

3.

✖ 850-950 °C

4. ✔ 700-800°C

Question Number : 152 Question Id : 2106889558 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is the miner's disease caused by inhalation of iron dust?

Options :

1. ✖ Pneumoconiosis

2. ✖ Silicosis

3. ✔ Siderosis

4. ✖ Asbestosis

Question Number : 153 Question Id : 2106889559 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

CO_2 extinguisher consists of a cylinder having up to 5 kgs of Carbon Dioxide in liquefied

form under pressure of _____ kg/cm^2.

Options :

1. ✖ 105

2. ✖ 88

3. ✖ 90.5

4. ✔ 70

Question Number : 154 Question Id : 2106889560 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

No working should be carried out when it approaches with in a distance of _____

meters from water logged area of same mine or adjoining mine.

Options :

1. ✖ 50

2. ✔ 60

3. ✖ 45

4. ✖ 75

Question Number : 155 Question Id : 2106889561 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The length of a line measured by means of a 20 m chain was found to be 610.2 m known to be 608.0 m. What was the actual length of the chain?

Options :

1. ✖ 20.066 m

2. ✖ 20.012 m

3. ✖ 19.906 m

4. ✔ 19.928 m

Question Number : 156 Question Id : 2106889562 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What will be the Quadrantal bearing of a line whose whole circle bearing is $236^0 25'$?

Options :

1. ✔ S $56^0 25'$ W

2. ✖ $N\ 56^0 25'\ W$

3. ✖ $S\ 56^0 25'\ E$

4. ✖ $S\ 43^0 25'\ E$

Question Number : 157 Question Id : 2106889563 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The true bearing of a line is 326^0 and the magnetic declination is 8^0 E. Find the magnetic bearing of the line.

Options :

1. ✔ 318^0

2. ✖ 334^0

3. ✖ 138^0

4. ✖ 154^0

Question Number : 158 Question Id : 2106889564 Display Question Number : Yes Is Question

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

What is the formula for finding apex distance in a simple curve?

Options :

1. ✖ $2R \sin \theta/2$

2. ✖ $R \sin (\theta/2)-1$

3. ✔ $R(\text{Sec}(\theta/2)-1)$

4. ✖ $R(\text{Sin}(\theta/2)+1)$

Question Number : 159 Question Id : 2106889565 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The error of closure of traverse by correlation after distribution of the angular error must not exceed _____ of the sum of horizontal lengths of drafts of the traverse.

Options :

1. ✔ $1/2500^{th}$

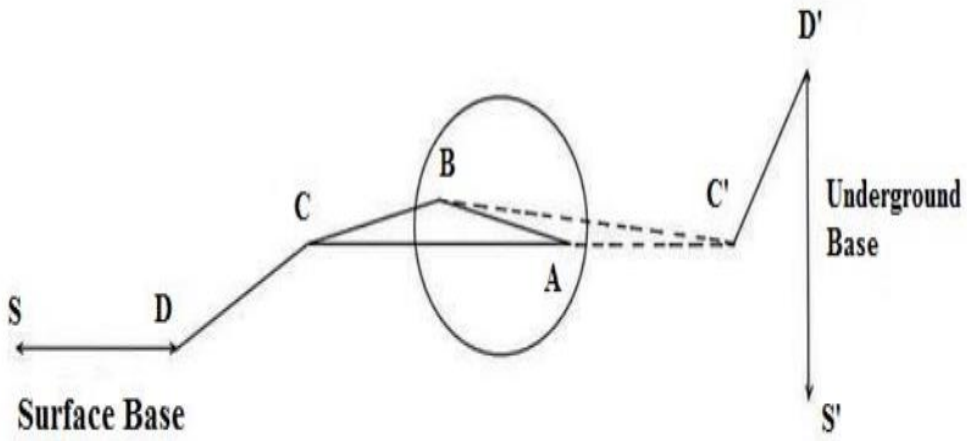
2. ✖ 1/3000th

3. ✖ $1/2000^{th}$

4. ✖ $1/3500^{th}$

Question Number : 160 Question Id : 2106889566 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

According to the diagram, CD is the line of known azimuth of surface base. Then, the azimuth of plumb line BA = _____.



Options :

1. ✔ Azimuth of CD + ∠DCA + ∠BCA

2. ✖ Azimuth of CB + ∠CAB + ∠BCA

3. ✖ Azimuth of CD + ∠DCA + ∠CAB

4. ✖ Azimuth of CB + ∠CAB + ∠DCA

Question Number : 161 Question Id : 2106889567 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one among the following comes under temporary adjustments of a theodolite?

Options :

1. ✖ Plate level adjustment

2. ✔ Elimination of parallax

3. ✖ Collimation adjustment

4. ✖ Vertical circle adjustment

Question Number : 162 Question Id : 2106889568 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the type of leveling, in which the relative levels of two and more isolated points are determined without taking intermediate sights and distances between staves ?

Options :

1. ✖ Profile leveling

2. ✔ Fly leveling

3. ✖ Compound leveling

4. ✖ Reciprocal leveling

Question Number : 163 Question Id : 2106889569 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the horizontal distance between the staff point and the point of observation is d, then the correction for curvature of earth is proportional to the following one.

Options :

1. ✖ d

2. ✖ 1/d

3. ✔ d^2

4. ✖ $1/d^2$

Question Number : 164 Question Id : 2106889570 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

When contour lines touch one another at a particular zone, it indicates which of the following?

Options :

1. ✖ Level surface

2. ✔ Vertical cliff

3. ✖ Horizontal surface

4. ✖ Inclined surface

Question Number : 165 Question Id : 2106889571 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An analytic lens is provided to make the additive constant equal to

Options :

1. ✖ 100

2. ✔ 0

3. ✖ 90

4. ✖ 180

Question Number : 166 Question Id : 2106889572 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The stadia markings are made on the following part of survey instrument.

Options :

1. ✖ Eyepiece

2. ✔ Diaphragm

3. ✖ Object glass

4. ✖ Concave lens

Question Number : 167 Question Id : 2106889573 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The diameter of the groove of the head gear pulley is _____ of the rope diameter of locked coil ropes.

Options :

1. ✔ 105%

2. ✖ 100%

3. ✖ 110%

4. ✖ 95%

Question Number : 168 Question Id : 2106889574 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the arc of contact of winding rope with grooved renewable friction lining of electrically driven sheave?

Options :

1. ✖ $100^{\circ} - 150^{\circ}$

2. ✖ $125^{\circ} - 180^{\circ}$

3. ✔ $185^{\circ} - 230^{\circ}$

4. ✖ $235^{\circ} - 270^{\circ}$

Question Number : 169 Question Id : 2106889575 Display Question Number : Yes Is Question

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

The tensioning weight in flexible guides is _____ for every 100 meters depth in case of deep shafts.

Options :

1. ✖ 1.5 kN

2. ✖ 10 kN

3. ✖ 12 kN

4. ✔ 5 kN

Question Number : 170 Question Id : 2106889576 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Within how much percentage of cross-section area of shaft, the rigid guides are to be erected?

Options :

1. ✖ 35%

2. ✔ 20%

3. ✖ 30%

4. ✖ 25%

Question Number : 171 Question Id : 2106889577 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the type of rope suitable for haulage system in underground mines?

Options :

1. ✖ Half locked coil

2. ✖ Full locked coil

3. ✔ Lang's lay

4. ✖ Ordinary lay

Question Number : 172 Question Id : 2106889578 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A locomotive shall not be used where gradient of track exceeds

Options :

1. ✖ 1 in 10

2. ✔ 1 in 15

3. ✖ 1 in 11

4. ✖ 1 in 9

Question Number : 173 Question Id : 2106889579 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one of the following is the function of snub pulley in a belt conveyor system?

Options :

1. ✖ Clean inner surface of the belt

2. ✖ Clean outer surface of the belt

3. ✔ Increase angle of contact of the belt with drive drum

4. ✖ Increase belt tension

Question Number : 174 Question Id : 2106889580 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

With what purpose, the Jazz rails are provided in haulage road?

Options :

1. ✖ To Prevent tubs running backward

2. ✖ To Prevent tubs running out of control

3. ✖ To Reduce speed of moving tubs

4. ✔ To Prevent runaway of tub in forward direction

Question Number : 175 Question Id : 2106889581 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In which type of haulage system, the Run away switch is used?

Options :

1. ✖ Gravity haulage

2. ✔ Direct haulage

3. ✖ Main and tail haulage

4.

✖ Endless haulage

Question Number : 176 Question Id : 2106889582 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the percentage of Iron in wire ropes?

Options :

1. ✖ 94.45

2. ✖ 96. 86

3. ✔ 98.86

4. ✖ 99.86

Question Number : 177 Question Id : 2106889583 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The vertical distance between the liquid level and the free discharge level of the liquid is called as

Options :

1. ✖ Static head

2. ✖ Suction head

3. ✔ Total static head

4. ✖ Delivery head

Question Number : 178 Question Id : 2106889584 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What part in turbine pump should be shorter for its effective running?

Options :

1. ✔ Suction pipe

2. ✖ Balancing disc

3. ✖ Delivery pipe

4. ✖ Diffusers

Question Number : 179 Question Id : 2106889585 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In which type of rocks, the angle of slope of bench 70° to 85° is maintained?

Options :

1. ✖ Weathered rocks

2. ✖ Friable rocks

3. ✖ Soft clay

4. ✔ Competent rocks

Question Number : 180 Question Id : 2106889586 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The angle of slope of bench should be _____ that of angle of repose of rock material of the bench.

Options :

1. ✔ Equal to or less than

2. ✖ More than

3. ✖ Less than

4. ✖ Equals to

Question Number : 181 Question Id : 2106889587 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the digging depth of a big Bucket Wheel Excavator below its floor level?

Options :

1. ✖ 70 m

2. ✖ 55 m

3. ✔ 25 m

4. ✖ 45 m

Question Number : 182 Question Id : 2106889588 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The quantity of explosive required to break one cubic meter of strata or Yield per Kg of

Explosive is called _____.

Options :

1. ✖ Specific energy

2. ✔ Powder factor

3. ✖ Specific consumption

4. ✖ Power factor

Question Number : 183 Question Id : 2106889589 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the threshold limit of airborne respirable dust fixed by DGMS?

Options :

1. ✖ $2\ mg/m^3$

2. ✖ $1.5\ mg/m^3$

3. ✖ $3.5\ mg/m^3$

4. ✔ $3\ mg/m^3$

Question Number : 184 Question Id : 2106889590 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the type of surface mine bench failure that happens due to two intersecting discontinuities?

Options :

1. ✔ Wedge failure

2. ✖ Planar failure

3. ✖ Circular failure

4. ✖ Toppling failure

Question Number : 185 Question Id : 2106889591 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following forces cause mountain formations?

Options :

1. ✖ Tectonic forces

2. ✖ Residual forces

3. ✔ Orogenic forces

4. ✖ Thermic origin forces

Question Number : 186 Question Id : 2106889592 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the scale number of Topaz in Mohs hardness Scale?

Options :

1. ✔ 8

2. ✖ 9

3. ✖ 4

4. ✖ 7

Question Number : 187 Question Id : 2106889593 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is measured with Convergence recorder?

Options :

1. ✖ Stress

2. ✔ Strain

3. ✖ Load

4. ✖ Fault

Question Number : 188 Question Id : 2106889594 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In subsidence, what is the angle between limit line and vertical line?

Options :

1. ✖ Angle of subsidence

2. ✔ Angle of draw

3. ✖ Angle of fracture initiation

4. ✖ Angle of breakage

Question Number : 189 Question Id : 2106889595 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Chocks are the type of supports used in severe bad roof conditions. Which of the following dimensions of sleeper piece in chock supports?

Options :

1. ✔ 10cm x 10cm x 120cm

2. ✖ 15cm x 15cm x 100cm

3. ✖ 10cm x 10cm x 100cm

4. ✖ 15cm x 10cm x 120cm

Question Number : 190 Question Id : 2106889596 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In pressure arch theory, in which zone the heaving up of floor with no bed separation takes place?

Options :

1. ✖ Zone-5

2. ✖ Zone-1

3. ✔ Zone-4

4. ✖ Zone-2

Question Number : 191 Question Id : 2106889597 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The first aid room shall be in charge of a whole time medical practitioner where the number of persons ordinarily employed in a mine is more than _____ as per Mine Rules,1955.

Options :

1. ✔ 1000

2. ✖ 1200

3. ✖ 800

4. ✖ 500

Question Number : 192 Question Id : 2106889598 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

As per Coal Mines Regulations,1957, in which form, the Notice of accident is given?

Options :

1. ✖ FORM-I D

2. ✔ FORM-IV A

3. ✖ FORM-IV B

4. ✖ FORM-IV C

Question Number : 193 Question Id : 2106889599 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the Minimum age for a person to be appointed as competent person as per Coal Mines Regulations,1957?

Options :

1. ✖ 18 Years

2. ✔ 20 Years

3. ✖ 21 Years

4. ✖ 22 Years

Question Number : 194 Question Id : 2106889600 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

As per Coal Mines Regulations, 1957, at what interval are manholes to be provided in a haulage roadway?

Options :

1. ✔ 10 m

2. ✖ 12 m

3. ✖ 15 m

4. ✖ 17 m

Question Number : 195 Question Id : 2106889601 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

As per Industrial Dispute Act, 1947, if a settlement of dispute is arrived at in the course of conciliation proceedings, a report shall be submitted by conciliation officer within _____ from the commencement of conciliation proceedings.

Options :

1. ✖ 15 days

2. ✖ 7 days

3. ✖ 30 days

4. ✔ 14 days

Question Number : 196 Question Id : 2106889602 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Micro organization is a company where the number of employees is

Options :

1. ✔ Less than 20

2. ✖ Less than 30

3. ✖ Less than 40

4. ✖ Less than 50

Question Number : 197 Question Id : 2106889603 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Traits and behavioral theories are regarding

Options :

1. ✔ Leadership

2. ✖ Viewership

3. ✖ Friendship

4. ✖ Entrepreneurship

Question Number : 198 Question Id : 2106889604 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In network analysis, “Burst Event” is an event

Options :

1. ✖ When more than one activity comes and joins an event

2. ✖ When more than one activity stops

3. ✔ When more than one activity leaves an event

4. ✖ When more than one activity fails

Question Number : 199 Question Id : 2106889605 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

_____ is the model for quality assurance in final inspection and test.

Options :

1. ✖ ISO 9004

2. ✖ ISO 9000

3. ✖ ISO 9002

4. ✔ ISO 9003

Question Number : 200 Question Id : 2106889606 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In which year the term "Internet of Things" coined?

Options :

1. ✖ 2000

2. ✖ 1996

3. ✖ 2001

4. ✔ 1999