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 :	Metallurgical Engineering 22nd July 2022 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

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Mathematics

Section Id :	722544116
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

Question Number : 1 Question Id : 7225445802 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $A=\begin{bmatrix}\cos\theta & -\sin\theta\\ \sin\theta & \cos\theta\end{bmatrix}$ then $A^T+A=I_2$ if

Options :

1. ✗ $\theta=n\pi, n\in Z$

2. ✗ $\theta=(2n+1)\frac{\pi}{2}, n\in Z$

3. ✓ $\theta=2n\pi\pm\frac{\pi}{3}, n\in Z$

4. ✗ $\theta=(2n+1)\frac{\pi}{4}, n\in Z$

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Question Number : 2 Question Id : 7225445803 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If for the matrix A, $A^3 = I$ then $A^{-1} =$

Options :

1. ✓ A^2

2. ✗ A^3

3. ✗ A

4. ✗ A^4

Question Number : 3 Question Id : 7225445804 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 λ for which the system of equations
$x+y+z=6$, $x+2y+3z=10$, $x+2y+\lambda z=12$ is inconsistent is

Options :

1. ✗ $\lambda = 1$

2. ✗ $\lambda = 2$

3. ✗ $\lambda = -2$

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4. ✔ $\lambda = 3$

Question Number : 4 Question Id : 7225445805 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $A=\begin{bmatrix} a & 0 & 0 \\ 0 & a & 0 \\ 0 & 0 & a \end{bmatrix}$ *then the value of* $|adj\ A|$ *is*

Options :

1. ✖ a^{27}

2. ✖ a^{9}

3. ✔ a^{6}

4. ✖ a^{2}

Question Number : 5 Question Id : 7225445806 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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$$If\ A+2B=\begin{bmatrix}1 & 2 & 0\\ 6 & -3 & 3\\ -5 & 3 & 1\end{bmatrix}\ and\ 2A-B=\begin{bmatrix}2 & -1 & 5\\ 2 & -1 & 6\\ 0 & 1 & 2\end{bmatrix}$$ then $tr(A)-\text{tr}(B)$ value equal

to

Options :

1. ✖ 0

2. ✖ 1

3. ✔ 2

4. ✖ 3

Question Number : 6 Question Id : 7225445807 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$\frac{2x+3}{(x+1)(x-3)}=\frac{a}{(x+1)}+\frac{b}{(x-3)}then\ \ 2a+3b=$$

Options :

1. ✖ 14

2. ✖ 12

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3. ✓ $25/4$

4. ✗ -12

Question Number : 7 Question Id : 7225445808 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The Number of partial fractions of $\frac{3x^2+70x+93}{(x-1)^4}$ *is*

Options :

1. ✓ 3

2. ✗ 4

3. ✗ 5

4. ✗ 2

Question Number : 8 Question Id : 7225445809 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Given that $A=\sin^2\theta+\cos^4\theta$, *then for all real values of* θ

Options :

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1. ✖ $1 \leq A \leq 2$

2. ✔ $\frac{3}{4} \leq A \leq 1$

3. ✖ $\frac{13}{16} \leq A \leq 1$

4. ✖ $\frac{3}{4} \leq A \leq \frac{13}{16}$

Question Number : 9 Question Id : 7225445810 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$If \tan\theta = -\frac{4}{3}$,*then* $\sin\theta =$

Options :

1. ✖ $-\frac{4}{5}$ *but not* $\frac{4}{5}$

2. ✔ $-\frac{4}{5}$ *or* $\frac{4}{5}$

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3. ✖ $\frac{4}{5}$ *but not* $-\frac{4}{5}$

4. ✖ $-\frac{3}{5}$ *but not* $\frac{3}{5}$

Question Number : 10 Question Id : 7225445811 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

$\sin x - 3\sin 2x + \sin 3x = \cos x - 3\cos 2x + \cos 3x$ *is*

Options :

1. ✖ $n\pi + \frac{\pi}{8}$

2. ✔ $\frac{n\pi}{2} + \frac{\pi}{8}$

3. ✖ $(-1)^n \frac{n\pi}{2} + \frac{\pi}{8}$

4. ✖ $2n\pi + \cos^{-1}\frac{3}{2}$

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Question Number : 11 Question Id : 7225445812 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If x, y, z *are in AP and* $\tan^{-1} x, \tan^{-1} y$ *and* $\tan^{-1} z$ *are also in AP then*

Options :

1. ✓ $x = y = z$

2. ✗ $2x = 3y = 6z$

3. ✗ $6x = 3y = 2z$

4. ✗ $6x = 4y = 3z$

Question Number : 12 Question Id : 7225445813 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $\tan^{-1} 2x + \tan^{-1} 3x = \frac{\pi}{4}$ *then* $x =$

Options :

1. ✓ $\frac{1}{6}$

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2. ✖ $\frac{1}{3}$

3. ✖ $\frac{1}{2}$

4. ✖ $\frac{3}{2}$

Question Number : 13 Question Id : 7225445814 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The sides of a triangle are in the ratio $1:\sqrt{3}:2$ then the angles of the triangle are in the ratio

Options :

1. ✖ $1:3:5$

2. ✖ $2:3:2$

3. ✖ $3:2:1$

4. ✔ $1:2:3$

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Question Number : 14 Question Id : 7225445815 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$Let\ \cos(\alpha+\beta)=\frac{4}{5}\ and\ \sin(\alpha-\beta)=\frac{5}{13}\ where\ 0<\alpha,\beta\le\frac{\pi}{4},\ then\ \tan 2\alpha=$$

Options :

1. ✖ $\frac{19}{12}$

2. ✖ $\frac{20}{7}$

3. ✖ $\frac{25}{16}$

4. ✔ $\frac{56}{33}$

Question Number : 15 Question Id : 7225445816 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$If\ 1+\sin x+\sin^2 x+\sin^3 x+....\infty\ =4+2\sqrt{3}\ ,\quad 0<x<\pi,\ then\ x=$$

Options :

1. ✖ $\frac{\pi}{6}$

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2. ✗ $\frac{\pi}{4}$

3. ✓ $\frac{2\pi}{3}$

4. ✗ $\frac{3\pi}{4}$

Question Number : 16 Question Id : 7225445817 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The angles of a triangle are in the ratio 3:5:10 then the ratio of the smallest side to the greatest side is

Options :

1. ✗ $1 : \sin 10°$

2. ✗ $1 : 2\sin 10°$

3. ✗ $1 : \cos 10°$

4. ✓ $1 : 2\cos 10°$

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Question Number : 17 Question Id : 7225445818 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$If\ \sin^{-1}x+\sin^{-1}y=\frac{2\pi}{3}\ then\ \cos^{-1}x+\cos^{-1}y=$

Options :

1. ✘ $\frac{2\pi}{3}$

2. ✔ $\frac{\pi}{3}$

3. ✘ $\frac{\pi}{6}$

4. ✘ π

Question Number : 18 Question Id : 7225445819 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The conjugate of a complex number is $\frac{1}{i-1}$, then that complex number is

Options :

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1. ✔ $\frac{-1}{i+1}$

2. ✖ $\frac{1}{i-1}$

3. ✖ $\frac{-1}{i-1}$

4. ✖ $\frac{1}{i+1}$

Question Number : 19 Question Id : 7225445820 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 $\frac{(\sin\ \pi/8 + i\cos\ \pi/8)^8}{(\sin\ \pi/8 - i\cos\ \pi/8)^8} =$

Options :

1. ✖ -1

2. ✖ 0

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3. ✓ 1

4. ✗ $2i$

Question Number : 20 Question Id : 7225445821 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The lines $2x-3y-5=0$ *and* $3x-4y=7$ *are diameters of a circle of area* 49π *sq.units, then the equation of the circle is*

Options :

1. ✗ $x^2+y^2+2x-2y-62=0$

2. ✗ $x^2+y^2+2x-2y-47=0$

3. ✓ $x^2+y^2-2x+2y-47=0$

4. ✗ $x^2+y^2-2x+2y-62=0$

Question Number : 21 Question Id : 7225445822 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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If the point $(a,-a)$ *lies inside the circle* $x^2+y^2-4x+2y-8=0$, then 'a' *lies in the* interval

Options :

1. ✔ $(-1,4)$

2. ✖ $(-\infty,-1)$

3. ✖ $(4,\infty)$

4. ✖ $[-1,4]$

Question Number : 22 Question Id : 7225445823 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The focus of the parabola $y^2-4y-8x+4=0$ *is*

Options :

1. ✖ $(1,1)$

2. ✖ $(1,2)$

3. ✖ $(2,1)$

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4. ✔ $(2,2)$

Question Number : 23 Question Id : 7225445824 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The equation $\frac{x^2}{10-a}+\frac{y^2}{4-a}=1$ *represents an ellipse if*

Options :

1. ✔ $a<4$

2. ✘ $a>4$

3. ✘ $4<a<10$

4. ✘ $a>10$

Question Number : 24 Question Id : 7225445825 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The vertices of the hyperbola $9x^2-16y^2-36x+96y-252=0$, *are*

Options :

1. ✘ $(6,3)$ *and* $(-6,3)$

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2. ✔ $(6,3)$ *and* $(-2,3)$

3. ✖ $(-6,3)$ *and* $(-6,-3)$

4. ✖ $(0, \pm\frac{2}{3})$

Question Number : 25 Question Id : 7225445826 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 with latus rectum 12 *and semi conjugate axis* $2\sqrt{3}$ *is*

Options :

1. ✔ 2

2. ✖ 3

3. ✖ $\sqrt{3}/2$

4. ✖ $2\sqrt{3}$

Question Number : 26 Question Id : 7225445827 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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The side of an equilateral triangle expands at the rate of 2 cm/sec, the rate of increase of its area when each side is 10 cm (in cm^2/sec)

Options :

1. ✖ $10\sqrt{2}$

2. ✖ $10\sqrt{3}$

3. ✔ 10

4. ✖ 5

Question Number : 27 Question Id : 7225445828 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If f (x+y) = f(x) f(y), for all x,y. f(5) = 2, $f'(0)=3$, then $f'(5)=$

Options :

1. ✔ 6

2. ✖ 2

3. ✖ 3

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4. ✖ 5

Question Number : 28 Question Id : 7225445829 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$\lim_{x\to\infty}\left[\frac{x^2+2x-1}{2x^2-3x-2}\right]^{\frac{2x+1}{2x-1}} \text{ is equal to}$$

Options :

1. ✖ 0

2. ✖ ∞

3. ✔ 1/2

4. ✖ 1/3

Question Number : 29 Question Id : 7225445830 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$\lim_{x\to 0}\frac{\sin^2 mx}{\tan^2 nx} \text{ is equal to}$$

Options :

1. ✖ m/n

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2. ✖ $m^2.n^2$

3. ✔ m^2/n^2

4. ✖ n^2/m^2

Question Number : 30 Question Id : 7225445831 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$If\ \ f(x)=\left|x^2-5x+6\right|\ \ then\ \ f'(x)=$

Options :

1. ✖ $2x-5 \quad for \ \ 2<x<3$

2. ✔ $5-2x \quad for \ \ 2<x<3$

3. ✖ $2x-5 \quad for \ \ x>2$

4. ✖ $5-2x \quad for \ \ x<3$

Question Number : 31 Question Id : 7225445832 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

ZOLLEGE.in

If $y = \log_y x$, then $\frac{dy}{dx} =$

Options :

1. ✔ $\frac{1}{x(1+\log y)}$

2. ✘ $\frac{1}{x+\log y}$

3. ✘ $\frac{1}{\log x(1+y)}$

4. ✘ $\frac{1}{y+\log x}$

Question Number : 32 Question Id : 7225445833 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 tangents *to the curve* $y = x^2 - 5x + 6$ *at the* points $(2,0)$ and $(3,0)$ is

Options :

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1. ✖ $\frac{\pi}{3}$

2. ✔ $\frac{\pi}{2}$

3. ✖ $\frac{\pi}{6}$

4. ✖ $\frac{\pi}{4}$

Question Number : 33 Question Id : 7225445834 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If errors of 1% *is made in the base radius and height of a cylinder then the percentage error in its volume is*

Options :

1. ✖ 1%

2. ✖ 2%

3. ✔ 3%

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4% ✗

4. ✗

Question Number : 34 Question Id : 7225445835 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$The\ value\ of\ 'a'\ for\ which\ the\ function\ f(x) = a\sin x + \frac{1}{3}\sin 3x$$

$$has\ \ an\ \ extremum\ \ at\ x = \frac{\pi}{3}\ is$$

Options :

1 ✗

1. ✗

−1 ✗

2. ✗

0 ✗

3. ✗

2 ✓

4. ✓

Question Number : 35 Question Id : 7225445836 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$If\ \ u = x^y\ \ then\ \frac{\partial^2 u}{\partial x \partial y} =$$

Options :

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1. ✖ $x^{y-1}(1+x\log y)$

2. ✖ $y^{x-1}(1+y\log x)$

3. ✔ $x^{y-1}(1+y\log x)$

4. ✖ $x^{y+1}(1-y\log x)$

Question Number : 36 Question Id : 7225445837 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 $\int e^{\sin^{-1}x}\frac{1}{\sqrt{1-x^2}}dx$

Options :

1. ✖ $2e^{\sin^{-1}x}+c$

2. ✔ $e^{\sin^{-1}x}+c$

3. ✖ $e^{\sin x}+c$

4. ✖ $e^{\cos^{-1}x}+c$

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Question Number : 37 Question Id : 7225445838 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$If \int \frac{4x+1}{x^2+3x+2}dx = a\log|x+1| + b\log|x+2| + C, \ then$$

Options :

1. ✖ $a = b$

2. ✔ $a + b = 4$

3. ✖ $a = 2b$

4. ✖ $b = 2a$

Question Number : 38 Question Id : 7225445839 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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

Options :

1. ✖ $-\frac{1}{\sin x + \cos x} + c$

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2. ✔ $\log|\sin x+\cos x|+c$

3. ✖ $\log|\sin x-\cos x|+c$

4. ✖ $(\sin x+\cos x)^2+c$

Question Number : 39 Question Id : 7225445840 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$If\ \int f(x)dx=2(f(x))^3+C\ \ then\ \ f(x)=$

Options :

1. ✖ $\frac{x}{2}$

2. ✖ x^3

3. ✖ $\frac{1}{\sqrt{x}}$

4. ✔ $\sqrt{\frac{x}{3}}$

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Question Number : 40 Question Id : 7225445841 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$If \int e^{ax}\cos bx\ dx = \frac{e^{2x}}{29}f(x)+C,\ then\ f''(x) =$$

Options :

1. ✖ $29f(x)$

2. ✖ $-29f(x)$

3. ✖ $25f(x)$

4. ✔ $-25f(x)$

Question Number : 41 Question Id : 7225445842 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$The\ value\ of\ x\ in \int_{\sqrt{2}}^{x} \frac{1}{t\sqrt{t^2-1}}dt = \frac{\pi}{2}\ is$$

Options :

1. ✖ $\frac{\sqrt{3}}{2}$

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2. ✖ $2\sqrt{2}$

3. ✖ 2

4. ✔ $-\sqrt{2}$

Question Number : 42 Question Id : 7225445843 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 $\int_0^1 \frac{(\sin^{-1} x)^2}{\sqrt{1-x^2}} dx$

Options :

1. ✔ $\frac{\pi^3}{24}$

2. ✖ $\frac{\pi^3}{48}$

3. ✖ $\frac{\pi^3}{64}$

4. ✖ $\frac{\pi^3}{12}$

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Question Number : 43 Question Id : 7225445844 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$If\ f(x)\ is\ a\ polynomial\ of\ \text{degree}\ 2\ satisfying\ f(0)=1,$$

$$f'(0)=-2\ and\ f''(0)=6\ then\ \int_{-1}^{2} f(x)dx =$$

Options :

1. ✖ 6

2. ✖ 0

3. ✔ 9

4. ✖ -8

Question Number : 44 Question Id : 7225445845 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The degree of the differential equation $a^2\frac{d^2y}{dx^2}=\left[1+\left(\frac{dy}{dx}\right)^2\right]^{3/2}$ *is*

Options :

1. ✔ 2

2. ✖ 1

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3. ✖ 3

4. ✖ 4

Question Number : 45 Question Id : 7225445846 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$\log\left(\frac{y}{x}\right) = cx$, where c is abitrary constant is a solution of the differential equation

Options :

1. ✔ $\log\left(\frac{y}{x}\right) = \frac{x}{y}\frac{dy}{dx} - 1$

2. ✖ $\log\left(\frac{x}{y}\right) = \frac{x}{y}\frac{dy}{dx} - 1$

3. ✖ $\log\left(\frac{x}{y}\right) = \frac{y}{x}\frac{dy}{dx} + 1$

4. ✖ $\frac{dy}{dx} = 1 + \log\left(\frac{y}{x}\right)$

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Question Number : 46 Question Id : 7225445847 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The solution of the differential equation $\cos\theta\, dr - r\sin\theta\, d\theta = 0$ *is*

Options :

1. ✓ $r\cos\theta = c$, $c-$arbitrary constant

2. ✗ $r\sin\theta = c$, $c-$arbitrary constant

3. ✗ $r\cos\theta + r\sin\theta = c$, $c-$arbitrary constant

4. ✗ $r^2\cos 2\theta = c$, $c-$arbitrary constant

Question Number : 47 Question Id : 7225445848 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The degree of $\left(\frac{d^2y}{dx^2}\right)^2 + \left(\frac{dy}{dx}\right)^2 = x\sin\frac{dy}{dx}$ is

Options :

1. ✗ 1

2. ✗ 2

3. ✗ 3

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4. ✓ Not defined

Question Number : 48 Question Id : 7225445849 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The complimenary function of the differential equation $\frac{d^2y}{dx^2}+4\frac{dy}{dx}+3y=e^{2x}$ *is*

Options :

1. ✗ $x=c_1e^{-y}+c_2e^{-3y}$, c_1,c_2-arbitrary constants

2. ✓ $y=c_1e^{-x}+c_2e^{-3x}$, c_1,c_2-arbitrary constants

3. ✗ $y=c_1e^{x}+c_2e^{3x}$, c_1,c_2-arbitrary constants

4. ✗ $x=c_1e^{y}+c_2e^{3y}$, c_1,c_2-arbitrary constants

Question Number : 49 Question Id : 7225445850 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The particular integral of $(D^2+4)y=\cos 2x$ *is*

Options :

1. ✗ $-\frac{1}{2}x\sin 2x$

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2. ✖ $\frac{1}{2}x\sin 2x$

3. ✖ $-\frac{1}{4}x\cos 2x$

4. ✔ $\frac{1}{4}x\sin 2x$

Question Number : 50 Question Id : 7225445851 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The integrating factor of the equation $x^2y\,dx-(x^3+y^3)dy=0$ *is*

Options :

1. ✖ $-\frac{1}{x^4}$

2. ✖ $\frac{1}{x^4}$

3. ✖ $\frac{1}{y^4}$

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4. ✔ $-\frac{1}{y^4}$

Physics

Section Id :	722544117
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

Question Number : 51 Question Id : 7225445852 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Parsec is the unit of

Options :

1. ✖ Time

2. ✔ Distance

3. ✖ Frequency

4. ✖ Angular acceleration

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Question Number : 52 Question Id : 7225445853 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Among the following pairs, which pair does not have identical dimensions

Options :

1. ✔ Moment of inertia and moment of a force

2. ✘ Work and torque

3. ✘ Angular momentum and Planck's constant

4. ✘ Impulse and momentum

Question Number : 53 Question Id : 7225445854 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

One of the two forces is double the other and their resultant is equal to the greater force.

The angle between them is

Options :

1. ✘ $\cos^{-1}(1/2)$

2. ✘ $\cos^{-1}(-1/2)$

3. ✘ $\cos^{-1}(1/4)$

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4. ✔ $\cos^{-1}(-1/4)$

Question Number : 54 Question Id : 7225445855 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If three vectors $\vec{A} = \hat{\imath} - 2\hat{\jmath} + 3\hat{k}$, $\vec{B} = x\hat{\imath} + 3\hat{k}$ and $\vec{C} = 7\hat{\imath} + 3\hat{\jmath} - 11\hat{k}$ are coplanar, then the value of x is

Options :

1. ✘ 36/21

2. ✔ -51/13

3. ✘ 51/32

4. ✘ -36/21

Question Number : 55 Question Id : 7225445856 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A body is allowed to fall from a height of 100 m. The time taken for the first 50 m is t_1 and for the remaining 50 m is t_2, then

Options :

1. ✘ $t_1 = t_2$

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2. ✓ $t_1 > t_2$

3. ✗ $t_1 < t_2$

4. ✗ Depends upon the mass

Question Number : 56 Question Id : 7225445857 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Two stones are projected with the same speed but making different angles with the horizontal. Their horizontal ranges are equal. The angle of projection of one stone is $\pi/3$ and the maximum height reached by it is 102 meters. Then the maximum height reached by the other in meters is

Options :

1. ✗ 336

2. ✗ 224

3. ✗ 56

4. ✓ 34

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Question Number : 57 Question Id : 7225445858 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A cricket ball is thrown at a speed of 28 ms^{-1} in a direction 30° above the horizontal. The time taken by the ball to return to the same level in seconds is

Options :

1. ✓ 2.9

2. ✗ 3.9

3. ✗ 1.9

4. ✗ 2

Question Number : 58 Question Id : 7225445859 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The maximum height of a projectile is half of its range on the horizontal. If the velocity of the projection is u, then its range on the horizontal is

Options :

1. ✗ $\frac{2u^2}{5g}$

2. ✗ $\frac{3u^2}{5g}$

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3. ✖ $\frac{u^2}{g}$

4. ✔ $\frac{4u^2}{5g}$

Question Number : 59 Question Id : 7225445860 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A cubical block rests on an inclined plane of coefficient of friction $\mu = \frac{1}{\sqrt{3}}$. What should be the angle of inclination so that the block just slides down the inclined plane?

Options :

1. ✔ $30°$

2. ✖ $60°$

3. ✖ $45°$

4. ✖ $90°$

Question Number : 60 Question Id : 7225445861 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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For the equilibrium of a body on an inclined plane of inclination 45°, the coefficient of static friction will be

Options :

1. ✓ Greater than one

2. ✗ Zero

3. ✗ Less than one

4. ✗ Less than zero

Question Number : 61 Question Id : 7225445862 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The displacement x and time t for a particle are related to each other as $t = \sqrt{x} + 3$. The work done in first six seconds of its motion is

Options :

1. ✗ 6 J

2. ✓ Zero

3. ✗ 4 J

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4. ✖ 2 J

Question Number : 62 Question Id : 7225445863 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A particle move with a velocity $v = (5\hat{\imath} - 3\hat{\jmath} + 6\hat{k})$ m/s under the influence of a constant force $\vec{F} = 10\hat{\imath} + 10\hat{\jmath} + 20\hat{k}$. The instantaneous power applied to the particle is

Options :

1. ✖ 200 J/sec

2. ✖ 40 J/sec

3. ✔ 140 J/sec

4. ✖ 170 J/sec

Question Number : 63 Question Id : 7225445864 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The main source of solar energy is

Options :

1. ✖ Nuclear fission

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2. ✓ Nuclear fusion

3. ✗ Gravitational contraction

4. ✗ Combustion

Question Number : 64 Question Id : 7225445865 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The particle executing the simple harmonic motion passes through the mean position. It has

Options :

1. ✗ Minimum kinetic energy and maximum potential energy

2. ✓ Maximum kinetic energy and minimum potential energy

3. ✗ Maximum kinetic energy and maximum potential energy

4. ✗ Minimum kinetic energy and minimum potential energy

Question Number : 65 Question Id : 7225445866 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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A simple pendulum has a time period T_1 on the earth's surface and T_2 at a height of R above the earth's surface, where R is the radius of the earth. The value of T_2/T_1 is

Options :

1. ✖ 1

2. ✖ 4

3. ✖ $\sqrt{2}$

4. ✔ 2

Question Number : 66 Question Id : 7225445867 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 characteristic of musical sound?

Options :

1. ✖ Quality

2. ✖ Pitch

3. ✔ Wavelength

4. ✖ Loudness

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Question Number : 67 Question Id : 7225445868 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Doppler shift in frequency does not depend upon

Options :

1. ✖ The actual frequency of the wave

2. ✔ The distance of the source from the listener

3. ✖ The velocity of the source

4. ✖ The velocity of the observer

Question Number : 68 Question Id : 7225445869 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Inaudibility limit is around

Options :

1. ✖ One-hundredth of the initial intensity

2. ✖ One-tenth of the initial intensity

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3. ✖ One-thousandth of the initial intensity

4. ✔ One-millionth of the initial intensity

Question Number : 69 Question Id : 7225445870 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An ideal gas at 27°C is compressed adiabatically to 8/27 of its original volume. If $\gamma = 5/3$, then the rise in temperature is

Options :

1. ✖ 450K

2. ✔ 375K

3. ✖ 225K

4. ✖ 405K

Question Number : 70 Question Id : 7225445871 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A system is provided with 200 calories of heat and the work done by the system on the surrounding is 40 J. Then its internal energy

Options :

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1. ✖ Increases by 600 J

2. ✖ Decreases by 800 J

3. ✔ Increases by 800 J

4. ✖ Decreases by 50J

Question Number : 71 Question Id : 7225445872 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The temperature of n moles of an ideal gas is increased from T to 4Tthrough a process for which pressure $P = a\,T^{-1}$where a is a constant. Then the work done by the gas is

Options :

1. ✖ nRT

2. ✖ $4nRT$

3. ✖ $2nRT$

4. ✔ $6nRT$

Question Number : 72 Question Id : 7225445873 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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When an ideal gas with pressure P and volume V is compressed isothermally to one fourth of its volume, the pressure is P_1. When the same gas is compressed polytropically according to the equation $PV^{1.5}$ = constant to one fourth of its initial volume, the pressure is P_2. The ratio of P_2/P_1 is

Options :

1. ✖ $\frac{1}{2}$

2. ✖ $\frac{1}{2^{1.5}}$

3. ✔ 2

4. ✖ $2^{1.5}$

Question Number : 73 Question Id : 7225445874 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A Carnot engine whose efficiency is 40%, receives heat at 500K. If the efficiency is to be 50%, the source temperature for the same exhaust temperature is

Options :

1. ✖ 900 K

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2. ✓ 600 K

3. ✗ 700 K

4. ✗ 800 K

Question Number : 74 Question Id : 7225445875 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Optical fibers carry very large information compared to copper cables because of their

Options :

1. ✗ Large thickness

2. ✓ Extremely wide bandwidth

3. ✗ Extremely less bandwidth

4. ✗ Light weight

Question Number : 75 Question Id : 7225445876 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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A superconductor is a perfect …….. material.

Options :

1. ✔ Diamagnetic

2. ✘ Dielectric

3. ✘ Insulating

4. ✘ Semiconducting

Chemistry

Section Id :	722544118
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

Question Number : 76 Question Id : 7225445877 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 characteristic of Plank's theory radiation?

Options :

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1. ✗ Energy is always associated with radiations

2. ✓ The absorption and emission of energy occur continuously and not in small packets of energy called quanta

3. ✗ The energy associated with a quantum of radiation is directly proportional to its frequency

4. ✗ The emission and absorption of energy takes place in small packets called quanta

Question Number : 77 Question Id : 7225445878 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The atomic number of calcium is 20 and mass number is 40, it contains

Options :

1. ✓ 20 protons, 20 electrons and 20 neutrons

2. ✗ 20 protons, 20 electrons and 22 neutrons

3. ✗ 20 protons, 20 electrons and 40 neutrons

4. ✗ 40 protons, 20 electrons and 20 neutrons

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Question Number : 78 Question Id : 7225445879 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which molecule among the following obeys the octet rule?

Options :

1. ✗ PF_5

2. ✗ NO

3. ✗ ClO_2

4. ✓ O_2

Question Number : 79 Question Id : 7225445880 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 has higher ionic radius?

Options :

1. ✓ C^{4-}

2. ✗ N^{3-}

3. ✗ O^{2-}

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4. ✖ Na^+

Question Number : 80 Question Id : 7225445881 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

0.2 equivalents of H_2SO_4 is present in 100 mL of the solution. What is its normality?

Options :

1. ✖ 1 N

2. ✔ 2 N

3. ✖ 4 N

4. ✖ 20 N

Question Number : 81 Question Id : 7225445882 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which ion is isoelectronic with CO?

Options :

1. ✔ CN^-

2. ✖ O_2^+

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3. ✖ O_2^-

4. ✖ N_2^+

Question Number : 82 Question Id : 7225445883 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

20 mL of 0.01 M HCl solution is diluted to 100 mL What is the molarity of final solution?

Options :

1. ✖ 0.02 M

2. ✔ 0.002 M

3. ✖ 0.05 M

4. ✖ 0.001 M

Question Number : 83 Question Id : 7225445884 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

How many moles of HCl are required to react with completely with 2 moles of Na_2CO_3?

Options :

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1. ✗ 1

2. ✗ 2

3. ✗ 3

4. ✓ 4

Question Number : 84 Question Id : 7225445885 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 is a Lewis acid and also Bronsted acid?

Options :

1. ✗ CO_2

2. ✗ $AlCl_3$

3. ✓ H^+

4. ✗ Cu^{2+}

Question Number : 85 Question Id : 7225445886 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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What is the pH of 0.01 M NaOH solution?

Options :

1. ✖ 2

2. ✖ 8

3. ✖ 10

4. ✔ 12

Question Number : 86 Question Id : 7225445887 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Four alkali metals A, B, C and D are having standard electrode potentials as -3.05, - 1.66, -0.40 and 0.80 V respectively. Which one will be most reducing?

Options :

1. ✔ A

2. ✖ B

3. ✖ C

4. ✖ D

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Question Number : 87 Question Id : 7225445888 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 is used as depolarizer in dry cell battery?

Options :

1. ✖ Ammonium chloride

2. ✖ Potassium hydroxide

3. ✔ Manganese dioxide

4. ✖ Sodium phosphate

Question Number : 88 Question Id : 7225445889 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

How much copper is deposited when 2 Faraday of electricity is passed through a $CuSO_4$ solution? (Cu atomic weight = 63.54)

Options :

1. ✖ 31. 77 g

2. ✖ 159.54 g

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127.77 g

3. ✖

63.54 g

4. ✔

Question Number : 89 Question Id : 7225445890 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 cell potential for the following cell at 298 K?
$Mg(s) \mid Mg^{2+}(0.001M) \parallel Cu^{2+}(0.0001M) \mid Cu(s)$
Given E_0 of $Cu^{2+}|Cu = 0.34$ V and E_0 of $Mg^{2+} \mid Mg = -2.37$ V

Options :

1. ✖ 1.34 V

2. ✔ 2.68 V

3. ✖ 0.268 V

4. ✖ 0.134 V

Question Number : 90 Question Id : 7225445891 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The hard water sample contains the following ions/salts. Which water sample is more in hardness?

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Options :

1. ✗ 100 grams of $CaCO_3$ per litre

2. ✗ 50 equivalents of Ca^{2+} ions per litre

3. ✓ 20 moles of $CaCO_3$ per litre

4. ✗ 20 moles of $MgCO_3$ per litre

Question Number : 91 Question Id : 7225445892 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

20 ml of hard water required 10 ml of EDTA solution. The hardness of water sample is 1000 ppm. What is the molarity of EDTA?

Options :

1. ✓ 0.02 M

2. ✗ 0.03 M

3. ✗ 0.005 M

4. ✗ 0.05 M

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Question Number : 92 Question Id : 7225445893 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The hardness of water sample is 500 ppm. What is the weight of $MgSO_4$ present in it, assume that the hardness is only due to the presence of magnesium sulphate.

Options :

1. ✗ 0.3 g

2. ✗ 1.2 g

3. ✓ 0.6 g

4. ✗ 0.01 g

Question Number : 93 Question Id : 7225445894 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The rate of corrosion is high if

Options :

1. ✓ Anodic areas are small and cathodic areas are large

2. ✗ Anodic areas are large and cathodic areas are small

3. ✗ Both anodic and cathodic areas are large

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4. ✖ Does not depend upon the area of anode and cathode

Question Number : 94 Question Id : 7225445895 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In electroplating, the metal to be coated or electroplated is made of

Options :

1. ✖ Anode

2. ✔ Cathode

3. ✖ Both anode and cathode

4. ✖ Inert metal

Question Number : 95 Question Id : 7225445896 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 thermosetting plastic?

Options :

1. ✖ Bakelite

2. ✖ Melamine

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3. ✖ Epoxy resins

4. ✔ Teflon

Question Number : 96 Question Id : 7225445897 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 molecule contains the functionality TWO?

Options :

1. ✖ 1, 2-Dihydroxy benzene

2. ✖ Benzene

3. ✖ Phenol

4. ✔ Ethylene

Question Number : 97 Question Id : 7225445898 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 synthetic rubber?

Options :

1. ✖ Buna-S

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2. ✗ Buna-N

3. ✗ Neoprene

4. ✓ 1, 4-Polyisoprene

Question Number : 98 Question Id : 7225445899 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 renewable source of energy?

Options :

1. ✗ Solar energy

2. ✗ Wind Energy

3. ✓ Petrol

4. ✗ Hydro energy

Question Number : 99 Question Id : 7225445900 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 is not a greenhouse gas?

Options :

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1. ✖ CH_4

2. ✖ Water vapour

3. ✖ Chlorofluoro carbons

4. ✔ SO_2

Question Number : 100 Question Id : 7225445901 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one is responsible for the depletion of ozone layer?

Options :

1. ✖ Carbon free radical

2. ✖ Oxygen free radical

3. ✔ Chlorine free radical

4. ✖ Fluorine free radical

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Metallurgical Engineering

Section Id :	722544119
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

Question Number : 101 Question Id : 7225445902 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The resolving power of an optical microscope is

Options :

1. ✖ $10\ A^0$

2. ✖ $100\ A^0$

3. ✔ $1000\ A^0$

4. ✖ $10000\ A^0$

Question Number : 102 Question Id : 7225445903 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The term Pearlite in steels refer to

Options :

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A solid solution

1. ✗

An intermetallic compound

2. ✗

A mixture of two phases

3. ✓

An inclusion

4. ✗

Question Number : 103 Question Id : 7225445904 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Out of the following binary systems the one which does not show eutectic reaction is

Options :

Fe - C

1. ✗

2. ✗ Cu - Al

3. ✗ Al - Si

4. ✓ Ni – Cu

Question Number : 104 Question Id : 7225445905 Display Question Number : Yes Is Question Mandatory : No Calculator : None

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

The peritectic reaction in steel occurs at

Options :

1. ✖ 1146^0C

2. ✔ 1495^0C

3. ✖ 910^0C

4. ✖ 723^0C

Question Number : 105 Question Id : 7225445906 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Eutectoid reaction among the following is

Options :

1. ✖ $L \xrightarrow{\text{Cooling}} \alpha + \beta$

2. ✔ $\gamma \xrightarrow{\text{Cooling}} \alpha + \beta$

3. ✖ $\alpha + L \xrightarrow{\text{Cooling}} \beta$

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4. ✗ $\alpha + \gamma$ ——Cooling—— β

Question Number : 106 Question Id : 7225445907 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Transformation of austenite to martensite occurs by

Options :

1. ✗ Lattice diffusion

2. ✗ Spinodal decomposition

3. ✗ Nucleating-and-growth

4. ✓ Diffusion less process

Question Number : 107 Question Id : 7225445908 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The alloying element which shifts the nose of the C-curve to the left is

Options :

1. ✗ Cr

2. ✗ Mn

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3. ✗ V

4. ✓ Co

Question Number : 108 Question Id : 7225445909 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Dual-phase steel contains

Options :

1. ✗ Ferrite and pearlite

2. ✗ Tempered martensite

3. ✓ Ferrite and martensite

4. ✗ Ferrite and cementite

Question Number : 109 Question Id : 7225445910 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Case carburising of steel components is done for improving

Options :

1. ✗ Machinability

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2. ✓ Fatigue resistance

3. ✗ Hardenability

4. ✗ Plasticity

Question Number : 110 Question Id : 7225445911 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Substitutional solid solution forms when

Options :

1. ✗ The crystal structure of two metals are different

2. ✗ Solute atoms are very small compared to solvent atoms

3. ✓ Solute and solvent atoms possess almost equal diameters

4. ✗ The chemical affinity of the two metals is high

Question Number : 111 Question Id : 7225445912 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 softest structure that appears on Fe-C equilibrium diagram?

Options :

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Pearlite

1. ✖

Cementite

2. ✖

Ferrite

3. ✔

Austenite

4. ✖

Question Number : 112 Question Id : 7225445913 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The structure produced by austempering of steel is _____

Options :

Bainite

1. ✔

Martensite

2. ✖

Troostite

3. ✖

Austenite

4. ✖

Question Number : 113 Question Id : 7225445914 Display Question Number : Yes Is Question Mandatory : No Calculator : None

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

Hardening temperature for high speed steel is _____ ^0C

Options :

1. ✖ 550 - 650

2. ✖ 800 – 900

3. ✖ 750 - 950

4. ✔ 1150 – 1350

Question Number : 114 Question Id : 7225445915 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Sub-zero treatment is most applicable for

Options :

1. ✔ High-speed steel

2. ✖ Steels containing < 0.2% carbon

3. ✖ Mild steel

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Steels not containing retained austenite

4. ✖

Question Number : 115 Question Id : 7225445916 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Hardenability of Steel is the measure of

Options :

Its cementite content

1. ✖

The depth to which steel can be hardened

2. ✔

Its hardness

3. ✖

The depth to which pearlite forms

4. ✖

Question Number : 116 Question Id : 7225445917 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Compound formed during age hardening of duralumin is

Options :

1. ✖ CuAl

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2. ✓ $CuAl_2$

3. ✗ Cu_2Al_3

4. ✗ Cu_3Al_2

Question Number : 117 Question Id : 7225445918 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 carbide forming element in steel

Options :

1. ✓ Ni

2. ✗ Cr

3. ✗ Mo

4. ✗ W

Question Number : 118 Question Id : 7225445919 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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Which is the hardest structure that appears on Fe-C equilibrium diagram?

Options :

1. ✖ Pearlite

2. ✔ Cementite

3. ✖ Martensite

4. ✖ Austenite

Question Number : 119 Question Id : 7225445920 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Troostite is a mixture

Options :

1. ✖ Austenite and Ferrite

2. ✔ Ferrite and cementite

3. ✖ Ferrite and martenisite

4. ✖ Ferrite and pearlite

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Question Number : 120 Question Id : 7225445921 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Alloying element used in material for the construction of leaf & coil springs is

Options :

1. ✖ Cobalt

2. ✖ Aluminium

3. ✖ Nickel

4. ✔ Silicon

Question Number : 121 Question Id : 7225445922 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Spheroidal graphite is obtained in cast irons by

Options :

1. ✖ Inoculating the melt with ferrosilicon

2. ✖ Adding Ni to the melt in the form of round shots

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3. ✓ Treating the melts of controlled composition with Mg.

4. ✗ Annealing of flake graphite cast iron

Question Number : 122 Question Id : 7225445923 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The inequality of diffusion of components in a binary solution of alloys is given by

Options :

1. ✗ Graham's law

2. ✗ Fick's law

3. ✗ Cottrell effect

4. ✓ Kirkendall effect

Question Number : 123 Question Id : 7225445924 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The recrystallized grain size will be smaller

Options :

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1. ✗ Lower the annealing temperature and lower the amount of prior cold work

2. ✗ Higher the annealing temperature and lower the amount of prior cold work

3. ✓ Lower the annealing temperature and higher the amount of prior cold work

4. ✗ Higher the annealing temperature and higher the amount of prior cold work

Question Number : 124 Question Id : 7225445925 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 a forging defect

Options :

1. ✗ Shrinkage cracks

2. ✗ Laps

3. ✓ Cold shuts

4. ✗ Insufficient penetration

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Question Number : 125 Question Id : 7225445926 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 defects in metal does not get welded up during its hot working

Options :

1. ✔ Blowholes

2. ✖ Internal porosity

3. ✖ Cracks

4. ✖ Pipes

Question Number : 126 Question Id : 7225445927 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Lead is subjected to hot working at

Options :

1. ✖ 100^0C

2. ✖ 200^0C

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3. ✗ 300^0C

4. ✓ 20^0C

Question Number : 127 Question Id : 7225445928 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Flange wrinkling is the defect found in

Options :

1. ✗ Rolling

2. ✓ Deep drawing

3. ✗ Extrusion

4. ✗ Forging

Question Number : 128 Question Id : 7225445929 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

. The operation of removal of scale from the steel slabs formed by rolling of ingots is called

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Options :

1. ✖ Shot blasting

2. ✔ Pickling

3. ✖ Scarfing

4. ✖ Slitting

Question Number : 129 Question Id : 7225445930 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The temperature at which the grains and the grain boundaries will have equal strength is called _____ temperature

Options :

1. ✖ Curie

2. ✖ Recrystallization

3. ✖ Absolute zero

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Equi-cohesive

4. ✔

Question Number : 130 Question Id : 7225445931 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Residual stress are measured mainly by _____

Options :

1. ✖ Dye-penetrant method

2. ✖ Magnetic particle method

3. ✔ X-ray analysis

4. ✖ Ultrasonic testing

Question Number : 131 Question Id : 7225445932 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The process used for making collapsible shaving cream tubes is _____

Options :

1. ✖ Forging

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Rolling

2. ✗

3. ✗ Indirect extrusion

4. ✓ Impact extrusion

Question Number : 132 Question Id : 7225445933 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The common lubricant used during compaction of metal powders is

Options :

Acetone

1. ✗

2. ✗ Ethyl alcohol

Stearic acid

3. ✓

Glycerol

4. ✗

Question Number : 133 Question Id : 7225445934 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Plane strain condition is found in

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Options :

1. ✓ Thick plates

2. ✗ Thin sheets

3. ✗ Not so thick sheets

4. ✗ Strips

Question Number : 134 Question Id : 7225445935 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

High stacking - fault energy metal exhibit

Options :

1. ✗ High work hardening

2. ✓ Low work hardening

3. ✗ Do not work harden

4. ✗ Moderate work hardening

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Question Number : 135 Question Id : 7225445936 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Dislocation density depends on

Options :

1. ✖ Temperature

2. ✖ Strain-rate

3. ✔ Degree of cold work

4. ✖ Time

Question Number : 136 Question Id : 7225445937 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The deformation in an alloy containing overaged particles or ceramic particles is by

Options :

1. ✖ Slip

2. ✖ Shearing of particles

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3. ✔ By-passing and looping

4. ✖ Multiple slip

Question Number : 137 Question Id : 7225445938 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 ore of Titanium

Options :

1. ✖ Wustite

2. ✖ Bauxite

Limonite

3. ✖

4. ✔ Ilmenite

Question Number : 138 Question Id : 7225445939 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Increase in carbon content of steel _____ DBTT

Options :

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1. ✖ Increases

2. ✔ Decreases

3. ✖ Does not effect

4. ✖ Steel does not have DBTT

Question Number : 139 Question Id : 7225445940 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Ductile materials exhibit _____ fracture

Options :

1. ✔ Cup and cone

2. ✖ Flat

3. ✖ Helical

4. ✖ Combined

Question Number : 140 Question Id : 7225445941 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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The maximum working temperature is determined by

Options :

1. ✖ Melting point

2. ✔ Hot shortness temperature

3. ✖ Recrystallization temperature

4. ✖ Work-hardening

Question Number : 141 Question Id : 7225445942 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The process used for powder production is _____

Options :

1. ✖ Forging

2. ✖ Tapping

3. ✖ Rolling

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4. ✓ Atomization

Question Number : 142 Question Id : 7225445943 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In CO_2 moulding process which of the following is used as binder

Options :

1. ✗ Bentonite

2. ✗ Dextrine

3. ✓ Sodium silicate

4. ✗ Water

Question Number : 143 Question Id : 7225445944 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Orange-peel defect in deep-drawing depends on

Options :

1. ✓ Grain size

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2. ✖ Force used

3. ✖ Thickness of sheet

4. ✖ Hold down pressure

Question Number : 144 Question Id : 7225445945 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The important consideration in determining deep-drawability is

Options :

Work-hardening coefficient (n)

1. ✖

Drawing load

2. ✖

Anisotropy ratio, R

3. ✔

Frictional condition

4. ✖

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Question Number : 145 Question Id : 7225445946 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Cementite (Fe_3C) crystal structure is

Options :

1. ✗ B.C.C.

2. ✓ Orthorhombic

3. ✗ CPH

4. ✗ FCC

Question Number : 146 Question Id : 7225445947 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In face-centered cubic lattice, the most closely packed planes are

Options :

1. ✗ (1 0 0)

2. ✗ (1 1 0)

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3. ✔ (1 1 1)

4. ✖ (1 1 2)

Question Number : 147 Question Id : 7225445948 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Stacking faults are _____ imperfections

Options :

1. ✖ Linear

2. ✖ Point

3. ✖ Volume

4. ✔ Surface

Question Number : 148 Question Id : 7225445949 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Choose the correct statement

Options :

1. ✖ Burgers vector is parallel to an edge dislocation

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2. ✗ Burgers vector is perpendicular to screw dislocation

3. ✓ Screw dislocation can undergo cross slip

4. ✗ Screw dislocation can undergo climb

Question Number : 149 Question Id : 7225445950 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

German silver is an alloy of

Options :

1. ✓ Cu, Ni & Zn

2. ✗ Cu, Al & Ag

3. ✗ Cu, Ni & Ag

4. ✗ Ag, Ni & Zn

Question Number : 150 Question Id : 7225445951 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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). The phase rule as applied to the eutectic point in a isobaric binary metallic system gives a value of degree of freedom (F) equal to

Options :

1. ✗ 3

2. ✓ 0

3. ✗ 2

4. ✗ 1

Question Number : 151 Question Id : 7225445952 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 alloy can be strengthened by Age-hardening

Options :

1. ✗ Cu – Zn

2. ✗ Cu - Sn

3. ✗ Ni – Cu

4. ✓ Cu – Be

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Question Number : 152 Question Id : 7225445953 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Example for a thermosetting polymer is

Options :

1. ✖ Polyethylene

2. ✔ Polyester

3. ✖ Cellulose nitrate

4. ✖ PVC

Question Number : 153 Question Id : 7225445954 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Bull's eye structure is observed in

Options :

1. ✖ White cast iron

2. ✖ Grey cast iron

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Nodular cast iron

3. ✖

Malleable cast iron

4. ✔

Question Number : 154 Question Id : 7225445955 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Mechanical twinning is commonly observed in

Options :

Copper and its alloys

1. ✔

Steels

2. ✖

Al alloys

3. ✖

Zinc and its alloys

4. ✖

Question Number : 155 Question Id : 7225445956 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Surgical instruments are made of

Options :

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Austenitic stainless steels

1. ✖

Martensitic stainless steels

2. ✔

High carbon steels

3. ✖

Super alloys

4. ✖

Question Number : 156 Question Id : 7225445957 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Carbon percentage in Razor blades is in the range of

Options :

1. ✖ 0.1 - 0.3

2. ✖ 0.3 - 0.5

3. ✖ 0.6 - 0.8

4. ✔ 1.1 - 1.4

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Question Number : 157 Question Id : 7225445958 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Zirconium alloys are used in nuclear reactors as

Options :

1. ✖ Moderator

2. ✖ Fuel

3. ✖ Catalyst

4. ✔ Cladding material

Question Number : 158 Question Id : 7225445959 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Corrosion resistance of stainless steel is due to

Options :

1. ✖ Addition of Ni

2. ✔ Addition of Cr

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Presence of C

3. ✖

Presence of Mo

4. ✖

Question Number : 159 Question Id : 7225445960 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 conditions favor dephosphorization in steel making

Options :

Acid slag and oxidizing atmosphere

1. ✖

Basic slag and oxidizing atmosphere

2. ✔

Acid slag and reducing atmosphere

3. ✖

Basic slag and reducing atmosphere

4. ✖

Question Number : 160 Question Id : 7225445961 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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Banking of blast furnace means

Options :

1. ✔ Stopping blast furnace operation for a specific period

2. ✘ Controlled reduction in production rate

3. ✘ Hard driving of blast furnace to increase production

4. ✘ Draining of pig iron before shutting down

Question Number : 161 Question Id : 7225445962 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For desulphurization of iron

Options :

1. ✘ Slag should be viscous

2. ✘ Atmosphere should be oxidizing

3. ✘ Slag basicity should be low and temperature should be high

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Both slag basicity and temperature should be high

4. ✓

Question Number : 162 Question Id : 7225445963 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Open-hearth process of steel making is getting obsolete because

Options :

It can use only hot metal

1. ✗

It can use only scrap

2. ✗

It has low thermal efficiency

3. ✓

Control of carbon is difficult in this process

4. ✗

Question Number : 163 Question Id : 7225445964 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Increase in alumina content of blast furnace slag

Options :

Increases its melting point, but decreases its viscosity

1. ✗

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Increases both its melting point and viscosity

2. ✔

Decreases both its melting point but increases its viscosity

3. ✖

Does not affect its melting point but increases its viscosity

4. ✖

Question Number : 164 Question Id : 7225445965 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 function of coke in iron blast furnace?

Options :

1. ✖ Acts as a fuel

2. ✖ Imparts permeability

3. ✔ Acts as a flux

4. ✖ Acts as a reductant

Question Number : 165 Question Id : 7225445966 Display Question Number : Yes Is Question Mandatory : No Calculator : None

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

The reaction of $C + CO_2$ -----> 2CO occuring in the blast furnace is called

Options :

1. ✗ Reduction reaction

2. ✗ Naumann reaction

3. ✓ Solution loss reaction

4. ✗ Calcination reaction

Question Number : 166 Question Id : 7225445967 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 grain structure is preferred for Creep applications

Options :

1. ✗ Fine

2. ✓ Coarse

3. ✗ Columnar

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Dendritic

4. ✗

Question Number : 167 Question Id : 7225445968 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Salamander is

Options :

1. ✗ Unreduced ore

2. ✗ Irregularity in B.F.

3. ✗ Solid residue in scrubbers

4. ✓ Solid Fe remaining in hearth

Question Number : 168 Question Id : 7225445969 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Slag bond in sinter has _____ compared to diffusion bond

Options :

1. ✗ Higher reducibility and high strength

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Low reducibility and high strength

2. ✔

Low reducibility and low strength

3. ✖

Higher reducibility and low strength

4. ✖

Question Number : 169 Question Id : 7225445970 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Wustite is

Options :

Fe_2O_3

1. ✖

2. ✔ FeO

$FeCO_3$

3. ✖

$FeO.SiO_2$

4. ✖

Question Number : 170 Question Id : 7225445971 Display Question Number : Yes Is Question Mandatory : No Calculator : None

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

Phosphorous is better removed in _____ process

Options :

1. ✗ Open-hearth

2. ✗ LD

3. ✓ LDAC

4. ✗ B.F.

Question Number : 171 Question Id : 7225445972 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 employs a bottom blowing operation?

Options :

1. ✗ L.D. converter

2. ✓ OBM

3. ✗ Open hearth furnace

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4. ✗ Kaldo furnace

Question Number : 172 Question Id : 7225445973 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In acid steel making process which is the chief impurity to be eliminated from iron

Options :

1. ✗ Phosphorous

2. ✗ Manganese

3. ✓ Silicon

4. ✗ Sulphur

Question Number : 173 Question Id : 7225445974 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Killing of the steel bath is a process practiced to remove _____

Options :

1. ✗ Carbon

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2. ✓ Oxygen

3. ✗ Sulphur

4. ✗ Phosphorous

Question Number : 174 Question Id : 7225445975 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which is not a basic refractory?

Options :

1. ✗ Chromo magnesite

2. ✗ Magnesite

3. ✗ Dolomite

4. ✓ Silicon carbide

Question Number : 175 Question Id : 7225445976 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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Segar cones are used for determination of _____ of refractories

Options :

1. ✔ Softening temperature

2. ✖ Spalling resistance

3. ✖ Electrical conductivity

4. ✖ Resistance to slag attack

Question Number : 176 Question Id : 7225445977 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In pidgeon process, the reducing agent used is

Options :

1. ✖ Carbon

2. ✖ Carbon monoxide

3. ✖ Hydrogen

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Ferrosilicon

4. ✔

Question Number : 177 Question Id : 7225445978 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In Parkes process, desilverizing of molten lead is effected by the addition of

Options :

Carbon

1. ✖

Aluminum

2. ✖

Copper

3. ✖

4. ✔ Zinc

Question Number : 178 Question Id : 7225445979 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Bacterial leaching is useful for

Options :

1. ✖ Leaching of enriched ores

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In situ-leaching low-grade ores

2. ✔

Fast recovery of metal values

3. ✖

Refining of metals

4. ✖

Question Number : 179 Question Id : 7225445980 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Chemical formula of Cassiterite is

Options :

1. ✖ ZnS

2. ✔ SnO_2

3. ✖ CaF_2

4. ✖ Cu_2O

Question Number : 180 Question Id : 7225445981 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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Which of the following is a mineral of molybdenum

Options :

1. ✖ Scheelite

2. ✖ Kainite

3. ✔ Wulfenite

4. ✖ Carnellite

Question Number : 181 Question Id : 7225445982 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Hydrometallurgical process as compared to pyrometallurgical processes

Options :

1. ✖ Deal with rich-grade ores

2. ✖ Will not result in recovery of valuable by-products

3. ✖ Are carried out at elevated temperatures

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Produce metals in variety of physical forms

4. ✔

Question Number : 182 Question Id : 7225445983 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Cathodic protection to steel can be provided by

Options :

Sacrificial anode

1. ✔

Painting

2. ✘

Non-metallic coating

3. ✘

Anodizing

4. ✘

Question Number : 183 Question Id : 7225445984 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The formation of corrosion retarding films on metal surfaces is known as _____

Options :

Polarization

1. ✘

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2. ✗ Pitting

3. ✗ Cavitation

4. ✓ Passivation

Question Number : 184 Question Id : 7225445985 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

. Example of a sacrificial anode which is used in the protection of underground pipelines

Options :

1. ✗ Steel

2. ✗ Platinum

3. ✓ Magnesium

4. ✗ Graphite

Question Number : 185 Question Id : 7225445986 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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Second law of thermodynamics is concerned with

Options :

1. ✖ Amount of energy transferred

2. ✔ Direction of energy transfer

3. ✖ Irreversible proceses only

4. ✖ Non-cyclic process only

Question Number : 186 Question Id : 7225445987 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

First law of thermodynamics is mathematically expressed as

Options :

1. ✔ $dQ = dU + dW$

2. ✖ $dQ = dU - dW$

3. ✖ $dU = dQ + dW$

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4. ✖ $dW = dQ + dU$

Question Number : 187 Question Id : 7225445988 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Ellingham diagrams for $M - MO_X$ reactions is a plot of

Options :

1. ✖ ΔG vs T

2. ✖ ΔG vs 1/T

3. ✔ ΔG^0 vs T

4. ✖ ΔG^0 vs 1/T

Question Number : 188 Question Id : 7225445989 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

. In Ellingham diagram of oxides, the reaction that is parallel to the temperature axis is

Options :

1. ✖ $2C + O_2 = 2CO$

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2. ✖ $2Zn + O_2 = 2ZnO$

3. ✔ $C + O_2 = CO_2$

4. ✖ $2CO + O_2 = 2CO_2$

Question Number : 189 Question Id : 7225445990 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

_____ process is used for casting dental alloys

Options :

1. ✖ Shell moulding

2. ✔ Investment casting

3. ✖ True centrifugal

4. ✖ Dry sand

Question Number : 190 Question Id : 7225445991 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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The ideal theoretical shape of a Riser is

Options :

1. ✔ Cylindrical

2. ✖ Conical

3. ✖ Spherical

4. ✖ Cubic

Question Number : 191 Question Id : 7225445992 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The casting process used for the manufacture of Heavy machine beds is

Options :

1. ✖ Die casting

2. ✖ Investment casting

3. ✔ Gravity casting

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Centrifugal casting

4. ✗

Question Number : 192 Question Id : 7225445993 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Hot tears are casting defects caused by

Options :

Some sand shearing from the cope surface

1. ✗

Two streams of metals that are too cold to figure properly

2. ✗

Discontinuity is metal casting resulting from hindered contraction

3. ✓

Excessive gaseous substances not able to escape

4. ✗

Question Number : 193 Question Id : 7225445994 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Rat tail is a casting defect whis is due to

Options :

Non-uniform ramming of mould

1. ✓

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2. ✖ More moisture content in moulding sand

3. ✖ Poor expansion properties of moulding sand

4. ✖ Too low pouring temperature

Question Number : 194 Question Id : 7225445995 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A mixture of 50% sand and 50% clay is called _____ sand

Options :

1. ✖ Green

2. ✖ Dry

3. ✔ Loam

4. ✖ Bentonite

Question Number : 195 Question Id : 7225445996 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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Sweep pattern is used for molding parts having _____ shape

Options :

1. ✘ Elliptical

2. ✔ Uniform symmetrical

3. ✘ Rectangular

4. ✘ Complicated

Question Number : 196 Question Id : 7225445997 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Thermit welding uses the following energy source

Options :

1. ✘ Electrical energy

2. ✔ Chemical energy

3. ✘ Energy of high velocity electrons

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4. ✖ Heat due to friction

Question Number : 197 Question Id : 7225445998 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 material has highest weldability

Options :

1. ✖ Brass

2. ✖ Stainless steel

3. ✖ Aluminium

4. ✔ Plain Carbon steel

Question Number : 198 Question Id : 7225445999 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 solid state welding process

Options :

1. ✖ TIG

2. ✖ SAW

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3. ✓ Explosive

4. ✗ Stud arc

Question Number : 199 Question Id : 7225446000 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The process with highest penetration is

Options :

1. ✗ SMAW

2. ✓ EBW

3. ✗ Oxy-acetylene welding

4. ✗ Friction welding

Question Number : 200 Question Id : 7225446001 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The most common soldering material 'tinman's solder is

Options :

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1. ✖ An eutectic mixture of 38% Sn and 62% Pb

2. ✖ Having a melting point of 232^0C

3. ✔ An eutectic mixture of 62% Sn and 38% Pb

4. ✖ A mixture of 35% Sn and 65% Pb.

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