Question Paper Preview

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

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Mathematics

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

Question Number : 1 Question Id : 61097514629 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. 1

2. 2

3. -2

4. -1

Ans : no correct option

Question Number : 2 Question Id : 61097514630 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. 0

2. 1

3. 2

4. -2

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Question Number : 3 Question Id : 61097514631 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. x= 0

2. x=1

3. x= 2

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

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Question Number : 4 Question Id : 61097514632 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. 16. 3

2. 17. -3

3. 17. 3

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4. -17, -3

Question Number : 5 Question Id : 61097514633 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

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

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

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

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

Question Number : 6 Question Id : 61097514634 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. S_2

2. $2S_2$

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3. $4S_2$

4. $4S_1$

Question Number : 7 Question Id : 61097514635 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. 0

2. 1

3. -1

4. 2

Question Number : 8 Question Id : 61097514636 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If $\sin780^0\ \sin480^0-\cos120^0\sin330^0=k$ then k is

Options :

1. 0

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2. 1

3. 1/2

4. -1/2

Question Number : 9 Question Id : 61097514637 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

cosA+cosB+cosC+cosD=

Options :

1. 0

2. 2

3. -1

4. -2

Question Number : 10 Question Id : 61097514638 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1.

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

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

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

Question Number : 11 Question Id : 61097514639 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. 2π

2. π

3. 3π

4. 4π

Question Number : 12 Question Id : 61097514640 Question Type : MCQ Display Question

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

Orientation : Vertical

The value of $\tan 1^0 \tan 2^0 \tan 3^0 \ldots\ldots\ldots\ldots\ldots \tan 89^0$ is

Options :

1. 1

2. 0

3. -1

4. ∞

Question Number : 13 Question Id : 61097514641 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. $f(x)<1$

2. $f(x)=1$

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

4. $f(x) \geq 2$

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Question Number : 14 Question Id : 61097514642 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. -1

2. 1

3. 0

4. 2

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Question Number : 15 Question Id : 61097514643 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

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

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

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

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

Question Number : 16 Question Id : 61097514644 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

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

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

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

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

Question Number : 17 Question Id : 61097514645 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1.

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2. $\left\{n\pi+\frac{2\pi}{3}.n=1.2.3.....\right\}$

3. $\left\{n\pi-\frac{2\pi}{3}.n=1.2.3.....\right\}$

4. 0

Question Number : 18 Question Id : 61097514646 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. 2^7

2. $2^7 i$

3. $-2^7 i$

4. -2^7

Question Number : 19 Question Id : 61097514647 Question Type : MCQ Display Question

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

Orientation : Vertical

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

Options :

1. 0

2. -1

3. $-i$

4. i

Question Number : 20 Question Id : 61097514648 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

The equation of the polar of (-2.3) with respect to $x^2+y^2-4x-6y-5=0$ is

Options :

1. $x=y$

2. $x+y=0$

3. $x=0$

4. $y=0$

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Question Number : 21 Question Id : 61097514649 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A parabolic arc has a height of 12m and a span of 20m. The height of the arc. 5m away

on either side of the centre is

Options :

1. 2m

2. 5m

3. 6m

4. 9m

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Question Number : 22 Question Id : 61097514650 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

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

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

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

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

Question Number : 23 Question Id : 61097514651 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. Parabola

2. Ellipse

3. hyperbola

4. Circle

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Question Number : 24 Question Id : 61097514652 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. $(4,2)$

2. $(3,5)$

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3. (5.1)

4. (2.1)

Question Number : 25 Question Id : 61097514653 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The tangents drawn from the point P(-2.19) to the parabola $y^2=8x$ are perpendicular to each other. Then the point P lies on the parabola at

Options :

1. Tangent at the vertex

2. directrix

3. latus-rectum

4. diameter through the focus

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Question Number : 26 Question Id : 61097514654 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

$\underset{n\to\infty}{Lt}\left(\frac{n}{n+1}\right)^{2n}$ is

Options :

1. 0

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2. e

3. e^2

4. $1\ e^2$

Question Number : 27 Question Id : 61097514655 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If x=ylogxy then $\frac{dy}{dx}=$

Options :

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

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

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

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

Question Number : 28 Question Id : 61097514656 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. 0

2. 1

3. 2

4. 4

Question Number : 29 Question Id : 61097514657 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

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

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

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

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

Question Number : 30 Question Id : 61097514658 Question Type : MCQ Display Question

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

Orientation : Vertical

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

Options :

1. $6e^{\pi}$

2. $12e^{\pi}$

3. $-12e^{\pi}$

4. $-6e^{\pi}$

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Question Number : 31 Question Id : 61097514659 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

The maximum area of a rectangle with perimeter 176cm is

Options :

1. $1936cm^2$

2. $1854cm^2$

3. $2110cm^2$

4. $1735cm^2$

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Question Number : 32 Question Id : 61097514660 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. 32.32

2. 48.16

3. 40.24

4. 32. 24

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Question Number : 33 Question Id : 61097514661 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. nu

2. $n\ \frac{\partial u}{\partial x}$

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

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

4.

Ans : no correct option

Question Number : 34 Question Id : 61097514662 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. 3

2. -3

3. u

4. 0

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Question Number : 35 Question Id : 61097514663 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. $100\pi cm^2$ / sec

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2. $32\pi\ cm^2$ / sec

3. $192\pi\ cm$ / sec

4. $192\pi\ cm^2$ / sec

Question Number : 36 Question Id : 61097514664 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

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

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

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

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

Question Number : 37 Question Id : 61097514665 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. 0

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

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

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

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Question Number : 38 Question Id : 61097514666 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

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

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

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

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

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Question Number : 39 Question Id : 61097514667 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

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

2. $2a\pi$

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

4. $24a\pi$

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Question Number : 40 Question Id : 61097514668 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. 2

2. π

3. π^2

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4. 1

Question Number : 41 Question Id : 61097514669 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

$\int_a^b f(x)dx$ represents

Options :

1. The area bounded by the curve and the x-axis

2. The area bounded by the curve and the ordinates x=a. x=b

3. The area bounded by the curve. the x-axis and the ordinates x=a.x=b

4. The area not bounded by the curve

Question Number : 42 Question Id : 61097514670 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. 0

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2. 2

3. $1\ 2$

4. $-1\ 2$

Question Number : 43 Question Id : 61097514671 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Mean value of $\frac{1}{1+x^2}$ *on* $[-1.1]$ is

Options :

1. 0

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

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

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

Question Number : 44 Question Id : 61097514672 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. 1.2

2. 2.1

3. 1.1

4. 2.2

Question Number : 45 Question Id : 61097514673 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. a set of circles whose centers are on the x-axis

2. a set of circles whose centers are on the y-axis

3. a set of parabolas

4. a set of ellipses

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Question Number : 46 Question Id : 61097514674 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. $\sin^{-1}x+\sin^{-1}y=c$

2. $\sin^{-1}x-\sin^{-1}y=c$

3. $\sinh^{-1}x+\sinh^{-1}y=c$

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

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Question Number : 47 Question Id : 61097514675 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

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

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

3.

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

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

Question Number : 48 Question Id : 61097514676 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

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

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

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

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

Question Number : 49 Question Id : 61097514677 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

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Options :

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

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

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

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

Question Number : 50 Question Id : 61097514678 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

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

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

3. a

4. $2a$

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

Question Number : 51 Question Id : 61097514679 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The dimensional formula for magnetic flux is

Options :

1. $[ML^{2}T^{-2}A^{-1}]$

2. $[ML^{3}T^{-2}A^{-2}]$

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

4. $[ML^{2}T^{-1}A^{2}]$

Question Number : 52 Question Id : 61097514680 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The unit for angular frequency is

Options :

1. Hertz

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2. Newton

3. Degrees (or) radians per second

4. Steradian

Question Number : 53 Question Id : 61097514681 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. $A = B$

2. $A = 2B$

3. $B = 2A$

4. A and B have the same direction

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Question Number : 54 Question Id : 61097514682 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The resultant of two forces. one double the other in magnitude. is perpendicular to the

smaller of the two forces. The angle between the two forces is

Options :

1. 120^0

2. 60^0

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3. 90^0

4. 150^0

Question Number : 55 Question Id : 61097514683 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. $y = 4x$

2. $y = x$

3. $y = 3x$

4. $y = 2x$

Question Number : 56 Question Id : 61097514684 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. $1 : 2$

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2. $2:1$

3. $\sqrt{3}:2$

4. $1:\sqrt{2}$

Question Number : 57 Question Id : 61097514685 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Two bodies of different masses are dropped from heights of 2 m and 8 m respectively.

then the ratio of the time taken by them is _____.

Options :

1. 1: 4

2. 1:1

3. 1:2

4. 1:3

Question Number : 58 Question Id : 61097514686 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The angle of projection of a projectile for which the horizontal range and maximum

height are equal is

Options :

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

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

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

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

Question Number : 59 Question Id : 61097514687 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If μ_k is the coefficient of kinetic friction. μ_r is the coefficient of rolling friction and μ_s is

the coefficient of static friction. then

Options :

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

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

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

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

Question Number : 60 Question Id : 61097514688 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. 300 N

2. 400 N

3. 500 N

4. 600 N

Question Number : 61 Question Id : 61097514689 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. 800

2. 200

3. 600

4. 400

Question Number : 62 Question Id : 61097514690 Question Type : MCQ Display Question

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

Orientation : Vertical

A spring of force constant 800 N m^{-1} has an extension of 5 cm. The work done in

extending it from 5 cm to 15 cm is

Options :

1. 16 J

2. 8 J

3. 32 J

4. 24 J

Question Number : 63 Question Id : 61097514691 Question Type : MCQ Display Question

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

Orientation : Vertical

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

energy

Options :

1. Hydroelectric power plant

2. Ocean thermal energy

3. Tidal energy

4. Biomass

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Question Number : 64 Question Id : 61097514692 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A particle executes simple harmonic motion along a straight line so that its period is 12 seconds .

The time it takes in traversing a distance equal to half of its amplitude from its equilibrium position is

Options :

1. 6 seconds

2. 4 seconds

3. 2 seconds

4. 1 second

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Question Number : 65 Question Id : 61097514693 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A particle executes simple harmonic motion with a frequency f. The frequency with

which the potential energy oscillates is

Options :

1. f

2. $f/2$

3. $2f$

4. zero

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Question Number : 66 Question Id : 61097514694 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. 516 Hz

2. 508 Hz

3. 512 Hz

4. 500 Hz

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Question Number : 67 Question Id : 61097514695 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. $v/10$

2. $v/20$

3. $v/2$

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4. v^{5}

Question Number : 68 Question Id : 61097514696 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The reverberation time is

Options :

1. Directly proportional to sound absorption

2. Inversely proportional to volume

3. Inversely proportional to sound absorption

4. Directly proportional to pressure

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Question Number : 69 Question Id : 61097514697 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The pressure P_1 and density d_1 of a diatomic gas ($\gamma = 7\ 5$) change to P_2 and d_2 during an adiabatic operation. If $\frac{d2}{d1} = 32$. then $\frac{P2}{P1}$ is

Options :

1. 125

2. 128

3. 32

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4. 256

Question Number : 70 Question Id : 61097514698 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The first law of thermodynamics is concerned with conservation of

Options :

1. No. of molecules

2. No. of moles

3. Energy

4. Temperature

Question Number : 71 Question Id : 61097514699 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

When ice cube melts into water.

Options :

1. Entropy decreases and internal energy decreases

2. Entropy decreases and internal energy increases

3. Entropy increases and internal energy increases

4. Entropy increases and internal energy decreases

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Question Number : 72 Question Id : 61097514700 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

For nitrogen. C_p-C_v = x and for argon. C_p-C_v = y. The relation between x and y is

Options :

1. $x = y$

2. $x = 7y$

3. $y = 7x$

4. $x = y^2$

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Question Number : 73 Question Id : 61097514701 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A Carnot's engine extracts 1.5×10^3 kilocalories of heat from a reservoir at 627^0C and exhausts it to a sink maintained at 27^0C. The work performed by the engine is

Options :

1. 4.2 J

2. 4.2×10^2 J

3. 4.2×10^{-6} J

4. 4.2×10^6 J

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Question Number : 74 Question Id : 61097514702 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

At critical angle. the angle of refraction is

Options :

1. 45^0

2. 90^0

3. 180^0

4. 60^0

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Question Number : 75 Question Id : 61097514703 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Superconductivity is due to the formation of

Options :

1. Domain walls

2. Electron-hole pairs

3. Hysteresis

4. Cooper pairs

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Chemistry

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

Question Number : 76 Question Id : 61097514704 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

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

Options :

1. A

2. Z

3. $Z - A$

4. $A - Z$

Question Number : 77 Question Id : 61097514705 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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The two electrons present in an orbital are distinguished by :

Options :

1. Principal Quantum number

2. Spin Quantum number

3. Magnetic Quantum number

4. Azimutal Quantum number

Question Number : 78 Question Id : 61097514706 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The order of increasing energies of the orbitals follows:

Options :

1. 3s. 3p. 3d. 4s. 4p

2. 3s. 3p. 4s. 4p. 3d

3. 3s. 3p. 4s. 3d. 4p

4. 3s. 3p. 3d. 4p. 4s

Question Number : 79 Question Id : 61097514707 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Ionic bond is formed by

Options :

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1. Sharing of electrons

2. Donating of electron

3. Transfer of Electrons

4. Donating of electron pair

Question Number : 80 Question Id : 61097514708 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. 2

2. 4

3. 10

4. 6

Question Number : 81 Question Id : 61097514709 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. more than one

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2. less than one

3. exactly one

4. not fixed

Question Number : 82 Question Id : 61097514710 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A 10N Solution stands for

Options :

1. Normal solution

2. Decanormal solution

3. Decinormal solution

4. Seminormal solution

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Question Number : 83 Question Id : 61097514711 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The molarity of pure water is

Options :

1. 55.6

2. 50

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3. 100

4. 18

Question Number : 84 Question Id : 61097514712 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. OH^-

2. HSO_4^-

3. H_3O^+

4. Cl-

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Question Number : 85 Question Id : 61097514713 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. 4

2. 6

3. 8

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4. 10

Question Number : 86 Question Id : 61097514714 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. 10 faradys

2. 20 faradays

3. 5 faradays

4. 18 faradays

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Question Number : 87 Question Id : 61097514715 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

$Zn = Zn^{2-} + 2e^-$; $E^0 = +0.76V$

$Fe = Fe^{2-} + 2e^-$; $E^0 = +0.41V$

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

Options :

1. -0.35 V

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2. +0.35 V

3. +1.17 V

4. -1.17 V

Question Number : 88 Question Id : 61097514716 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The best electronic conductor is

Options :

1. Copper

2. Aluminium

3. Zinc

4. Silver

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Question Number : 89 Question Id : 61097514717 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

substance is

Options :

1. Charge on one mole of electrons

2. One ampere per second

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3. 96500 coulombs per second

4. One ampere for one hour

Question Number : 90 Question Id : 61097514718 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. $MgCO_3$

2. $CaCO_3$

3. Na_2CO_3

4. K_2CO_3

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Question Number : 91 Question Id : 61097514719 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following is a powerful disinfectant?

Options :

1. O_2

2. Cl_2

3. $CaOCl_2$

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4. N_2

Question Number : 92 Question Id : 61097514720 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The process of killing pathogenic bacteria in water is called

Options :

1. Softening

2. Osmosis

3. Sterilization

4. Reverse osmosis

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Question Number : 93 Question Id : 61097514721 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The metal oxide film that can easily undergo corrosion is

Options :

1. Stable

2. Porous

3. Volatile

4. Unstable

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Question Number : 94 Question Id : 61097514722 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

In galvanised articles. which metal protects the base metal?

Options :

1. Fe

2. Cu

3. Zn

4. Pb

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Question Number : 95 Question Id : 61097514723 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following is thermosetting plastic?

Options :

1. PVC

2. Bakelite

3. Polystyrene

4. Teflon

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Question Number : 96 Question Id : 61097514724 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Natural rubber is a polymer of:

Options :

1. Isoprene

2. Ethylene

3. Vinyl chloride

4. Styrene

Question Number : 97 Question Id : 61097514725 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Ebonite is a :

Options :

1. PVC

2. Synthetic rubber

3. Highly vulcanised rubber

4. Polystyrene

Question Number : 98 Question Id : 61097514726 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

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Orientation : Vertical

The coal having the highest ranking is

Options :

1. Anthracite

2. Peat

3. Lignite

4. Bituminous

Question Number : 99 Question Id : 61097514727 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following causes Minamata disease

Options :

1. Argan

2. Sulphur

3. Mercury

4. Nitrogen

Question Number : 100 Question Id : 61097514728 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following is not a green house gas?

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Options :

1. Carbon dioxide

2. Methane gas

3. Water vapour

4. Nitrogen gas

Metallurgical Engineering

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

Question Number : 101 Question Id : 61097514729 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Screen capacity is expressed in terms of

Options :

1. Tons hr

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2. Tons m^2

3. Tons sec^2

4. Tons $hr.m^2$

Question Number : 102 Question Id : 61097514730 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Cyclones are primarily used for

Options :

1. Classification

2. Concentration

3. Dewatering

4. Comminution

Question Number : 103 Question Id : 61097514731 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

In which of the following processes the chemical combination between the metal sought and other elements is not broken up ?

Options :

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1. Hydrometallurgy

2. Mineral dressing

3. Pyrometallurgy

4. Electrometallurgy

Question Number : 104 Question Id : 61097514732 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which is the most common form of ore roasting ?

Options :

1. Oxidizing roasting

2. Chloridizing

3. Suspension roasting

4. Sulfatizing

Question Number : 105 Question Id : 61097514733 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Bayer's process is used for purification of

Options :

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1. Aluminum

2. Aluminate

3. Bauxite

4. Cryolite

Question Number : 106 Question Id : 61097514734 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The main raw material for manufacture of silicon carbide refractories is

Options :

1. Corundum

2. Carborundum

3. Bauxite

4. Periclase

Question Number : 107 Question Id : 61097514735 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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Silica percentage in silica refractories used in the walls of coke oven is about

Options :

1. 45%

2. 55%

3. 75%

4. 90%

Question Number : 108 Question Id : 61097514736 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

M_{10} index of coke indicates

Options :

1. Compressive strength

2. Abrasion resistance

3. Impact strength

4. Hardness

Question Number : 109 Question Id : 61097514737 Question Type : MCQ Display Question

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

Orientation : Vertical

The lowest temperature to which the fuel must be preheated so that it

starts burning smoothly is called _____ temperature

Options :

1. Ignition

2. Combustion

3. Boiling point of fuel

4. Preheating

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Question Number : 110 Question Id : 61097514738 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

The calorific value of a producer gas is around -------Kcal Nm^3

Options :

1. 500

2. 1300

3. 4500

4. 9000

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Question Number : 111 Question Id : 61097514739 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following has the highest heat of combustion?

Options :

1. CO

2. CH_4

3. C_2H_6

4. H_2

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Question Number : 112 Question Id : 61097514740 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Perfect ordered pure material will always have

Options :

1. Configurational entropy

2. Thermal entropy

3. Negative entropy

4. Maximum entropy

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Question Number : 113 Question Id : 61097514741 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Free energy change for vaporization of pure substance is

Options :

1. Unity

2. Zero

3. Positive

4. Negative

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Question Number : 114 Question Id : 61097514742 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Easy ignition of coal requires

Options :

1. Fixed carbon

2. Hydrogen

3. Oxygen

4. Volatile matter

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Question Number : 115 Question Id : 61097514743 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

What is the valve of free energy in Ellingham diagram for ($m+o_2 \rightarrow mo_2$)

Options :

1. $\Delta G^0 = +RTlnk$

2. $\Delta G^0 = -RTlnPo_2$

3. $\Delta G^0 = Po_2\ Po$

4. $\Delta G^0 = RTlnPo_2$

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Question Number : 116 Question Id : 61097514744 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

According to Lechatelier principle if we decrease the pressure of the system the chemical reaction proceeds towards

Options :

1. Lower gas moles → lower moles (at constant V)

2. Higher gas moles → lower moles (at constant T)

3. Lower gas moles → higher moles & V increases

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4. Reaction will occur but no change in moles

Question Number : 117 Question Id : 61097514745 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the below equation is true?

Options :

1. $a_A = p_B\ p_A$

2. $a_A = p^0_A\ p_A$

3. $a_A = f^0_A\ f_B$

4. $a_A = p_A\ (x_A = 1)\ p_A\ (x_A = 1)$

Question Number : 118 Question Id : 61097514746 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following is NOT an intensive property?

Options :

1. Temperature

2. Pressure

3. Volume

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4. Refractive index

Question Number : 119 Question Id : 61097514747 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The solution which shows positive or negative deviation from Raoult's law is called

Options :

1. Ideal solution

2. True solution

3. Non-ideal solution

4. Colloidal solution

Question Number : 120 Question Id : 61097514748 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

What are the examples of metals that undergo volume expansion during solidification (liquid→solid) ?

Options :

1. $\alpha -$ iron

2. Ductile gray cast iron

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3. Gray cast iron & Antimony

4. Al

Question Number : 121 Question Id : 61097514749 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Hardenability of steel does not depend up on the -------

Options :

1. Alloy content

2. Grain size

3. Amount of carbon present

4. Amount of cold work

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Question Number : 122 Question Id : 61097514750 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The Condition for dendritic growth is

Options :

1. Temperature in liquid rises ahead of interface

2. +ve temperature gradient

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3. Temperature inversion

4. No effect of temperature

Question Number : 123 Question Id : 61097514751 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Degree of freedom at single phase region of binary phase diagram (at one atm pressure)

Options :

1. F=0

2. F=3

3. F=2

4. F=1

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Question Number : 124 Question Id : 61097514752 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following is used for prediction of chemical composition of phases in phase diagram?

Options :

1. Tie line

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2. Solvus line

3. Lever rule

4. Freezing range line

Question Number : 125 Question Id : 61097514753 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

At what wt% C. the peritectic reaction takes place ($T=1493^0C$)

Options :

1. 0.1 wt % C

2. 0.8 wt % C

3. 0.18 wt % C

4. 0.5 wt % C

Question Number : 126 Question Id : 61097514754 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

What is the ratio of tetrahedral voids number of atoms per unit cell of BCC

Options :

1. 3:1

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2. 1:1

3. 2:1

4. 6:1

Question Number : 127 Question Id : 61097514755 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Twin system for FCC

Options :

1. $(10\bar{1}2)[\bar{1}011]$

2. $(110)[111]$

3. $(112)[111]$

4. $(111)[112]$

Question Number : 128 Question Id : 61097514756 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The Relation between a & r for Diamond cubic system is

Options :

1. $a=8r/(\sqrt{3})$

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2. $a= 2(\sqrt{2}r)$

3. $a=2r$

4. $a=6r\ (\sqrt{3})$

Question Number : 129 Question Id : 61097514757 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

What is the curie temperature for Fe_3C (cementite)

Options :

1. 727^0 C

2. 910^0 C

3. 210^0 C

4. 240^0 C

Question Number : 130 Question Id : 61097514758 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Pearlite consists of

Options :

1. 6.67 % Carbon & 93.3% Iron

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2. 87% Fe_3C & 13 % Y - Fe

3. 13% Fe_3 C & 87% Ferrite

4. 13% Carbon & 87% Ferrite

Question Number : 131 Question Id : 61097514759 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The refractory lining of the bottom in a basic electric arc furnace is made of

Options :

1. Silica

2. Aluminium

3. Magnesia

4. Fire clay

Question Number : 132 Question Id : 61097514760 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Lower critical temperature (A_1) in Iron-Iron carbide diagram is

Options :

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1. 527^0 C

2. 727^0 C

3. 911^0 C

4. 1137^0 C

Question Number : 133 Question Id : 61097514761 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The percentage of carbon in hypo-eutectoid steel is

Options :

1. <0.022%

2. <0.077%

3. <0.033

4. =6.77%

Question Number : 134 Question Id : 61097514762 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

TTT diagrams stand for

Options :

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1. Time. temperature and transformation

2. Temperature. transformation and time

3. Temperature. time and transformation

4. Time. transformation and temperature

Question Number : 135 Question Id : 61097514763 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Martensite is formed from Austenite on

Options :

1. Fast cooling

2. Slow cooling

3. Moderate cooling

4. Room temperature

Question Number : 136 Question Id : 61097514764 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The Crystal structure of γ-Austenite is

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Options :

1. BCC

2. FCC

3. HCP

4. Tetrahedron

Question Number : 137 Question Id : 61097514765 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The iron-carbon diagram and the TTT curves are determined under

Options :

1. Equilibrium and non-equilibrium conditions respectively

2. Non-equilibrium and equilibrium conditions respectively

3. Equilibrium conditions for both

4. Non- Equilibrium conditions for both

Question Number : 138 Question Id : 61097514766 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Heat treatment of metal is necessary

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Options :

1. To produce certain desired properties

2. To make good appearance on the component

3. To increase strength of material

4. To make the metal rust proof

Question Number : 139 Question Id : 61097514767 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which one of the following structure of steel is obtained due to the drastic cooling from the austenite structure?

Options :

1. Pearlite

2. Cementite

3. Martensite

4. Ferrite

Question Number : 140 Question Id : 61097514768 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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The toughness in a steel is increased and brittleness is decreased by a heat treatment operation called as

Options :

1. Normalizing

2. Tempering

3. Case hardening

4. Annealing

Question Number : 141 Question Id : 61097514769 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The purpose of Normalizing steel is to

Options :

1. Improve machinability

2. Remove induced stresses

3. Soften the steel

4. Increase the toughness and reduce brittleness

Question Number : 142 Question Id : 61097514770 Question Type : MCQ Display Question

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

Orientation : Vertical

In heat treatment process Annealing is done to

Options :

1. Increase toughness

2. Increase hardness

3. Increase softness

4. Increase brittleness

Question Number : 143 Question Id : 61097514771 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

Red or reddish black iron ore contains mainly

Options :

1. Hematite

2. magnetite

3. limonite

4. carbonate

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Question Number : 144 Question Id : 61097514772 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Average iron content in Indian iron ore is ---------- %

Options :

1. 40

2. 60

3. 80

4. 90

Question Number : 145 Question Id : 61097514773 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Finest dust particles present in Blast Furnace gas are removed by

Options :

1. Dust catchers

2. Electrostatic precipitators

3. Hydro cyclone

4. Wet scrubbers

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Question Number : 146 Question Id : 61097514774 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Chief source of Sulphur in the blast furnace charge is

Options :

1. coke

2. iron ore

3. sinter

4. flux

Question Number : 147 Question Id : 61097514775 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Salamander tapping in the blast furnace is done after

Options :

1. Blowing in

2. Blowing out

3. Banking

4. Back droughting

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Question Number : 148 Question Id : 61097514776 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Interruption of uniform descent of the burden in the blast furnace either by wedging bridging in the stack is called

Options :

1. hanging

2. slipping

3. pillaring

4. capping

Question Number : 149 Question Id : 61097514777 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Blast furnace slag granulates are used in the ---------- making

Options :

1. road

2. cement

3. rail tracks

4. buildings

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Question Number : 150 Question Id : 61097514778 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Open hearth furnaces can`t be heated by burning of --------

Options :

1. oil

2. pulverized coal

3. gas

4. coke

Question Number : 151 Question Id : 61097514779 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which steel making furnace has no oxidizing atmosphere of it`s own

Options :

1. L.D converter

2. Open heart furnace

3. Electric furnace

4. Bessemer

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Question Number : 152 Question Id : 61097514780 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The problem of pipe forming is most serious in the case of ----- steels

Options :

1. Capped

2. Killed

3. Rimming

4. Semi-killed

Question Number : 153 Question Id : 61097514781 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Vacuum refining of liquid steels aims of reducing the -------content

Options :

1. Carbon

2. Dissolved gases

3. Metallic inclusions

4. Dust particles

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Question Number : 154 Question Id : 61097514782 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The nozzle used in the lance LD steel making process is ---------

Options :

1. Convergent-divergent

2. Convergent

3. Divergent

4. Divergent- convergent

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Question Number : 155 Question Id : 61097514783 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

What Is the oxide form of a Copper ore ?

Options :

1. Chalcopyrite

2. Covellite

3. Chalcocite

4. Cuprite

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Question Number : 156 Question Id : 61097514784 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

What is the chemical formula for magnetite ?

Options :

1. $Mg(OH)_2$

2. $Mg_2(SiO)_4$

3. $MgCO_3$

4. $MgCO_3\ CaCO_3$

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Question Number : 157 Question Id : 61097514785 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Chemical reagent used for zircon decomposition process is

Options :

1. NaOH

2. H_2SO_4

3. H_2O

4. NaCl

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Question Number : 158 Question Id : 61097514786 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which metal is extracted by leaching

Options :

1. Gold

2. Iron

3. Lead

4. Aluminium

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Question Number : 159 Question Id : 61097514787 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which one of the following processes has the objective of selective dissolution of metal ?

Options :

1. Roasting

2. Converting

3. Leaching

4. Cementation

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Question Number : 160 Question Id : 61097514788 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

In froth floatation process . which one of the following acts as a depressor ?

Options :

1. $NaCN$

2. $CuSO_4$

3. Pine oil

4. Thio carbonates

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Question Number : 161 Question Id : 61097514789 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Metals that undergo self reduction are

Options :

1. Pb.Cu

2. Zn.Al

3. Pb.Cu.Hg

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4. Au.Ag

Question Number : 162 Question Id : 61097514790 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The chief impurity present in red bauxite is --------

Options :

1. SiO_2

2. K_2SO_4

3. Fe_2O_3

4. NaF

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Question Number : 163 Question Id : 61097514791 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The extraction of which of the following metals involves bessemerization?

Options :

1. Cu

2. Al

3. Ag

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4. Fe

Question Number : 164 Question Id : 61097514792 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The process of mixing bauxite ore with coke and heating at 1800^0 C in the presence of nitrogen for purification of bauxite ore is known as

Options :

1. Bayer`s process

2. Hall`s process

3. Serpeck`s process

4. Electrolytic reduction

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Question Number : 165 Question Id : 61097514793 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The ability of a material to resist deformation within the linear range is

known as

Options :

1. Ultimate Strength

2. Modulus of Elasticity

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3. Modulus of Rigidity

4. Proportional Limit

Question Number : 166 Question Id : 61097514794 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

In what units are the Brinell hardness number and Rockwell hardness expressed?

Options :

1. Kgf/mm^2 and No units

2. N/mm^2 and Kgf/mm^2

3. Kg/mm^2 and $N-mm^2$

4. Kg/mm^2 and No units

Question Number : 167 Question Id : 61097514795 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Cast iron shell be subjected to how many cycles before failure in Wohler's Fatigue test (S-N curve) ?

Options :

1. 1,00,000

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2. 10.00.000

3. 10.000.000

4. 100.000.000

Question Number : 168 Question Id : 61097514796 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Microporosity of castings is due to

Options :

1. Eutectic freezing

2. Short range freezing

3. Long range freezing

4. Peritectic freezing

Question Number : 169 Question Id : 61097514797 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

It is difficult to detect internal cracks using

Options :

1. Liquid penetration test

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2. Ultrasonic test

3. Magnetic particle test

4. X-ray Radiography

Question Number : 170 Question Id : 61097514798 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following statements is are true for the ultrasonic test?

Options :

1. Equipment used for ultrasonic testing is portable

2. Complicated shapes can be easily scanned

3. Waves generated are health hazardous

4. Waves generated are health hazardous and complicated shapes can be easily scanned

Question Number : 171 Question Id : 61097514799 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Visible, solvent removable penetrants are most advantageous for

Options :

1. Inspecting parts with rough surfaces

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2. Inspecting batches of small parts

3. Inspecting parts at remote locations

4. Inspecting parts with porous surfaces

Question Number : 172 Question Id : 61097514800 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following is a true statement in Ultrasonic testing?

Options :

1. Higher frequencies produce lower sensitivity

2. Higher frequencies produce longer wavelengths

3. Thicker crystals produce lower frequency transducers

4. Longer wavelengths produce higher sensitivity

Question Number : 173 Question Id : 61097514801 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Maximum principal stress theory is for -------- materials

Options :

1. Brittle

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2. Ductile

3. High entropy

4. Creep

Question Number : 174 Question Id : 61097514802 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which parameter has highest stress value on engineering stress-strain curve in elastic region ?

Options :

1. Elastic limit (E)

2. Proportionality limit (P)

3. Yield strength (y_0)

4. Resilience point

Question Number : 175 Question Id : 61097514803 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

For a Poisson's ratio of 0.5 , what is the value of volumetric strain (Δ) ?

Options :

1. Constant

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2. 1

3. 0

4. 2 4

Question Number : 176 Question Id : 61097514804 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

In sheet metal forming stretcher strain occur in ------

Options :

1. Duralumin sheets

2. Low carbon steel sheets

3. Ni- base alloy sheet

4. Austenitic stainless steel sheet

Question Number : 177 Question Id : 61097514805 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Condition for low strain hardening is

Options :

1. n=e

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2. $n=0.5$

3. $n=0$

4. $n=\ln(1+e)$

Question Number : 178 Question Id : 61097514806 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Uniaxial tension biaxial compression is used for

Options :

1. Rolling

2. Sheet forming

3. Extrusion

4. Deep drawing

Question Number : 179 Question Id : 61097514807 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Extrusion pressure is proportional to ----

Options :

1. Reduction in area (r)

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2. Extrusion ratio (R)

3. Natural logarithm of r

4. Natural logarithm of R

Question Number : 180 Question Id : 61097514808 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The maximum working temperature is determined by

Options :

1. Melting point

2. Hot shortness temperature

3. Recrystallization temperature

4. Work hardening

Question Number : 181 Question Id : 61097514809 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Axles and shafts are manufactured by

Options :

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1. Powder forging

2. Press forging

3. Open die forging

4. Closed die forging

Question Number : 182 Question Id : 61097514810 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Springback in sheet metal bending depends upon

Options :

1. Elastic limit

2. Bend radius

3. Degree of bend

4. Thickness of sheet

Question Number : 183 Question Id : 61097514811 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The pattern shrinkage allowance to be used for gray cast iron is ------

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Options :

1. 6.9 -10.4 mm meter

2. 1.3 – 2.7 mm meter

3. 12.5 – 18.7 mm meter

4. 29.6 – 43.5 mm meter

Question Number : 184 Question Id : 61097514812 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The size tolerance for grey cast iron casting weighing more than 0.5 ton is

about

Options :

1. 6.2 mm

2. 1.6 mm

3. 8.4 mm

4. 12.6 mm

Question Number : 185 Question Id : 61097514813 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

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Orientation : Vertical

Flux used in Aluminium alloy melting is based on

Options :

1. Chlorides

2. Silicates

3. Oxides

4. Sulphides

Question Number : 186 Question Id : 61097514814 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

True centrifugal casting is used to ---------

Options :

1. Obtain high density & purity casting

2. Ensure purity & density at extremes of a casting

3. Cast symmetrical objects

4. Forced into mould under high pressure

Question Number : 187 Question Id : 61097514815 Question Type : MCQ Display Question

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

Orientation : Vertical

In die casting process molten metal is ------

Options :

1. Pored non-uniformly

2. Forced into mould under high pressure

3. Pored through the charging pipes

4. Fed into the cavity in metallic mould by gravity

Question Number : 188 Question Id : 61097514816 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

In foundry practice the fluidity of an alloy does not increase with increasing

Options :

1. Channel size

2. superheat

3. Flow velocity

4. Heat transfer coefficient

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Question Number : 189 Question Id : 61097514817 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

CO_2 moulding is carried out using -----

Options :

1. Sodium silicate

2. Cast iron

3. Phenol formaldehyde

4. Non-ferrous alloy

Question Number : 190 Question Id : 61097514818 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

In a casting cold shut defect is caused by ----

Options :

1. Low pouring temperature

2. Melt mould reaction

3. Faulty gating reaction

4. Very low mould permeability

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Question Number : 191 Question Id : 61097514819 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Feed heads . feeders and risers in casting serve to provide sources of molten metal to compensate for ---

Options :

1. Misruns
2. Cold shuts
3. Hot tears
4. Shrinkage

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Question Number : 192 Question Id : 61097514820 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The most commonly used flame in gas welding is....

Options :

1. Neutral
2. Oxidizing
3. Carburizing
4. Hydrogen

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Question Number : 193 Question Id : 61097514821 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following is strongest for brazing joints?

Options :

1. Butt

2. Scarf(inclined)

3. Lap

4. All are of equal strength

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Question Number : 194 Question Id : 61097514822 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Arc length in arc welding should be equal to…

Options :

1. Half the diameter of electrode rod

2. Rod diameter

3. Twice the rod diameter

4. 2.5 times the rod diameter

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Question Number : 195 Question Id : 61097514823 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The following welding process uses consumable electrodes

Options :

1. TIG

2. MIG

3. Thermit

4. Gas

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Question Number : 196 Question Id : 61097514824 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The mixture of iron oxide and aluminium oxide are used in Thermit welding is

Options :

1. 1:1

2. 1:2

3. 1:3

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4. 3:1

Question Number : 197 Question Id : 61097514825 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Voltage used in resistance welding is

Options :

1. 1 V

2. 10 V

3. 100 V

4. 1000V

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Question Number : 198 Question Id : 61097514826 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

In MIG welding helium or argon is used in order to

Options :

1. Provide cooling effect

2. Act as flux

3. Protect electrode

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4. Act as a shielding medium

Question Number : 199 Question Id : 61097514827 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Acetylene gas is generated form of

Options :

1. Carbon

2. Calcium

3. Calcium carbonate

4. Calcium carbide

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Question Number : 200 Question Id : 61097514828 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following defects occur due to melting or burning away of base metal?

Options :

1. Undercut

2. Hot cracking

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3. Cracking in weld metal

4. Cold cracking

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