

Telangana State Council 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 11th May 2019 Shift1
Subject Name:	Metallurgical Engineering
Creation Date:	2019-05-11 13:35:20
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Actual Answer Key:	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?:	No

Metallurgical Engineering

Group Number :	1
Group Id :	89465823
Group Maximum Duration :	0
Group Minimum Duration :	180
Revisit allowed for view? :	No
Revisit allowed for edit? :	No
Break time:	0
Group Marks:	200

Mathematics

Section Id :	89465887
Section Number :	1
Section type :	Online
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:	No

Sub-Section Number: 1
Sub-Section Id: 89465897
Question Shuffling Allowed : Yes

Question Number : 1 Question Id : 8946584409 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✘ 0
2. ✘ 1
3. ✔ -1
4. ✘ 11

Question Number : 2 Question Id : 8946584410 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

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

Options :

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

Question Number : 3 Question Id : 8946584411 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✓ -5

2. ✗ 5

3. ✗ 3

4. ✗ 1

Question Number : 4 Question Id : 8946584412 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✗ $A(\alpha, \beta)$

2. ✗ $A(\alpha, -\beta)$

3. ✓ $A(-\alpha, -\beta)$

4. ✗ $A(-\alpha, \beta)$

Question Number : 5 Question Id : 8946584413 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

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

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

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

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

Question Number : 6 Question Id : 8946584414 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✗ $\frac{1-2ac}{2c+abc+1}$

2. ✗ $\frac{1-2ac}{2c-abc-1}$

3. ✗ $\frac{1+2ac}{2c-abc-1}$

4. ✓ $\frac{1+2ac}{2c+abc+1}$

Question Number : 7 Question Id : 8946584415 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$$\cos \frac{2\pi}{7} + \cos \frac{4\pi}{7} + \cos \frac{6\pi}{7} = \text{_____}.$$

Options :

1. ✗ 1

2. ✗ $\frac{1}{2}$

3. ✓ $\frac{-1}{2}$

4. ✘ 0

Question Number : 8 Question Id : 8946584416 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

expression $\frac{a}{c} \sin 2C + \frac{c}{a} \sin 2A$ is —.

Options :

1. ✔ $\sqrt{3}$

2. ✘ $\frac{\sqrt{3}}{2}$

3. ✘ 1

4. ✘ $\frac{1}{2}$

Question Number : 9 Question Id : 8946584417 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✔ $\frac{7}{24}$

2. ✘ $\frac{24}{7}$

3. ✘ $\frac{3}{4}$

4. ✘ 1

Question Number : 10 Question Id : 8946584418 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✘ 50°

2. ✘ 30°

3. ✘ 16°

4. ✔ 8°

Question Number : 11 Question Id : 8946584419 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✔ $\left(\frac{63}{16}, 15\right)$

2. ✘ $\left(\frac{16}{63}, 15\right)$

3. ✘ $\left(\frac{63}{16}, 5\right)$

4. ✘ $\left(\frac{16}{63}, 5\right)$

Question Number : 12 Question Id : 8946584420 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✓ unique solution $x = 2$
2. ✗ two solutions $x = 1, 2$
3. ✗ no solution
4. ✗ infinite number of solutions

Question Number : 13 Question Id : 8946584421 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

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

Options :

1. ✗ 30°
2. ✗ 90°
3. ✓ 60°
4. ✗ 45°

Question Number : 14 Question Id : 8946584422 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✓ $\log(3 + \sqrt{10})$
2. ✗ $\log(3 - \sqrt{10})$

3. ✘ $\log(6 + \sqrt{10})$

4. ✘ 1

Question Number : 15 Question Id : 8946584423 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

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

2. ✘ $|z_1 + z_2| \leq |z_1| + |z_2|$

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

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

Question Number : 16 Question Id : 8946584424 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✘ $2\sqrt{2} + 2i$

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

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

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

Question Number : 17 Question Id : 8946584425 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

such that $r + s = 5$ and $rs = 6$ is $ax + by + c = 0$, then $a + b + c = \underline{\hspace{2cm}}$.

Options :

1. ✘ 11

2. ✘ 5

3. ✘ -7

4. ✔ -1

Question Number : 18 Question Id : 8946584426 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✘ $5(a^2 + b^2) = 1$

2. ✘ $a^2 + b^2 = \sqrt{5}$

3. ✔ $a^2 + b^2 = 1$

4. ✘ $\sqrt{a^2 + b^2} = 5$

Question Number : 19 Question Id : 8946584427 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✓ 14 cm

2. ✗ $\sqrt{304}$ cm

3. ✗ 4 cm

4. ✗ $\sqrt{124}$ cm

Question Number : 20 Question Id : 8946584428 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✗ $\frac{x-2019}{e^x}$

2. ✗ $\frac{2019-x}{e^x}$

3. ✗ $\frac{x-2020}{e^x}$

4. ✓ $\frac{2020-x}{e^x}$

Question Number : 21 Question Id : 8946584429 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

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

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

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

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

Question Number : 22 Question Id : 8946584430 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✘ 0

2. ✘ U

3. ✔ $-U$

4. ✘ $2U$

Question Number : 23 Question Id : 8946584431 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✘ 3

2. ✔ 75

3. ✘ $\frac{1}{3}$

4. ✘ $\frac{1}{75}$

Question Number : 24 Question Id : 8946584432 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✘ $1 < x < 2$

2. ✘ all $x \in \mathbb{R}$

3. ✔ $\mathbb{R} - [1, 2]$

4. ✘ $x \geq 2$

Question Number : 25 Question Id : 8946584433 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✘ e^2

2. ✘ ∞

3. ✘ 1

4. ✔ 2

Question Number : 26 Question Id : 8946584434 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✘ 2

2. ✘ 4

3. ✘ e

4. ✔ 3

Question Number : 27 Question Id : 8946584435 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✔ 5100

2. ✘ 1

3. ✘ 5050

4. ✘ $\frac{1}{2}$

Question Number : 28 Question Id : 8946584436 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✘ 0

2. ✘ $\frac{1}{2}$

3. ✔ $\frac{9}{16}$

4. ✘ $\frac{9}{8}$

Question Number : 29 Question Id : 8946584437 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✔ $\frac{1}{6}$

2. ✘ $\frac{1}{5}$

3. ✘ 1

4. ✘ 6

Question Number : 30 Question Id : 8946584438 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✘ 0

2. ✔ $\frac{22}{7} - \pi$

3. ✘ $\frac{2}{105}$

4. ✘ $\frac{71}{15} - \frac{3\pi}{4}$

Question Number : 31 Question Id : 8946584439 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✘ 1
2. ✘ $\frac{8}{19}$
3. ✘ $\frac{35}{4}$
4. ✔ $\frac{27}{6}$

Question Number : 32 Question Id : 8946584440 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The volume of the solid obtained by revolving the region bounded by the curves $y = x^3$, $y = 8$ and $x = 0$ about the y -axis is _____

Options :

1. ✘ $\frac{96}{5}$
2. ✔ $\frac{96\pi}{5}$
3. ✘ $\frac{32\pi}{5}$
4. ✘ $\frac{32}{5}$

Question Number : 33 Question Id : 8946584441 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✔ $\frac{\pi^2}{32}$

2. ✘ $\frac{\pi}{32}$

3. ✘ $\frac{\pi^2}{16}$

4. ✘ $\frac{\pi}{16}$

Question Number : 34 Question Id : 8946584442 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✘ 5

2. ✘ $\frac{20}{3}$

3. ✔ $\frac{5}{3}$

4. ✘ 1

Question Number : 35 Question Id : 8946584443 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✔ infinitely many solutions

2. ✘ no solution

3. ✘ a unique solution

4. ✘ exactly two solutions

Question Number : 36 Question Id : 8946584444 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✘ $a = 1, b = \frac{3}{2}$

2. ✘ $a = \frac{3}{2}, b = 1$

3. ✔ $a = \frac{2}{3}, b = 1$

4. ✘ $a = 1, b = \frac{2}{3}$

Question Number : 37 Question Id : 8946584445 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

then the general solution is _____.

Options :

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

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

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

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

Question Number : 38 Question Id : 8946584446 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✓ $-xe^{2x} \cos 3x$

2. ✗ $xe^{2x} \cos 3x$

3. ✗ $-xe^{2x} \sin 3x$

4. ✗ $xe^{2x} \sin 3x$

Question Number : 39 Question Id : 8946584447 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

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

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

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

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

Question Number : 40 Question Id : 8946584448 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

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

Options :

1. ✘ $\frac{2}{e} - \frac{2}{e^2}$

2. ✔ $2e^{-2}$

3. ✘ $2 - \frac{2}{e}$

4. ✘ $2 - 2e$

Question Number : 41 Question Id : 8946584449 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

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

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

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

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

Question Number : 42 Question Id : 8946584450 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✘ $y = \frac{1}{ce^x - \sin x}$

2. ✘ $y = ce^{-x} - e^x \sin x$

3. ✘ $y = ce^{-x} - \sin x$

4. ✔ $y = \frac{1}{ce^{-x} - \sin x}$

Question Number : 43 Question Id : 8946584451 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

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

is _____.

Options :

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

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

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

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

Question Number : 44 Question Id : 8946584452 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

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

Options :

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

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

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

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

Question Number : 45 Question Id : 8946584453 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
 Single Line Question Option : No Option Orientation : Vertical
 Correct Marks : 1 Wrong Marks : 0

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

_____.

Options :

1. ✔ 0

2. ✘ 3

3. ✘ ∞

4. ✘ $\frac{1}{2}$

Question Number : 46 Question Id : 8946584454 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
 Single Line Question Option : No Option Orientation : Vertical
 Correct Marks : 1 Wrong Marks : 0

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

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

Options :

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

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

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

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

Question Number : 47 Question Id : 8946584455 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

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

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

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

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

Question Number : 48 Question Id : 8946584456 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For $x > 0$, $\int_0^{\infty} \frac{\sin xt}{t} dt$ is _____.

Options :

1. ✘ 0

2. ✘ $\frac{\pi}{2x}$

3. ✘ $\frac{1}{x}$

4. ✔ $\frac{\pi}{2}$

Question Number : 49 Question Id : 8946584457 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

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

Options :

1. ✘ $a_n = 0$, for all $n \geq 0$

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

3. ✘ $b_n \neq 0$, for all $n \geq 1$

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

Question Number : 50 Question Id : 8946584458 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

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

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

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

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

Physics

Section Id :	89465888
Section Number :	2
Section type :	Online
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:	No

Sub-Section Number:	1
Sub-Section Id:	89465898
Question Shuffling Allowed :	Yes

Question Number : 51 Question Id : 8946584459 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The dimensional formula for gravitational constant is _____.

Options :

1. ✓ $L^3T^{-2}M^{-1}$

2. ✗ $L^3T^2M^{-1}$

3. ✗ $L^2T^3M^{-2}$

4. ✗ $L^3T^1M^{-3}$

Question Number : 52 Question Id : 8946584460 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

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

Note: For this question, ambiguity is found in question/answer. Candidate will get full marks for this question if any of the correct options are chosen.

Question Number : 53 Question Id : 8946584461 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is not correct?

Options :

1. ✗ $j \times i = -k$
2. ✗ $k \times j = -i$
3. ✗ $i \times k = -j$
4. ✓ $k \times i = -j$

Question Number : 54 Question Id : 8946584462 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✗ $\sqrt{0.89}$
2. ✗ 0.2
3. ✗ 0.3

4. ✓ $\sqrt{0.11}$

Question Number : 55 Question Id : 8946584463 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Which of the following is correct?

Options :

1. ✗ $A.B \neq B.A$

2. ✓ $A.(B+C) = A.B + C.A$

3. ✗ $A.B = A.B - A.C$

4. ✗ $A.B = -B.A$

Question Number : 56 Question Id : 8946584464 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✗ G

2. ✓ GM/R^2

3. ✗ GM/R

4. ✗ GM

Question Number : 57 Question Id : 8946584465 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The value of g is maximum at _____.

Options :

1. ✗ equator

2. ✓ Pole

3. ✘ higher altitudes

4. ✘ at the centre of the earth

Question Number : 58 Question Id : 8946584466 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

When the speed of rotation of earth increases your weight _____

Options :

1. ✘ increases

2. ✔ decreases

3. ✘ remains constant

4. ✘ becomes zero

Question Number : 59 Question Id : 8946584467 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The value of G is zero at _____

Options :

1. ✔ nowhere

2. ✘ the centre of the earth

3. ✘ surface of the earth

4. ✘ pole

Question Number : 60 Question Id : 8946584468 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✘ 50%

2. ✘ 100%

3. ✔ 125%

4. ✘ 25%

Question Number : 61 Question Id : 8946584469 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✔ both will reach the ground with the same velocity

2. ✘ both will reach the ground together

3. ✘ both will reach the ground travelling with same acceleration

4. ✘ the block sliding down the plane will strike earlier

Question Number : 62 Question Id : 8946584470 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✘ $u/24$

2. ✘ $u/5$

3. ✘ $5u$

4. ✔ $25u$

Question Number : 63 Question Id : 8946584471 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✘ 4:1

2. ✘ $\sqrt{2}:1$

3. ✔ 1:2

4. ✘ 1:16

Question Number : 64 Question Id : 8946584472 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✘ 7 m/s

2. ✘ 9.8 m/s

3. ✘ 4.9 m/s

4. ✔ $\sqrt{9.8}$ m/s

Question Number : 65 Question Id : 8946584473 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Note: For this question, discrepancy is found in question/answer. Full Marks is being awarded to all candidates.

Options :

1. $2\pi b$

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

3. $2\pi/b$

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

Question Number : 66 Question Id : 8946584474 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✘ 1 cm

2. ✘ $\sqrt{2}$ cm

3. ✘ 2 cm

4. ✔ $2\sqrt{2}$ cm

Question Number : 67 Question Id : 8946584475 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✘ green colour

2. ✘ yellow colour

3. ✔ blue end

4. ✘ red end

Question Number : 68 Question Id : 8946584476 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✓ 100
2. ✗ 90
3. ✗ 80
4. ✗ 900

Question Number : 69 Question Id : 8946584477 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

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

Question Number : 70 Question Id : 8946584478 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The quality of tone_____

Options :

1. ✗ decreases with loudness
2. ✗ varies inversely as amplitude
3. ✗ varies directly as pitch

4. ✓ depends on the overtones present

Question Number : 71 Question Id : 8946584479 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✗ reversible process

2. ✓ irreversible process

3. ✗ isothermal process

4. ✗ isobaric process

Question Number : 72 Question Id : 8946584480 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✗ CO₂ is a perfect gas

2. ✓ there is continuity of state

3. ✗ there is discontinuity of state

4. ✗ gases like CO₂ and H₂ cannot be liquefied

Question Number : 73 Question Id : 8946584481 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A diesel cycle works at _____

Options :

1. ✗ constant volume

2. ✓ constant pressure

3. ✘ constant temperature

4. ✘ both constant volume and constant temperature

Question Number : 74 Question Id : 8946584482 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✔ zero to 10 k

2. ✘ 10 k to 20 k

3. ✘ 20 k to 50 k

4. ✘ 50 k alone

Question Number : 75 Question Id : 8946584483 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Propagation of light through fiber core is due to _____

Options :

1. ✘ diffraction

2. ✘ interference

3. ✔ total internal reflection

4. ✘ reflection

Chemistry

Section Id :

89465889

Section Number :

3

Section type :

Online

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:	No

Sub-Section Number:	1
Sub-Section Id:	89465899
Question Shuffling Allowed :	Yes

Question Number : 76 Question Id : 8946584484 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following energy orders is correct?

Options :

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

Question Number : 77 Question Id : 8946584485 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

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

Question Number : 78 Question Id : 8946584486 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

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

Question Number : 79 Question Id : 8946584487 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

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

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

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

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

The elements that belong to same group are _____.

Options :

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

Question Number : 80 Question Id : 8946584488 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

_____.

Options :

1. ✘ 0.1 M
2. ✔ 0.025 M
3. ✘ 0.25 M
4. ✘ 0.01 M

Question Number : 81 Question Id : 8946584489 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✘ 98
2. ✘ 49
3. ✔ 32.66
4. ✘ 24.5

Question Number : 82 Question Id : 8946584490 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is the Bronsted acid?

Options :

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

Question Number : 83 Question Id : 8946584491 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The pH of 1 M KOH is _____.

Options :

1. ✘ 12

2. ✘ 11

3. ✔ 14

4. ✘ 13

Question Number : 84 Question Id : 8946584492 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Froth floatation process is used for the _____.

Options :

1. ✘ Oxide ores

2. ✔ Sulphide ores

3. ✘ Chloride ores

4. ✘ Oxide ores and Chloride ores

Question Number : 85 Question Id : 8946584493 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The composition of brass is _____.

Options :

1. ✔ Cu and Zn

2. ✘ Cu and Ni

3. ✘ Cu and Mn

4. ✘ Cu and Fe

Question Number : 86 Question Id : 8946584494 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following statements is correct?

Options :

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

Question Number : 87 Question Id : 8946584495 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

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

Question Number : 88 Question Id : 8946584496 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The unit of resistivity is _____.

Options :

1. ✘ Ω
2. ✔ $\Omega \text{ m}$

3. ✘ Ω / m

4. ✘ Ωm^2

Question Number : 89 Question Id : 8946584497 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following metals provide cathodic protection to iron?

Options :

1. ✘ Cu and Ni

2. ✔ Al and Zn

3. ✘ Al and Cu

4. ✘ Co and Ni

Question Number : 90 Question Id : 8946584498 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The chemical composition of rust is _____.

Options :

1. ✘ Fe_3O_4

2. ✘ Fe_3O_3

3. ✔ $Fe_2O_3 \cdot nH_2O$

4. ✘ $Fe_3O_3 \cdot xH_2O$

Question Number : 91 Question Id : 8946584499 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

1 ppm of hardness of water is equal to _____.

Options :

1. ✔ 1 part of $CaCO_3$ hardness in 10^6 parts of water

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

Question Number : 92 Question Id : 8946584500 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

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

Question Number : 93 Question Id : 8946584501 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The basic buffer solution is a mixture of _____.

Options :

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

Question Number : 94 Question Id : 8946584502 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following polymers has amide linkage?

Options :

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

Question Number : 95 Question Id : 8946584503 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The monomer of natural rubber is _____.

Options :

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

Question Number : 96 Question Id : 8946584504 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is a thermo setting?

Options :

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

Question Number : 97 Question Id : 8946584505 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The composition of water gas is _____.

Options :

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

Question Number : 98 Question Id : 8946584506 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Earth is protected from UV radiation by _____.

Options :

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

Question Number : 99 Question Id : 8946584507 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of following statements is not correct?

Options :

1. ✗ CO is the main air pollutant
2. ✗ All pollutants are not wastes
3. ✓ Water is polluted by dissolved Oxygen
4. ✗ Lichens are pollution indicators

Question Number : 100 Question Id : 8946584508 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Minamata disease is caused due to the presence of _____.

Options :

1. ✘ Cd
2. ✘ Pb
3. ✘ As
4. ✔ Hg

Metallurgical Engineering

Section Id :	89465890
Section Number :	4
Section type :	Online
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:	No

Sub-Section Number:	1
Sub-Section Id:	894658100
Question Shuffling Allowed :	Yes

Question Number : 101 Question Id : 8946584509 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following minerals of metal is adequately available in India?

Options :

1. ✔ Aluminium
2. ✘ Copper
3. ✘ Graphite
4. ✘ Uranium

Question Number : 102 Question Id : 8946584510 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

_____ method is one of the principal mineral exploration methods.

Options :

1. ✘ Radioactive
2. ✘ Seismic
3. ✔ Magnetic
4. ✘ Gravitational

Question Number : 103 Question Id : 8946584511 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Match the list in Group A with Group B and find the correct answer

Group A

- a. Collector
- b. Regulator
- c. Activator
- d. Frother

Group B

- I. Pine oil
- II. Copper sulphate
- III. Sodium ethyl xanthate
- IV. Lime

Options :

1. ✘ a-II, b-III, c-IV, d-I
2. ✘ a-IV, b-II, c-III, d-I
3. ✔ a-III, b-IV, c-II, d-I
4. ✘ a-I, b-III, c-II, d-IV

Question Number : 104 Question Id : 8946584512 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Match the metals listed in Group A with the corresponding ores given in Group B and find the correct answer.

Group A

- a. Lead
- b. Zinc
- c. Uranium
- d. Niobium

Group B

- I. Columbite
- II. Cassiterite
- III. Galena
- IV. Pitchblende
- V. Sphalerite

Options :

- 1. ✘ a-III, b-V, c-II, d-IV
- 2. ✘ a-III, b-II, c-V, d-IV
- 3. ✔ a-III, b-V, c-IV, d-I
- 4. ✘ a-III, b-IV, c-V, d-II

Question Number : 105 Question Id : 8946584513 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

_____metallurgical extraction methods are advantageous for lean and complex ores.

Options :

- 1. ✘ Pyro
- 2. ✘ Electro
- 3. ✘ Powder
- 4. ✔ Hydro

Question Number : 106 Question Id : 8946584514 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Match the extraction methods listed in Group A with the metals given in Group B and find the correct answer.

Group A

- a. Roasting followed by carbothermic reduction
- b. Electrolysis of fused salt
- c. Roasting followed by controlled oxidation
- d. Halide process

Group B

- I. Ti
- II. Pb
- III. Al
- IV. Cu
- V. Au

Options :

- 1. ✓ a-II, b-III, c-IV, d-I
- 2. ✗ a-V, b-IV, c-III, d-I
- 3. ✗ a-II, b-V, c-I, d-IV
- 4. ✗ a-III, b-II, c-V, d-I

Question Number : 107 Question Id : 8946584515 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Cyclones are primarily used for _____

Options :

- 1. ✗ Comminution
- 2. ✗ Dewatering
- 3. ✗ Concentration
- 4. ✓ Classification

Question Number : 108 Question Id : 8946584516 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Chalcopyrite is an ore of _____.

Options :

- 1. ✗ Iron

2. ✘ Zinc

3. ✔ Copper

4. ✘ Titanium

Question Number : 109 Question Id : 8946584517 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Heating of coal in absence of air at high temperature is called as _____

Options :

1. ✘ Gasification

2. ✘ Coalification

3. ✘ Run-of-mine

4. ✔ Carbonization

Question Number : 110 Question Id : 8946584518 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following fuels has high calorific value?

Options :

1. ✔ Carbureted water gas

2. ✘ Water gas

3. ✘ Producer gas

4. ✘ Blast furnace gas

Question Number : 111 Question Id : 8946584519 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Match Group A with Group B and find the correct answer

Group A

- a. Dulong formula
- b. Carbon
- c. Dwight-Lloyd machine
- d. Radiation

Group B

- I. Ultimate analysis
- II. Gray body
- III. Sintering
- IV. Refractory

Options :

- 1. ✘ a-I, b-II, c-III, d-IV
- 2. ✘ a-II, b-IV, c-III, d-I
- 3. ✔ a-I, b-IV, c-III, d-II
- 4. ✘ a-III, b-I, c-IV, d-II

Question Number : 112 Question Id : 8946584520 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

An example for basic refractory is _____

Options :

- 1. ✘ Quartz
- 2. ✔ Dolomite
- 3. ✘ Silica
- 4. ✘ Fire clay

Question Number : 113 Question Id : 8946584521 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Fire clay refractory contains _____ .

Options :

- 1. ✘ Al_2O_3
- 2. ✘ SiO_2

3. ✓ Al_2O_3 and SiO_2

4. ✗ MgO

Question Number : 114 Question Id : 8946584522 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For blast furnace hearth walls _____ refractories are used.

Options :

1. ✗ Silica

2. ✓ Carbon

3. ✗ Magnesite

4. ✗ SiC

Question Number : 115 Question Id : 8946584523 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which thermocouple of the following is used for temperature measurement of 1100°C in a furnace?

Options :

1. ✓ Chromel-Alumel

2. ✗ Copper-Constantan

3. ✗ Iron-Constantan

4. ✗ Chromel-Constantan

Question Number : 116 Question Id : 8946584524 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

IR pyrometers are very advantageous to measure the temperatures of _____ and above.

Options :

1. ✗ 150°C

2. ✗ -200°C

3. ✘ 450°C

4. ✔ 1300°C

Question Number : 117 Question Id : 8946584525 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Match the properties given in Group A with the units given in Group B and find the correct answer

Group A

Group B

a. Thermal conductivity

I. $\text{J/m}^2\text{-s-K}$

b. Heat transfer coefficient

II. J/m -s-K

c. Specific heat

III. m^2/s

d. Diffusivity

IV. J/mol-K

Options :

1. ✘ a-I, b-II, c-IV, d-III

2. ✘ a-II, b-III, c-I, d-IV

3. ✔ a-II, b-I, c-IV, d-III

4. ✘ a-II, b-IV, c-III, d-I

Question Number : 118 Question Id : 8946584526 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Critical value of the Gibb's energy of nucleation at equilibrium temperature is _____.

Options :

1. ✔ Infinite

2. ✘ Zero

3. ✘ Positive

4. ✘ Negative

Question Number : 119 Question Id : 8946584527 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following can give information about the corrosion rate?

Options :

1. ✘ Ellingham diagram
2. ✘ Pourbaix diagram
3. ✔ Tafel extrapolation
4. ✘ EMF series

Question Number : 120 Question Id : 8946584528 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following metals cannot be electroplated from aqueous electrolyte?

Options :

1. ✔ Al
2. ✘ Cu
3. ✘ Ni
4. ✘ Zn

Question Number : 121 Question Id : 8946584529 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following partial derivatives is equal to $\left(\frac{\partial S}{\partial V}\right)_T$?

Options :

1. ✘ $-\left(\frac{\partial S}{\partial V}\right)_T$
2. ✔ $-\left(\frac{\partial V}{\partial T}\right)_P$
3. ✘ $\left(\frac{\partial S}{\partial V}\right)_P$

4. ✘ $-\left(\frac{\partial V}{\partial T}\right)_S$

Question Number : 122 Question Id : 8946584530 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

One mole of element P is mixed with one mole of element Q. The entropy of mixing at 0 Kelvin temperature is _____

Options :

1. ✔ $-R \ln 0.5$

2. ✘ Infinity

3. ✘ Zero

4. ✘ $-R \ln 2$

Question Number : 123 Question Id : 8946584531 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In Ellingham diagram, the slope of the line represent is _____

Options :

1. ✔ $-\Delta S^\circ$

2. ✘ $-\Delta H^\circ$

3. ✘ ΔS°

4. ✘ ΔH°

Question Number : 124 Question Id : 8946584532 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

During the paramagnetic to ferromagnetic transition of iron, which property does abruptly change?

Options :

1. ✘ Entropy

- 2. ✘ Enthalpy
- 3. ✔ Heat capacity
- 4. ✘ Free energy

Question Number : 125 Question Id : 8946584533 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Driving force for grain growth after completion of recrystallization is _____.

Options :

- 1. ✔ Grain boundary energy
- 2. ✘ Dislocation density
- 3. ✘ Vacancy concentration
- 4. ✘ Stored energy

Question Number : 126 Question Id : 8946584534 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Match the list in Group A with Group B and find the correct answer

Group A

- a. Iron-silicon alloy
- b. Ga, As
- c. Nichrome
- d. Quartz crystals

Group B

- I. Heating element
- II. Ultrasonic generator
- III. Transformer core
- IV. Light emitting diode

Options :

- 1. ✔ a-III, b-IV, c-I, d-II
- 2. ✘ a-II, b-IV, c-I, d-III
- 3. ✘ a-I, b-III, c-IV, d-II

4. ✘ a-III, b-II, c-IV, d-I

Question Number : 127 Question Id : 8946584535 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The Miller indices of the common direction to (111) and (110) planes for a cubic system is _____

Options :

1. ✔ $[\bar{1}10]$

2. ✘ [110]

3. ✘ [101]

4. ✘ [111]

Question Number : 128 Question Id : 8946584536 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In continuous cooling of eutectoid steel, which phase of the following does not form?

Options :

1. ✘ Fully bainitic

2. ✘ Fully Pearlitic

3. ✘ Pearlitic and bainitic

4. ✔ Martensitic

Question Number : 129 Question Id : 8946584537 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Match the alloy names listed in Group A with the main elements present in them listed in Group B and find the correct answer

Group A

Group B

- a. Babbit
- b. Muntz metal
- c. Invar
- d. Inconel

- I. Fe-Ni
- II. Ni-Cr-Fe
- III. Cu-Zn
- IV. Sn-Sb-Cu

Options :

- 1. ✘ a-III, b-I, c-IV, d-II
- 2. ✘ a-III, b-IV, c-I, d-II
- 3. ✘ a-IV, b-I, c-II, d-III
- 4. ✔ a-IV, b-III, c-I, d-II

Question Number : 130 Question Id : 8946584538 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In heterogeneous nucleation, the critical radius of the nucleus does not depend on

_____.

Options :

- 1. ✘ Under cooling
- 2. ✘ Enthalpy change of product
- 3. ✘ Surface energy
- 4. ✔ Contact angle

Question Number : 131 Question Id : 8946584539 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For which of the following, the complete solid solubility is possible for the alloy system?

Options :

1. ✘ Cu-Zn
2. ✔ Cu-Ni
3. ✘ Fe-Cr
4. ✘ Pb-Sn

Question Number : 132 Question Id : 8946584540 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The self-diffusion in FCC metals occurs by one of the following mechanisms.

Options :

1. ✘ Interstitial
2. ✘ Substitutional
3. ✘ Interstitialcy
4. ✔ Vacancy

Question Number : 133 Question Id : 8946584541 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The eutectic reaction in a binary system is represented by _____

Options :

1. ✔ Liquid = Solid1 + Solid2
2. ✘ Liquid + Solid1 = Solid2
3. ✘ Solid = Solid1 + Solid2
4. ✘ Liquid1 + Liquid2 = Solid

Question Number : 134 Question Id : 8946584542 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For which unit cell of a crystal, $a = b \neq c$ and $\alpha = \beta = \gamma = 90^\circ$?

Options :

1. ✘ Cubic
2. ✘ Rhombohedral
3. ✔ Tetragonal
4. ✘ Orthorhombic

Question Number : 135 Question Id : 8946584543 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Nitriding is carried out in the region of _____

Options :

1. ✔ Ferrite
2. ✘ Ferrite and austenite
3. ✘ Austenite
4. ✘ Liquid

Question Number : 136 Question Id : 8946584544 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Normalizing is carried out to obtain _____ steels.

Options :

1. ✘ Soft
2. ✘ Brittle
3. ✔ Strong
4. ✘ Coarse grained

Question Number : 137 Question Id : 8946584545 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Match the list in Group A with Group B and find the correct answer

Group A

- a. Quenching
- b. Maraging
- c. Tempering
- d. Austempering

Group B

- I. Bainite
- II. Martensite
- III. Intermetallic precipitates
- IV. Epsilon carbide

Options :

- 1. ✘ a-II, b-III, c-I, d-IV
- 2. ✘ a-I, b-III, c-II, d-IV
- 3. ✔ a-II, b-III, c-IV, d-I
- 4. ✘ a-III, b-II, c-I, d-IV

Question Number : 138 Question Id : 8946584546 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which coolant of the following is used in laser surface hardening?

Options :

- 1. ✘ Water medium
- 2. ✘ Oil medium
- 3. ✘ Air medium
- 4. ✔ No medium

Question Number : 139 Question Id : 8946584547 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For wire drawing of medium carbon steels, _____ heat treatment is adopted.

Options :

- 1. ✘ Quenching
- 2. ✘ Austempering

3. ✘ Quenching and tempering

4. ✔ Patenting

Question Number : 140 Question Id : 8946584548 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Agehardenable or precipitation hardenable alloys can be used _____

Options :

1. ✔ Below ageing temperature

2. ✘ Above ageing temperature

3. ✘ At solutionizing temperature

4. ✘ Upto melting point

Question Number : 141 Question Id : 8946584549 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following heat treatments is given to overcome stress corrosion cracking of brass?

Options :

1. ✘ Tempering

2. ✘ Thermo-mechanical treatment

3. ✔ Annealing

4. ✘ Normalizing

Question Number : 142 Question Id : 8946584550 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Decarburization can be avoided in high speed steels by _____.

Options :

1. ✘ Single stage heating

2. ✔ Two stage heating

3. ✘ Single stage quenching

4. ✘ Two stage quenching

Question Number : 143 Question Id : 8946584551 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following stainless steels cannot be heat treated?

Options :

1. ✔ Ferritic

2. ✘ Austenitic

3. ✘ Martensitic

4. ✘ Precipitation-hardened

Question Number : 144 Question Id : 8946584552 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Temper brittleness occurs during tempering in the range of _____

Options :

1. ✔ 350-550 °C

2. ✘ 150-250 °C

3. ✘ 0-150 °C

4. ✘ Sub-zero temperature

Question Number : 145 Question Id : 8946584553 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Match the facilities in a steel plant listed in Group A with the associated terms in Group B and find the correct answer

Group A

- a. Electric arc furnace
- b. LD convertor
- c. Continuous caster
- d. Blast furnace

Group B

- I. High top pressure
- II. Dummy bar
- III. Slag splashing
- IV. Eccentric bottom tapping

Options :

- 1. ✘ a-IV, b-I, c-II, d-III
- 2. ✘ a-II, b-IV, c-I, d-III
- 3. ✔ a-IV, b-III, c-II, d-I
- 4. ✘ a-I, b-III, c-II, d-IV

Question Number : 146 Question Id : 8946584554 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Blast furnace is a _____

Options :

- 1. ✔ Counter-current reactor
- 2. ✘ Co-current reactor
- 3. ✘ Cross-current reactor
- 4. ✘ No-current reactor

Question Number : 147 Question Id : 8946584555 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The driving force for sintering of a powder compact is _____

Options :

- 1. ✘ Volume energy

2. ✘ Strain energy
3. ✘ Stacking fault energy
4. ✔ Surface energy

Question Number : 148 Question Id : 8946584556 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

In continuous casting of liquid steel, the mould is made of _____

Options :

1. ✘ Refractory oxide
2. ✘ Silicon carbide
3. ✔ Water cooled copper
4. ✘ Water cooled steel

Question Number : 149 Question Id : 8946584557 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

For efficient performance of blast furnace, the extent of reduction of Wustite should be _____

Options :

1. ✔ 50-60% indirect reduction
2. ✘ 100% indirect reduction
3. ✘ 100% direct reduction
4. ✘ 50-60% direct reduction

Question Number : 150 Question Id : 8946584558 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

In the acid Bessemer steel process, the hot metal should have the following composition

(Where S is Sulphur and P is Phosphorus)

Options :

1. ✘ $S < 0.05\%$ and $P < 1.5\%$
2. ✔ $S < 0.05\%$ and $P < 0.05\%$
3. ✘ $S < 0.05\%$ and $P > 1.5\%$
4. ✘ $S > 1.5\%$ and $P < 0.05\%$

Question Number : 151 Question Id : 8946584559 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Pellets are not as popular in burden as sinter in the iron blast furnace because of their _____

Options :

1. ✘ Poor reducibility
2. ✘ Low mechanical strength
3. ✔ Swelling tendency
4. ✘ Shape

Question Number : 152 Question Id : 8946584560 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following factors is not desirable for effective phosphorus removal in BOF steel making process?

Options :

1. ✔ Higher temperature
2. ✘ Lower temperature
3. ✘ Higher basicity
4. ✘ Higher FeO level in slag

Question Number : 153 Question Id : 8946584561 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

_____ process is performed for inclusion modification in ladle metallurgy of steel making.

Options :

1. ✘ Oxygen top blowing
2. ✘ Oxygen bottom blowing
3. ✘ Aluminium wire injection
4. ✔ Calcium wire injection

Question Number : 154 Question Id : 8946584562 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In steel making, the addition of bauxite is done to _____

Options :

1. ✔ improve Phosphorus distribution ratio
2. ✘ decrease viscosity of slag
3. ✘ increase the activity of FeO in slag
4. ✘ improve Sulphur distribution ratio

Question Number : 155 Question Id : 8946584563 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following statements regarding Kroll's process is not correct?

Options :

1. ✘ Pure metal chlorides serve as raw material
2. ✘ Reduction chamber should be free of oxygen
3. ✘ Useful for the extraction of Ti and Zr
4. ✔ Reduction is done by Al

Question Number : 156 Question Id : 8946584564 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Match the metals listed in Group A with the process in Group B and find the correct answer

Group A

- a. Nickel refining
- b. Copper
- c. Zinc
- d. Iron sponge

Group B

- I. Poling
- II. Carbonyl process
- III. Rotary kiln process
- IV. Distillation

Options :

- 1. ✘ a-I, b-II, c-III, d-IV
- 2. ✔ a-II, b-I, c-IV, d-III
- 3. ✘ a-IV, b-II, c-I, d-III
- 4. ✘ a-III, b-IV, c-II, d-I

Question Number : 157 Question Id : 8946584565 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A conventional copper converter is blown from _____

Options :

- 1. ✘ top
- 2. ✘ bottom
- 3. ✔ side
- 4. ✘ top and bottom

Question Number : 158 Question Id : 8946584566 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which reducing agent is used in the extraction of magnesium from calcinated dolomite via Pidgeon process?

Options :

1. ✘ Carbon
2. ✔ Ferrosilicon
3. ✘ Silicon
4. ✘ Sodium

Question Number : 159 Question Id : 8946584567 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The Al_2O_3 content of cryolite in Hall-Heroult's cell is maintained between _____.

Options :

1. ✔ 6 – 12 %
2. ✘ 18 – 20 %
3. ✘ 2 – 5 %
4. ✘ 12 – 15 %

Question Number : 160 Question Id : 8946584568 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In imperial smelting process for extraction of zinc, zinc vapor is quenched in the external condenser by _____.

Options :

1. ✘ Jet of water
2. ✘ Blast of air
3. ✘ Mix of water and air
4. ✔ Molten lead

Question Number : 161 Question Id : 8946584569 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Monazite deposits constitute an important source for _____.

Options :

1. ✘ Titanium
2. ✔ Thorium
3. ✘ Molybdenum
4. ✘ Niobium

Question Number : 162 Question Id : 8946584570 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Copper can be reduced from copper sulphate solution by _____.

Options :

1. ✔ Iron
2. ✘ Silver
3. ✘ Lead
4. ✘ Carbon

Question Number : 163 Question Id : 8946584571 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Match the list in Group A with Group B and find the correct answer

Group A

- a. Penetrameter
- b. Differential coil probe
- c. Piezo-electric probe
- d. Developer

Group B

- I. Ultrasonic test
- II. Dye-penetrant test
- III. X-ray radiography
- IV. Acoustic emission test

Options :

1. ✔ a-III, b-IV, c-I, d-II
2. ✘ a-II, b-I, c-III, d-IV

3. ✘ a-I, b-II, c-IV, d-III

4. ✘ a-IV, b-III, c-II, d-I

Question Number : 164 Question Id : 8946584572 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Subsurface defects and its location can be found by the following test _____

Options :

1. ✔ Ultrasonic pulse echo

2. ✘ Penetrant

3. ✘ Eddy current

4. ✘ Magnetic particle

Question Number : 165 Question Id : 8946584573 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Generally brittle materials have % of elongation below _____.

Options :

1. ✔ 5

2. ✘ 10

3. ✘ 20

4. ✘ 40

Question Number : 166 Question Id : 8946584574 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Match the list in Group A with Group B and find the correct answer

Group A

- a. Tensile
- b. Compressive
- c. Fatigue
- d. Creep

Group B

- I. Barreling
- II. Intergranular cracking
- III. Striations
- IV. Cup and cone
- V. Earing

Options :

- 1. ✘ a-IV, b-V, c-III, d-I
- 2. ✔ a-IV, b-I, c-III, d-II
- 3. ✘ a-V, b-I, c-IV, d-II
- 4. ✘ a-III, b-II, c-I, d-IV

Question Number : 167 Question Id : 8946584575 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which test is commonly used to understand high temperature deformation behavior of materials?

Options :

- 1. ✘ Impact
- 2. ✘ Fatigue
- 3. ✔ Creep
- 4. ✘ Compression

Question Number : 168 Question Id : 8946584576 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Fatigue resistance of a steel is reduced by _____.

Options :

1. ✓ Decarburization
2. ✗ Polishing of surface
3. ✗ Fine grain size
4. ✗ Shot peening

Question Number : 169 Question Id : 8946584577 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Match the list in Group A with Group B and find the correct answer

Group A

- a. Low cycle fatigue
- b. Creep
- c. Impact toughness
- d. Stretcher strain

Group B

- I. Charpy test
- II. Portevin-Le Chatlier effect
- III. Coffin-Manson equation
- IV. Larson-Miller parameter
- V. Jominy end Quench test

Options :

1. ✗ a-II, b-IV, c-I, d-V
2. ✗ a-II, b-I, c-V, d-III
3. ✓ a-III, b-IV, c-I, d-II
4. ✗ a-III, b-I, c-IV, d-V

Question Number : 170 Question Id : 8946584578 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The fracture toughness of lower strength ductile material is best measured by _____.

Options :

1. ✓ J-integral method

2. ✘ K_{IC} evaluation
3. ✘ Impact test
4. ✘ Flexural test

Question Number : 171 Question Id : 8946584579 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Tungsten filament for lamp is commonly produced by _____.

Options :

1. ✔ Powder metallurgy and metal forming
2. ✘ Powder metallurgy and welding
3. ✘ Casting and metal forming
4. ✘ Casting and welding

Question Number : 172 Question Id : 8946584580 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Match the list in Group A with Group B and find the correct answer

Group A

Group B

- | | |
|--------------------|----------------------|
| a. Drawing | I. Large curved disc |
| b. Forging | II. Tube |
| c. Rolling | III. Crank shaft |
| d. Stretch forming | IV. Plate |

Options :

1. ✔ a-II, b-III, c-IV, d-I
2. ✘ a-I, b-IV, c-III, d-II
3. ✘ a-III, b-II, c-I, d-IV

4. ✘ a-IV, b-I, c-II, d-III

Question Number : 173 Question Id : 8946584581 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In metal forming, hot working and cold working is defined based on _____.

Options :

1. ✘ Solidus temperature
2. ✔ Recrystallization temperature
3. ✘ Transformation temperature
4. ✘ Eutectic temperature

Question Number : 174 Question Id : 8946584582 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Thin foils of aluminium is produced by _____.

Options :

1. ✘ 2-High roll mill
2. ✘ 4-High roll mill
3. ✘ Planetary mill
4. ✔ Cluster/Sendzimir mill

Question Number : 175 Question Id : 8946584583 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In sheet metal forming, stretcher strains occur in _____.

Options :

1. ✔ Low carbon steel
2. ✘ Duralumin
3. ✘ Austenitic stainless steels

4. ✘ Ni-base alloy

Question Number : 176 Question Id : 8946584584 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The respective units for dislocation density and stress intensity factor are _____.

Options :

1. ✘ m^2 and MPa.m

2. ✘ m^2 and MPa.m^{1/2}

3. ✔ m^{-2} and MPa.m^{1/2}

4. ✘ m^{-2} and MPa.m

Question Number : 177 Question Id : 8946584585 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Number of slip systems in close packed hexagonal metal is _____.

Options :

1. ✔ 3

2. ✘ 12

3. ✘ 24

4. ✘ 48

Question Number : 178 Question Id : 8946584586 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A defect that is bounded by two mirror planes is _____.

Options :

1. ✘ Stacking fault

2. ✘ Grain boundary

3. ✘ Edge dislocation

4. ✔ Twin

Question Number : 179 Question Id : 8946584587 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Match the list in Group A with Group B and find the correct answer

Group A

- a. Forging
- b. Rolling
- c. Deep drawing
- d. Extrusion

Group B

- I. Alligator
- II. Cold shut
- III. Chevron cracks
- IV. Wrinkles

Options :

1. ✘ a-I, b-II, c-III, d-IV

2. ✔ a-II, b-I, c-III, d-IV

3. ✘ a-I, b-II, c-IV, d-III

4. ✘ a -IV, b-III, c-II, d-I

Question Number : 180 Question Id : 8946584588 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Movement of jogs can produce _____.

Options :

1. ✔ Vacancies

2. ✘ Grain boundary sliding

3. ✘ Screw dislocation

4. ✘ Twin

Question Number : 181 Question Id : 8946584589 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Low melting point metals/alloys are generally casted by _____

Options :

1. ✘ Sand casting
2. ✘ Investment casting
3. ✔ Die casting
4. ✘ Centrifugal casting

Question Number : 182 Question Id : 8946584590 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Match the list in Group A with Group B and find the correct answer

Group A

- a. Hot tear
- b. Misrun
- c. Blister
- d. Rat tail

Group B

- I. Insufficient melt super heat
- II. High residual stresses
- III. Improper venting
- IV. Expansion of sand

Options :

1. ✘ a-I, b-II, c-III, d-IV
2. ✘ a-III, b-IV, c-I, d-II
3. ✘ a-IV, b-III, c-II, d-I
4. ✔ a-II, b-I, c-III, d-IV

Question Number : 183 Question Id : 8946584591 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Riser is not required for the casting of _____

Options :

1. ✘ White cast iron
2. ✔ Grey cast iron
3. ✘ Al alloys
4. ✘ Steel

Question Number : 184 Question Id : 8946584592 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a sand casting, the last liquid to solidify is in the _____.

Options :

1. ✔ Riser
2. ✘ Gate
3. ✘ Runner
4. ✘ Vent

Question Number : 185 Question Id : 8946584593 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Draft allowance is given to patterns for _____

Options :

1. ✘ Compensating liquid state shrinkage
2. ✔ Easy removal of pattern from the mould
3. ✘ Providing support for core
4. ✘ Compensating solid state shrinkage

Question Number : 186 Question Id : 8946584594 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Match the list in Group A with Group B and find the correct answer

Group A

- a. Macro-segregation
- b. Fine grained structure
- c. Porosity
- d. Dendrites

Group B

- I. Inoculation
- II. Gas evolution and shrinkage
- III. Temperature gradient and super cooling
- IV. Density difference and convection currents

Options :

- 1. ✘ a-I, b-III, c-II, d-IV
- 2. ✔ a-IV, b-I, c-II, d-III
- 3. ✘ a-II, b-IV, c-I, d-III
- 4. ✘ a-IV, b-I, c-III, d-II

Question Number : 187 Question Id : 8946584595 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which casting technique is used for obtaining close dimensional accuracy?

Options :

- 1. ✘ Centrifugal casting
- 2. ✘ Sand casting
- 3. ✘ Die casting
- 4. ✔ Investment casting

Question Number : 188 Question Id : 8946584596 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Mould coating material that helps in grain refinement of metal casting is _____.

Options :

- 1. ✘ Cobalt aluminide

2. ✘ Zinc

3. ✘ Tellurium

4. ✔ Boron

Question Number : 189 Question Id : 8946584597 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For casting of cast iron, generally melting is done by using _____.

Options :

1. ✔ Cupola

2. ✘ Muffle furnace

3. ✘ Blast furnace

4. ✘ Convertor

Question Number : 190 Question Id : 8946584598 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Directional solidification is preferred for applications such as _____.

Options :

1. ✘ Engine blocks

2. ✘ Connecting rods

3. ✔ Permanent magnets

4. ✘ Gears

Question Number : 191 Question Id : 8946584599 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a brazing process, the liquid metal fills the gap by _____ infiltration.

Options :

1. ✔ Capillary

2. ✘ Gravity

3. ✘ Pressure

4. ✘ Vacuum

Question Number : 192 Question Id : 8946584600 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The nature of submerged arc welding flux with basicity index of 0.5 is _____

Options :

1. ✘ Neutral

2. ✔ Acidic

3. ✘ Basic

4. ✘ Semi basic

Question Number : 193 Question Id : 8946584601 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is not a solid state welding process?

Options :

1. ✘ Friction stir welding

2. ✘ Ultrasonic welding

3. ✔ Flux cored arc welding

4. ✘ Explosive welding

Question Number : 194 Question Id : 8946584602 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

How much carbon equivalent in steel is considered to be good for weldability?

Options :

1. ✘ 1.0

2. ✘ 0.8

3. ✘ 0.6

4. ✔ 0.4

Question Number : 195 Question Id : 8946584603 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The weld structure of a metal has similarity to that of the metal produced via _____.

Options :

1. ✔ Casting

2. ✘ Powder metallurgy

3. ✘ Rolling

4. ✘ Forging

Question Number : 196 Question Id : 8946584604 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Match the list in Group A with Group B and find the correct answer

Group A

- a. Ultrasonic welding
- b. Spot welding
- c. SMAW
- d. Thermit welding

Group B

- I. Thermochemical
- II. Electrical resistance
- III. Friction
- IV. Electrical arc

Options :

1. ✘ a-III, b-II, c-I, d-IV

2. ✘ a-IV, b-III, c-II, d-I

3. ✘ a-I, b-III, c-IV, d-II

4. ✓ a-III, b-II, c-IV, d-I

Question Number : 197 Question Id : 8946584605 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Weld decay in austenitic stainless steels can be avoided by _____.

Options :

1. ✓ Reducing carbon content
2. ✗ Increasing carbon content
3. ✗ Eliminating strong carbide formers
4. ✗ Decreasing chromium content

Question Number : 198 Question Id : 8946584606 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Non consumable electrode is used in _____ process.

Options :

1. ✗ Gas metal arc welding
2. ✓ Gas tungsten arc welding
3. ✗ Submerged arc welding
4. ✗ Laser welding

Question Number : 199 Question Id : 8946584607 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Match the list in Group A with Group B and find the correct answer

Group A

- a. Soldering
- b. Welding
- c. Brazing

Group B

- I. Silver-Titanium alloy
- II. Silver-Tin alloy
- III. Mild steel
- IV. Lead flouride

Options :

- 1. ✓ a-II, b-III, c-I
- 2. ✗ a-I, b-II, c-III
- 3. ✗ a-III, b-I, c-IV
- 4. ✗ a-II, b-IV, c-I

Question Number : 200 Question Id : 8946584608 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which region of weld does undergo heat treatment effect?

Options :

- 1. ✗ Base metal
- 2. ✗ Weld metal
- 3. ✓ HAZ
- 4. ✗ Centre of the weld