# 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 20th May 2023 Shift1 SET1 |
| **Subject Name :** | Metallurgical Engineering |
| **Creation Date :** | 2023-05-20 13:03:36 |
| **Duration :** | 180 |
| **Total Marks :** | 200 |
| **Display Marks:** | No |
| **Share Answer Key With Delivery Engine :** | Yes |
| **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?** | Yes |
| **Change Font Color :** | No |
| **Change Background Color :** | No |

| | |
|---|---|
| **Change Theme :** | No |
| **Help Button :** | No |
| **Show Reports :** | No |
| **Show Progress Bar :** | No |

## Metallurgical Engineering

| | |
|---|---|
| **Group Number :** | 1 |
| **Group Id :** | 15920731 |
| **Group Maximum Duration :** | 0 |
| **Group Minimum Duration :** | 180 |
| **Show Attended Group? :** | No |
| **Edit Attended Group? :** | No |
| **Break time :** | 0 |
| **Group Marks :** | 200 |
| **Is this Group for Examiner? :** | No |
| **Examiner permission :** | Cant View |
| **Show Progress Bar? :** | No |

## Mathematics

| | |
|---|---|
| **Section Id :** | 159207118 |
| **Section Number :** | 1 |
| **Section type :** | Online |
| **Mandatory or Optional :** | Mandatory |
| **Number of Questions :** | 50 |
| **Number of Questions to be attempted :** | 50 |
| **Section Marks :** | 50 |
| **Enable Mark as Answered Mark for Review and Clear Response :** | Yes |

| | |
|---|---|
| **Maximum Instruction Time :** | 0 |
| **Sub-Section Number :** | 1 |
| **Sub-Section Id :** | 159207139 |
| **Question Shuffling Allowed :** | Yes |
| **Is Section Default? :** | null |

**Question Number : 1 Question Id : 1592076016 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Let $A=\begin{bmatrix}3 & 1\\ -1 & 2\end{bmatrix}$. If $A^2 = \alpha A + \beta I$, where I is the 2 x 2 identity matrix, then $(\alpha, \beta)$ =

**Options :**

1. $(5, 7)$ ✖

2. $(-5, -7)$ ✖

3. $(-5, 7)$ ✖

4. $(5, -7)$ ✔

**Question Number : 2 Question Id : 1592076017 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

If (a + b + c) = 5, then

$$\det\begin{bmatrix} a-b-c & 2b & 2c \\ 2a & b-c-a & 2c \\ 2a & 2b & c-a-b \end{bmatrix} =$$

**Options :**

1. ✖ 5

2. ✖ 25

3. ✔ 125

4. ✖ 625

**Question Number : 3 Question Id : 1592076018 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

If $\begin{bmatrix} 4 & 3 \\ 9 & 7 \end{bmatrix}\begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 18 \\ 41 \end{bmatrix}$, then $12x + 10y =$

**Options :**

1. ✖ 58

2. ✔ 56

3. ✖ 54

4. ✖ 52

**Question Number : 4 Question Id : 1592076019 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

If $\log_{16} x + \log_4 x + \log_2 x = 7$, then $x$ =

**Options :**

1. ✔ 16

2. ✖ 32

3. ✖ 64

4. ✖ 128

**Question Number : 5 Question Id : 1592076020 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

If $\frac{2x^2-6x+5}{x^3-6x^2+11x-6} = \frac{A}{x-1} + \frac{B}{x-2} + \frac{C}{x-3}$, then $10A + B + 2C =$

**Options :**

1. ✖ 5

2. ✖ 7

3. ✔ 9

4. ✖ 11

**Question Number : 6 Question Id : 1592076021 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

If $\log_x (3x^2 + 10x) = 3$, then $x =$

**Options :**

1. ✖ 3

2. ✔ 5

3. ✖ 7

4. ✖ 9

**Question Number : 7 Question Id : 1592076022 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The value of $\sin^2 45^o + \sin^2 135^o + \sin^2 225^o + \sin^2 315^o$ is

**Options :**

1. ✖ 1

2. ✔ 2

3. ✖ 0

4. ✖ 4

**Question Number : 8 Question Id : 1592076023 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

In a $\Delta ABC$, if $a = 3$, $b = 4$ and $\sin A = \frac{3}{4}$, then the angle B =

**Options :**

1. ✖ $45^o$

2. ✖ $60^o$

3. ✔ $90^o$

4. ✖ $70^o$

**Question Number : 9 Question Id : 1592076024 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

$\sin^2 36^o - \sin^2 18^o =$

**Options :**

1. ✖ $\frac{1}{2}$

2. ✔ $\frac{1}{4}$

3. ✖ $\frac{1}{8}$

4. ✖ $1$

**Question Number : 10 Question Id : 1592076025 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The period of the function $\cos\left(\frac{5}{3}\right)\sin\left(\frac{2x}{3}\right)+\sin\left(\frac{5}{3}\right)\cos\left(\frac{2x}{3}\right)$ is

**Options :**

1. ✖ $\pi$

2. ✖ $2\pi$

3. ✔ $3\pi$

4. ✖ $\frac{3\pi}{2}$

**Question Number : 11 Question Id : 1592076026 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

If $\cosh x = \frac{5}{4}$, then $\coth 2x =$

**Options :**

1. ✔ $\frac{17}{15}$

2. ✖ $\frac{5}{3}$

3. ✖ $\frac{15}{17}$

4. ✖ $\frac{3}{5}$

**Question Number : 12 Question Id : 1592076027 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The modulus of the complex number $\frac{2+i}{3-i}$ is

**Options :**

1. ✖ $\frac{1}{\sqrt{3}}$

2. ✖ 1

3. ✖ $\sqrt{2}$

4. ✔ $\frac{1}{\sqrt{2}}$

**Question Number : 13 Question Id : 1592076028 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

If the sides of a triangle are 13,7 and 8, then the greatest angle of the triangle is

**Options :**

1. ✖ $\frac{\pi}{3}$

2. ✖ $\frac{\pi}{2}$

3. ✔ $\frac{2\pi}{3}$

4. ✖ $\frac{3\pi}{2}$

**Question Number : 14 Question Id : 1592076029 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

If the angles of a triangle are in the ratio of $1:4:5$ , then the ratio of the greatest side to the smallest side is

**Options :**

1. ✔ $4:\sqrt{5}-1$

2. ✖ 5:4

3. ✖ $\sqrt{5}$-1:4

4. ✖ $4:\sqrt{5}$

**Question Number : 15 Question Id : 1592076030 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Number of tangents drawn at a point of the circle is

**Options :**

1. ✔ One

2. ✖ Two

3. ✖ Three

4. ✖ Many

**Question Number : 16 Question Id : 1592076031 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The minimum value of $f(x) = |x - 2| + |x + 2|$ is

**Options :**

1. ✖ 0

2. ✖ 2

3. ✔ 4

4. ✖ 8

**Question Number : 17 Question Id : 1592076032 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The eccentricity of ellipse $\frac{x^2}{16} + \frac{y^2}{4} = 1$ is

**Options :**

1. ✖ $2\sqrt{3}$

2. ✖ $\sqrt{2}$

3. ✔

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

4. ✖ $\sqrt{3}$

**Question Number : 18 Question Id : 1592076033 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

$\lim_{x\to\infty}\left(1+\frac{2}{x}\right)^{x}$ =

**Options :**

1. ✖ $e$

2. ✔ $e^2$

3. ✖ $e^3$

4. ✖ $e^4$

**Question Number : 19 Question Id : 1592076034 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

$\frac{d}{dx}\left(\sqrt{\sin\sqrt{x}}\right)$ =

**Options :**

1. ✖ $\frac{1}{4}\frac{\sin\sqrt{x}}{\sqrt{x}}$

2. ✖ $\frac{1}{6}\frac{\cos\sqrt{x}}{\sqrt{x}}$

3. ✔ $\frac{1}{4}\frac{\cos\sqrt{x}}{\sqrt{x}\sqrt{\sin\sqrt{x}}}$

4. ✖ $\frac{1}{2}\frac{\cos\sqrt{x}}{\sqrt{\sin\sqrt{x}}}$

**Question Number : 20 Question Id : 1592076035 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

If $x = 2\cos t - \cos 2t$, $y = 2\sin t - \sin 2t$, then $\frac{dy}{dx}$ at $t=\frac{\pi}{6}$ is

**Options :**

1. ✖ 0

2. ✔ 1

3. ✖ $\sqrt{3}$

4. ✖ $\frac{1}{\sqrt{3}}$

**Question Number : 21 Question Id : 1592076036 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

If $y = \cos(x + y)$, then $\frac{dy}{dx} =$

**Options :**

1. ✖ $\frac{1-\sin(x+y)}{\cos x+\cos y}$

2. ✖ $\frac{1+\sin(x+y)}{\cos x-\cos y}$

3. ✖ $\frac{\cos(x+y)}{1+\sin(x+y)}$

4. ✔ $\frac{-\sin(x+y)}{1+\sin(x+y)}$

**Question Number : 22 Question Id : 1592076037 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The equation of tangent to the curve $xy = 16$ at P (4, 4) is

**Options :**

1. ✖ $x + y = 2$

2. ✖ $x + y = 4$

3. ✔ $x + y = 8$

4. ✖ $x + y = 16$

**Question Number : 23 Question Id : 1592076038 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The maximum value of $f(x) = \left(\frac{1}{x}\right)^x$ is

**Options :**

1. ✔ $e^{1/e}$

2. ✖ $\left(\frac{1}{e}\right)^e$

3. ✖ $\left(\frac{1}{e}\right)^{1/e}$

4. ✖ $e^e$

**Question Number : 24 Question Id : 1592076039 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

If u (x, y, z) = log $\left(x^3+y^3+z^3-3xyz\right)$, then $\frac{\partial u}{\partial x}+\frac{\partial u}{\partial y}+\frac{\partial u}{\partial z}$ =

**Options :**

1. ✖ $\frac{1}{x+y+z}$

2. ✖ $\frac{9}{x+y+z}$

3. ✖ $\frac{6}{x+y+z}$

4. ✔ $\frac{3}{x+y+z}$

**Question Number : 25 Question Id : 1592076040 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

If $u(x, y) = \log\left(\frac{x^4+y^4}{x+y}\right)$, then $x\frac{\partial u}{\partial x}+y\frac{\partial u}{\partial y}$ =

**Options :**

1. ✖ 4

2. ✔ 3

3. ✖ 2

4. ✖ 1

**Question Number : 26 Question Id : 1592076041 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

$\int \frac{\sin\left(\tan^{-1}x\right)}{1+x^2}dx$ =

**Options :**

1. ✔ $-\cos(\tan^{-1}x) + c$

2. ✖ $\cos(\tan^{-1}x) + c$

3. ✖ $\sin(\tan^{-1}x) + c$

4. ✖ $-\sin(\tan^{-1}x) + c$

**Question Number : 27 Question Id : 1592076042 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

$$\int \frac{1}{e^{2x}+e^{x}}dx$$

**Options :**

1. ✖ $\log(e^{x}+1) - e^{-x} + c$

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

3. ✔ $\log(e^{-x}+1) - e^{-x} + c$

4. ✖ $\log\left(\frac{e^{-x}}{e^{x}+1}\right)+e^{-x}+c$

**Question Number : 28 Question Id : 1592076043 Question Type : MCQ Option**

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

**Correct Marks : 1 Wrong Marks : 0**

The value of the integral $\int_{\frac{-\pi}{2}}^{\frac{\pi}{2}} sin\,|x|\,dx$ is

**Options :**

1. ✖ 0

2. ✖ 1

3. ✖ –2

4. ✔ 2

**Question Number : 29 Question Id : 1592076044 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The curves $y = x^2 - 4$ and $y = 1 - x^2$ together enclose an area of

**Options :**

1. ✖ $10\sqrt{10}$

2. ✖ $5\sqrt{10}$

3. ✔

$\frac{10\sqrt{10}}{3}$

4. ✖ $\frac{10\sqrt{10}}{9}$

**Question Number : 30 Question Id : 1592076045 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The RMS value of the f(x) = $\sqrt{\log x}$ on [1, e] is

**Options :**

1. ✖ $\sqrt{\frac{e}{e-1}}$

2. ✖ $\sqrt{\frac{e-1}{e}}$

3. ✔ $\frac{1}{\sqrt{e-1}}$

4. ✖ $\sqrt{e-1}$

**Question Number : 31 Question Id : 1592076046 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : Non**

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

**Correct Marks : 1 Wrong Marks : 0**

The approximate value of the integral $\int_0^1 \frac{1}{1+x}dx$, using Trapezoidal rule with h = 0.5, is

**Options :**

1. 0.69450 ✖

2. 0.70834 ✔

3. 0.67435 ✖

4. 0.68500 ✖

**Question Number : 32 Question Id : 1592076047 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The velocity of a body as a function of time is given as $v(t) = 5e^{-2t} + 4$, where t is in seconds and $v$ is in m/s. The acceleration when t = 5 in m/$s^2$ is

**Options :**

1. $-10e^{-10}$ ✔

2. ✖ $-20e^{-10}$

3. ✖ $-30e^{-10}$

4. ✖ $-40e^{-10}$

**Question Number : 33 Question Id : 1592076048 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The order and degree of the differential equation

$\frac{d^2y}{dx^2} + \left(\frac{dy}{dx}\right)^2 + x = 0$ respectively are

**Options :**

1. ✖ 3 and 3

2. ✖ 2 and 2

3. ✖ 2 and 3

4. ✔ 2 and 1

**Question Number : 34 Question Id : 1592076049 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The general solution of $ye^x dx + (y-1)dy = 0$ is

**Options :**

1. ✖ $e^x - \log y = c$

2. ✖ $e^x - y = c$

3. ✖ $e^x - y - \log x = c$

4. ✔ $e^x + y - \log y = c$

**Question Number : 35 Question Id : 1592076050 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

If $sinx\ \frac{dy}{dx} + y\ cosx = x\ sinx$, then $(y-1)sinx =$

**Options :**

1. ✖ $c - x\ sinx$

2. ✖ $c + x\ sinx$

3. ✔ $c - x\,cosx$

4. ✖ $c + x\,cosx$

**Question Number : 36 Question Id : 1592076051 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The solution of the differential equation

$(e^y + 1)cosx\,dx + e^y sinx\,dy = 0$ is

**Options :**

1. ✔ $(e^y + 1)sinx = c$

2. ✖ $e^x sinx = c$

3. ✖ $(e^x + 1)cosx = c$

4. ✖ $(e^y - 1)sinx = c$

**Question Number : 37 Question Id : 1592076052 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The differential equation satisfied by $y = \frac{A}{x} + B$ , (A,B are parameters) is

**Options :**

1. ✖ $x^2y_1 = y$

2. ✖ $xy_1 + 2y_2 = 0$

3. ✔ $xy_2 + 2y_1 = 0$

4. ✖ $x^2y_1 - 2y = 0$

**Question Number : 38 Question Id : 1592076053 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The general solution of $\log(\frac{dy}{dx}) = 3x + 3y$ is

**Options :**

1. ✖ $e^{3x} + e^{3y} = c$

2. ✖ $e^{-3x} + e^{-3y} = c$

3. ✖ $e^{-3x}+e^{3y}=c$

4. ✔ $e^{3x}+e^{-3y}=c$

**Question Number : 39 Question Id : 1592076054 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

If $y\,dx+y^2dy=x\,dy, x\in\mathbb{R}, y>0$ and $y(1)=1$, then $y(-3)=$

**Options :**

1. ✔ 3

2. ✖ 2

3. ✖ 1

4. ✖ 5

**Question Number : 40 Question Id : 1592076055 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

$$L\{\sin 2t - 2t\cos 2t\} =$$

**Options :**

1. ✖ $\frac{2}{(s^2+4)^2}$

2. ✖ $\frac{8}{(s^2+4)^2}$

3. ✔ $\frac{16}{(s^2+4)^2}$

4. ✖ $\frac{32}{((s^2+4))^2}$

**Question Number : 41 Question Id : 1592076056 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

$$L\{\cosh 3t\ \cos 3t\} =$$

**Options :**

1. ✖ $\frac{1}{2}\left[\frac{s-6}{s^2-3s+18}+\frac{s+6}{s^2+3s+18}\right]$

2. ✔

$$\frac{1}{2}\left[\frac{s-3}{s^2-6s+18}+\frac{s+3}{s^2+6s+18}\right]$$

3. ✖ $$\frac{1}{2}\left[\frac{s-4}{s^2-4s+9}+\frac{s-3}{s^2-6s+9}\right]$$

4. ✖ $$\frac{1}{2}\left[\frac{s-6}{s^2+9}+\frac{s+6}{3s^2+9}\right]$$

**Question Number : 42 Question Id : 1592076057 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

$$L\left\{\frac{1-\cos 3t}{t}\right\}=$$

**Options :**

1. ✖ $$\frac{1}{2}\log\left(\frac{s^2+9}{s^2+3}\right)$$

2. ✖ $$\frac{1}{2}\log\left(\frac{s}{s+9}\right)$$

3. ✖ $$\frac{1}{2}\log\left(\frac{s}{s^2+9}\right)$$

4.

$\frac{1}{2}\log\left(\frac{s^2+9}{s^2}\right)$

**Question Number : 43 Question Id : 1592076058 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The Laplace transform of f(t) = t sin t is F(s) where F(s) =

**Options :**

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

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

3. $\frac{2s}{1+s^2}$

4. $\frac{s}{1+s^2}$

**Question Number : 44 Question Id : 1592076059 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

If $L^{-1}\left\{\frac{2s^2-1}{(s^2+1)(s^2+4)}\right\} = f(t)$, then $f\left(\frac{\pi}{2}\right) =$

**Options :**

1. ✖ 1

2. ✔ −1

3. ✖ 2

4. ✖ −2

**Question Number : 45 Question Id : 1592076060 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

$\int_0^\infty \frac{e^{-3t}-e^{-6t}}{t}dt =$

**Options :**

1. ✖ log 6

2. ✖ log 3

3. ✔ log 2

4. ✖ log 18

**Question Number : 46 Question Id : 1592076061 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The solution of the differential equation

$y'' - 2y' + 2y = 0$ satisfying $y(0) = y'(0) = 1$ is

**Options :**

1. ✖ $e^t + e^{-2t}\cos t$

2. ✖ $e^t + \cos t$

3. ✖ $e^t \sin t$

4. ✔ $e^t \cos t$

**Question Number : 47 Question Id : 1592076062 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The value of the Fourier coefficient $a_0$ in the Fourier series expansion of $f(x) = x \sin x$ in $(0, 2\pi)$ is

**Options :**

1. ✖ $2$

2. ✔ $-2$

3. ✖ $1$

4. ✖ $-1$

**Question Number : 48 Question Id : 1592076063 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

If $b_1$, $b_2$ are Fourier coefficients in the Fourier series expansion of $f(x) = |\sin x|$ in $(-\pi, \pi)$, then $b_1 + b_2 =$

**Options :**

1. ✖ $\frac{2}{\pi}$

2. ✖ $-\frac{2}{\pi}$

3. ✔ $0$

4. ✖ $\frac{4}{\pi}$

**Question Number : 49 Question Id : 1592076064 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

At $x = 0$, the Fourier series of $f(x) = \begin{cases} \pi + x & \text{if } -\pi < x < 0 \\ 0 & \text{if } 0 \le x < \pi \end{cases}$ converges to

**Options :**

1. ✖ $\pi$

2. ✖ $0$

3. ✖ $-\pi$

4. ✔ $\frac{\pi}{2}$

**Question Number : 50 Question Id : 1592076065 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

If $x = \frac{\pi}{2} + \sum_{n=1}^{\infty} a_n \cos nx, \quad 0 < x < \pi$, then the value of $a_n$ is

**Options :**

1. $\frac{2}{\pi n^2}\left[(-1)^n - 1\right]$ ✔

2. $\frac{2}{\pi n^2}$ ✖

3. 0 ✖

4. $\frac{4}{\pi n^2}$ ✖

# Physics

| | |
|---|---|
| **Section Id :** | 159207119 |
| **Section Number :** | 2 |
| **Section type :** | Online |
| **Mandatory or Optional :** | Mandatory |
| **Number of Questions :** | 25 |
| **Number of Questions to be attempted :** | 25 |
| **Section Marks :** | 25 |
| **Enable Mark as Answered Mark for Review and Clear Response :** | Yes |

| | |
|---|---|
| **Maximum Instruction Time :** | 0 |
| **Sub-Section Number :** | 1 |
| **Sub-Section Id :** | 159207140 |
| **Question Shuffling Allowed :** | Yes |
| **Is Section Default? :** | null |

**Question Number : 51 Question Id : 1592076066 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

If F is force, x is distance and t is time, then the dimensions of $\frac{b}{a}$ in the equation $F = \frac{b-x}{at}$ are same as that of

**Options :**

1. ✖ Velocity

2. ✖ Force

3. ✔ Momentum

4. ✖ Time

**Question Number : 52 Question Id : 1592076067 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The static friction is

**Options :**

1. ✖ Equal to the dynamic friction

2. ✔ Always greater than the dynamic friction

3. ✖ Always less than the dynamic friction

4. ✖ Sometimes less than and sometimes equal to dynamic friction

**Question Number : 53 Question Id : 1592076068 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

A vector A points vertically upward and B points towards north, the vector product of B x A is

**Options :**

1. ✖ Along west

2. ✔ Along east

3. ✖ Vertically downward

4. ✖ No direction

**Question Number : 54 Question Id : 1592076069 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

A Vector A has magnitude 9/2 unit towards north, the direction of vector -6A and 8A .

**Options :**

1. ✖ -27 units and 36 units towards south

2. ✖ -27 units and 36 units towards north

3. ✔ -27 units towards south and 36 units towards north

4. ✖ -27 units towards west and 36 units towards east

**Question Number : 55 Question Id : 1592076070 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The Angular displacement of a particle is described as $\theta = 2t + 3t^2$, the angular velocity (in rad/sec) at t = 2 sec is

**Options :**

1. ✖ 2

2. ✖ 6

3. ✖ 16

4. ✔ 14

**Question Number : 56 Question Id : 1592076071 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The acceleration of a car moving on a straight road with a constant velocity of 40 m/sec is

**Options :**

1. ✖ $30\ m/s^2$

2. ✖ $20\ m/s^2$

3. ✔ $0\ m/s^2$

4. ✖ $40\ m/s^2$

**Question Number : 57 Question Id : 1592076072 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Two wires of same length and made with same material are stretched with the same force. If the radii of the wires are in the ratio 1:3, then the ratio of their elongations is

**Options :**

1. ✖ 1:3

2. ✔ 9:1

3. ✖ 3:1

4. ✖ 1:9

**Question Number : 58 Question Id : 1592076073 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Along a stream line flow of fluid

**Options :**

1. ✖ The velocity of all fluid particles at a given instant is constant.

2. ✖ The velocity of a fluid particle remains constant.

3. ✔ The velocity of all fluid particles crossing a given position is constant.

4. ✖ The speed of a fluid particle remains constant.

**Question Number : 59 Question Id : 1592076074 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following gives the relation between $C_p$ and $C_v$

**Options :**

1. ✔ $C_p - C_v = R$

2. ✖ $Cp = Cv$

3. ✖ $Cp - Cv > R$

4. ✖ Cp / Cv = R

**Question Number : 60 Question Id : 1592076075 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Compressed air coming out of punctured football becomes cooler because.

**Options :**

1. ✔ Adiabatic expansion

2. ✖ Isothermal expansion

3. ✖ Energy dissipation

4. ✖ See-beck effect

**Question Number : 61 Question Id : 1592076076 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The work done (Joule) by a 1 mole of a perfect gas when it expands isothermally to double its volume. The initial temperature of the gas is $0^0C$ and $R = 8.31 \times 10^7$ erg- $mol^{-1}$ . $K^{-1}$. ( $\log_{10}2 = 0.3010$)

**Options :**

1. ✖ 15.72 joule

2. ✖ 157.2 joule

3. ✔ 1572 joule

4. ✖ 1.572 joule

**Question Number : 62 Question Id : 1592076077 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The energy possessed by an object, by virtue of its motion is termed as

**Options :**

1. ✖ Potential Energy

2. ✔ Kinetic Energy

3. ✖ Gravitational Energy

4. ✖ Nuclear Energy

**Question Number : 63 Question Id : 1592076078 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

At what speed the observer must move towards a stationary source so that the apparent frequency will be double the original frequency of the source? The velocity of sound is V.

**Options :**

1. ✔ $V$

2. ✖ $\frac{V}{2}$

3. ✖ $2V$

4. ✖ $\frac{V}{4}$

**Question Number : 64 Question Id : 1592076079 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The displacement equation of a particle executes SHM is given by $y = a \sin \omega t + b \cos \omega t$, the resultant amplitude is

**Options :**

1. ✔ $(a^2 + b^2)^{1/2}$

2. ✖ $(a + b)$

3. ✖ $(a + b)^{1/2}$

4. ✖ Zero

**Question Number : 65 Question Id : 1592076080 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The periodic time (T) of simple pendulum is observed for different lengths (L). If a graph of $\log_{10}L$ against $\log_{10}T$ is plotted, the slope of the graph will be

**Options :**

1. ✖ 1/2

2. ✖ -1/2

3. ✖ $(2)^{1/2}$

4. ✔ 2

**Question Number : 66 Question Id : 1592076081 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The maximum velocity of a particle performing SHM is 0.12 m/sec, if its maximum acceleration is 0.48 m/sec$^2$, then its time period (sec) is

**Options :**

1. ✖ 1.54

2. ✖ 1.59

3. ✔ 1.57

4. ✖ 1.75

**Question Number : 67 Question Id : 1592076082 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The minimum energy required to take out an electron from an alkali metal is called

**Options :**

1. ✖ Kinetic Energy

2. ✖ Potential Energy

3. ✖ Gibbs Free Energy

4. ✔ Work Function

**Question Number : 68 Question Id : 1592076083 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

$N_1$ and $N_2$ be the number of atoms in the ground and excited states. Then the condition for population inversion is

**Options :**

1. ✖ $N_1 = N_2$

2. ✖ $N_1 > N_2$

3. ✔ $N_2 > N_1$

4. ✖ $N_2 = 0$

**Question Number : 69 Question Id : 1592076084 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Two magnets have magnetic moments in the ratio 2:1. Their pole strengths are in the ratio 1:2. Then the ratio of their magnetic lengths is

**Options :**

1. ✖ 1:4

2. ✖ 1:1

3. ✖ 2:3

4. ✔ 4:1

**Question Number : 70 Question Id : 1592076085 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The susceptibility of para magnetic material is

**Options :**

1. ✔ Positive and small

2. ✖ Positive and large

3. ✖ Negative

4. ✖ Zero

**Question Number : 71 Question Id : 1592076086 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

There are three equal resistors, how many different combinations of these resisters are possible.

**Options :**

1. ✔ Four

2. ✖ Two

3. ✖ Three

4. ✖ Five

**Question Number : 72 Question Id : 1592076087 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None**

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

**Correct Marks : 1 Wrong Marks : 0**

Which one of the following is the perfect diamagnetic?

**Options :**

1. ✖ Any conductor

2. ✖ P-Type semiconductor

3. ✖ N-Type semiconductor

4. ✔ Superconductor

**Question Number : 73 Question Id : 1592076088 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The current in the PN junction diode during the reverse bias is the result of

**Options :**

1. ✖ Majority carriers

2. ✔ Minority carriers

3.

✖ Both majority and minority carriers

4. ✖ Only electrons

**Question Number : 74 Question Id : 1592076089 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following has maximum energy gap?

**Options :**

1. ✔ Insulators

2. ✖ Superconductors

3. ✖ Metals

4. ✖ Semiconductors

**Question Number : 75 Question Id : 1592076090 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following is true for Fermi energy level for p-type extrinsic semiconductor?

**Options :**

1. ✖ At middle of the band gap

2. ✔ Close to valence band

3. ✖ Close to conduction band

4. ✖ Fermi level does not exist

## Chemistry

| | |
|---|---|
| **Section Id :** | 159207120 |
| **Section Number :** | 3 |
| **Section type :** | Online |
| **Mandatory or Optional :** | Mandatory |
| **Number of Questions :** | 25 |
| **Number of Questions to be attempted :** | 25 |
| **Section Marks :** | 25 |
| **Enable Mark as Answered Mark for Review and Clear Response :** | Yes |
| **Maximum Instruction Time :** | 0 |
| **Sub-Section Number :** | 1 |
| **Sub-Section Id :** | 159207141 |
| **Question Shuffling Allowed :** | Yes |
| **Is Section Default? :** | null |

**Question Number : 76 Question Id : 1592076091 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The values of Azimuthal and principal quantum numbers respectively for an electron that is present in 4d orbital

**Options :**

1. ✖ 1 and 4

2. ✖ 4 and 1

3. ✔ 2 and 4

4. ✖ 4 and 2

**Question Number : 77 Question Id : 1592076092 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following molecule has ionic bonding?

**Options :**

1. ✖ $CH_3Cl$

2. ✖ $CH_3OH$

3. ✖ $CO_2$

4. ✔ MgO

**Question Number : 78 Question Id : 1592076093 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

What is the Oxidation number of carbon in formaldehyde?

**Options :**

1. ✖ -4

2. ✖ +4

3. ✔ 0

4. ✖ +2

**Question Number : 79 Question Id : 1592076094 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The Molarity of a solution containing 9 g of glucose (molar mass180) in 500 g of water is

**Options :**

1. ✖ 0.5

2. ✔ 0.1

3. ✖ 0.2

4. ✖ 1.0

**Question Number : 80 Question Id : 1592076095 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Prussian blue colloid is

**Options :**

1. ✖ $As_2S_3$

2. ✖ $Fe(OH)_3$

3. ✔ $KFe[Fe(CN)_6]$

4. ✖ $FeCl_3$

**Question Number : 81 Question Id : 1592076096 Question Type : MCQ Option**

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

**Correct Marks : 1 Wrong Marks : 0**

Which of the following anions is the strongest base?

**Options :**

1. ✔ $ClO^-$

2. ✖ $ClO_2^-$

3. ✖ $ClO_3^-$

4. ✖ $ClO_4^-$

**Question Number : 82 Question Id : 1592076097 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The pH of $10^{-9}$ molar solution of HCl is

**Options :**

1. ✖ 9

2. ✖ -9

3. ✖ Between 7 & 8

4. ✔ Between 6 & 7

**Question Number : 83 Question Id : 1592076098 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which one of the following is a Renewable energy source?

**Options :**

1. ✖ Petroleum

2. ✖ Coal

3. ✖ Natural gas

4. ✔ Wind mills

**Question Number : 84 Question Id : 1592076099 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following gas is responsible for depletion of ozone layer in the atmosphere?

**Options :**

1. ✖ $CH_2Cl_2$

2. ✔ $CF_2Cl_2$

3. ✖ $CH_2F_2$

4. ✖ $CO_2$

**Question Number : 85 Question Id : 1592076100 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The exhausted permutit is regenerated by percolating through it a solution of

**Options :**

1. ✖ Calcium chloride

2. ✖ Zinc chloride

3. ✔ Sodium chloride

4. ✖ Magnesium chloride

**Question Number : 86 Question Id : 1592076101 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : Non**

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

**Correct Marks : 1 Wrong Marks : 0**

During reverse osmosis:

**Options :**

1. ✖ Dissolved salts are pushed out through semipermeable membrane

2. ✖ Only dissolved ionic salts are pushed out through the semipermeable membrane

3. ✔ Pure water is pushed out through semipermeable membrane

4. ✖ Both water and dissolved salts are pushed out through the semipermeable membrane

**Question Number : 87 Question Id : 1592076102 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following is a weak electrolyte?

**Options :**

1. ✖ HCl

2. ✖ NaOH

3. ✔ $CH_3COOH$

4. ✖ $H_2SO_4$

**Question Number : 88 Question Id : 1592076103 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

When 2 amperes of current is passed through $CuSO_4$ solution for 10 minutes, the amount of Cu deposited is (Atomic weight of Cu = 63.5 g)

**Options :**

1. ✖ 3.94 g

2. ✔ 0.394 g

3. ✖ 0.788 g

4. ✖ 7.88 g

**Question Number : 89 Question Id : 1592076104 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Composition of Nichrome alloy is

**Options :**

1. ✖ Ni:68%, Cu:27%, Fe:5%

2. ✔ Ni:78%, Cr:20%, Fe:2%

3. ✖ Ni:40%, Cu:60%

4. ✖ Al:95%, Cu:2%, Ni:1%

**Question Number : 90 Question Id : 1592076105 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

In the froth flotation method, pine oil

**Options :**

1. ✖ Increases the surface tension of the solution

2. ✖ Acts as a collector

3. ✖ Does not affect the surface tension of the solution

4. ✔ Decreases the surface tension of the solution

**Question Number : 91 Question Id : 1592076106 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

During electro chemical corrosion in acidic environment

**Options :**

1. ✔ Hydrogen evolution takes place

2. ✖ Oxygen evolution takes place

3. ✖ Oxygen absorption occurs

4. ✖ Hydrogen absorption takes place

**Question Number : 92 Question Id : 1592076107 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The process of coating of Iron with Zinc metal is known as

**Options :**

1. ✔ Galvanizing

2. ✖

Sherardizing

3. ✖ Zincing

4. ✖ Tinning

**Question Number : 93 Question Id : 1592076108 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Bakelite is prepared by the condensation polymerization of

**Options :**

1. ✔ Phenol and formaldehyde

2. ✖ Urea and formaldehyde

3. ✖ Phenol and acetaldehyde

4. ✖ Urea and acetone

**Question Number : 94 Question Id : 1592076109 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The trade name of the polymer coated on non-stick utensils is

**Options :**

1. ✖ Dacron

2. ✖ Orlon

3. ✔ Teflon

4. ✖ Nylon

**Question Number : 95 Question Id : 1592076110 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Octane number of a petrol that consists 20:80 mixture of n-heptane and 2,2,4-trimethyl pentane is

**Options :**

1. ✖ 100

2. ✖ Zero

3. ✔ 80

4. ✖ 20

**Question Number : 96 Question Id : 1592076111 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Producer gas is a mixture of

**Options :**

1. ✖ $CO_2 + H_2$

2. ✔ $CO + N_2$

3. ✖ $CO + CH_4$

4. ✖ $CH_4 + H_2$

**Question Number : 97 Question Id : 1592076112 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

For the following cell reaction

$$Fe + \underset{(a=1)}{Ni}^{2+} \longrightarrow \underset{(a=1)}{Fe}^{2+} + Ni$$

The EMF of the cell at 298 K is $(\overset{o}{E}_{Fe^{2+}/Fe} = -0.440\ V; \overset{o}{E}_{Ni^{2+}/Ni} = -0.250\ V)$

**Options :**

1. ✖ – 0.190 V

2. ✔ + 0.190 V

3. ✖ + 0.690 V

4. ✖ – 0.690 V

**Question Number : 98 Question Id : 1592076113 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

In Hydrogen-Oxygen fuel cell, the reaction at the cathode is

**Options :**

1. ✔ $O_2(g) + 4H^+ + 4e^- \rightarrow 2H_2O$

2. ✖ $4H^+ + 4e^- \rightarrow 2H_2(g)$

3. ✖ $2H_2O \rightarrow O_2(g) + 4H^+ + 4e^-$

4. ✖ $2H_2(g) + 4OH^- \rightarrow 4H_2O(\ell) + 4e^-$

**Question Number : 99 Question Id : 1592076114 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following statements is true about SMOG?

**Options :**

1. ✖ SMOG is derived from the fog

2. ✖ SMOG is derived from smoke

3. ✖ SMOG is derived from water vapour

4. ✔ SMOG is derived from both fog and smoke

**Question Number : 100 Question Id : 1592076115 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

What do BOD and COD stand for?

**Options :**

1. ✔ Biological Oxygen Demand and Chemical Oxygen Demand respectively

2. ✖ Chemical Oxygen Demand and Biological Oxygen Demand respectively

3. ✖ Botanical Oxygen Demand and Chemical Oxygen Demand respectively

4. ✖ Basic Oxygen Demand and Chemical Oxygen Demand respectively

# Metallurgical Engineering

| | |
|---|---|
| **Section Id :** | 159207121 |
| **Section Number :** | 4 |
| **Section type :** | Online |
| **Mandatory or Optional :** | Mandatory |
| **Number of Questions :** | 100 |
| **Number of Questions to be attempted :** | 100 |
| **Section Marks :** | 100 |
| **Enable Mark as Answered Mark for Review and Clear Response :** | Yes |
| **Maximum Instruction Time :** | 0 |
| **Sub-Section Number :** | 1 |
| **Sub-Section Id :** | 159207142 |
| **Question Shuffling Allowed :** | Yes |
| **Is Section Default? :** | null |

**Question Number : 101 Question Id : 1592076116 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following method is used for dressing the ore $Fe_3O_4$ ?

**Options :**

1. ✖ Selective settling

2. ✖ Flotation

3. ✔ Magnetic separation

4. ✖ Gravity separation

**Question Number : 102 Question Id : 1592076117 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

'Calamine' is an important ore of

**Options :**

1. ✖ Copper

2. ✖ Lead

3. ✖ Tin

4. ✔ Zinc

**Question Number : 103 Question Id : 1592076118 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following statement is 'True'

**Options :**

1. ✖ Carbon acts as an oxidizing agent in smelting process.

2. ✖ Calcination does not involve dehydration of ores.

3. ✖ During roasting the gangue is removed as slag

4. ✔ Matte is a metal-rich phase produced during smelting

**Question Number : 104 Question Id : 1592076119 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Hydrometallurgy is properly used in the extraction of which of the following metal?

**Options :**

1. ✖ Aluminum

2. ✔ Gold

3. ✖ Titanium

4. ✖ Iron

**Question Number : 105 Question Id : 1592076120 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following element is used in powering electric vehicles

**Options :**

1. ✖ Sodium

2. ✖ Brass

3. ✔ Lithium

4. ✖ Germanium

**Question Number : 106 Question Id : 1592076121 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Identify the energy source used in the blast furnace?

**Options :**

1. ✖ Petrol

2. ✔ Coke

3. ✖ Sulphur in ore

4. ✖ Pig iron

**Question Number : 107 Question Id : 1592076122 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Pig iron can be produced by

**Options :**

1. ✖ Cupola furnace

2. ✖ Muffle furnace

3. ✔ Blast furnace

4. ✖ Electric arc furnace

**Question Number : 108 Question Id : 1592076123 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Thermal Shock Resistance can be identified by

**Options :**

1. ✖ Tensile test

2. ✔ Spalling test

3. ✖ Dye penetrant test

4. ✖ Pyrometric cone equivalent

**Question Number : 109 Question Id : 1592076124 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Elemental analysis of coal is reported by

**Options :**

1. ✖ Optical microscope

2. ✔ Ultimate analysis

3. ✖ Atomic force microscopy

4. ✖ Proximate analysis

**Question Number : 110 Question Id : 1592076125 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Identify the acidic refractory from the following

**Options :**

1. ✖ Magnesia

2. ✖ Dolomite

3. ✔ Silica

4. ✖ Zirconia

**Question Number : 111 Question Id : 1592076126 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Identify the extensive property.

**Options :**

1. ✖ Specific heat

2. ✔ Gibbs free energy

3. ✖

Molar volume

4. ✖ Heat capacity

**Question Number : 112 Question Id : 1592076127 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The activity coefficient of the solute in a dilute solution

**Options :**

1. ✔ Remains constant

2. ✖ In unity at infinite dilution

3. ✖ Decreases with increase of concentration of the solute

4. ✖ Increases with increase of concentration of the solute

**Question Number : 113 Question Id : 1592076128 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

$C_V$ for an ideal gas is independent of the

**Options :**

1. ✖ Temperature

2. ✖ Volume

3. ✖ Pressure

4. ✔ Pressure and volume

**Question Number : 114 Question Id : 1592076129 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The number of degrees of freedom for an azeotropic mixture of ethanol and water in vapor – liquid equilibrium is

**Options :**

1. ✖ 2

2. ✖ 1

3. ✔ 0

4. ✖ 3

**Question Number : 115 Question Id : 1592076130 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Ideal gas law is applicable at _____ (Where T = Temperature and P = Pressure)

**Options :**

1. ✖ Low T and high P

2. ✔ Low T and low P

3. ✖ High T and low P

4. ✖ High T and high P

**Question Number : 116 Question Id : 1592076131 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The entropy change for a spontaneous process is

**Options :**

1. ✖ >0 for the system and the surroundings

2. ✖ <0 for the surroundings

3. ✖ >0 for the system

4. ✔ <0 for the surroundings and the system

**Question Number : 117 Question Id : 1592076132 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Materials with ionic bonds exhibit the following property

**Options :**

1. ✖ Malleable and ductile

2. ✔ Poor conductor of electricity

3. ✖ Very hard and brittle

4. ✖ Low melting point

**Question Number : 118 Question Id : 1592076133 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Effective number of atoms in HCP crystal structure is/are

**Options :**

1. ✔ 6

2. ✖ 4

3. ✖ 2

4. ✖ 1

**Question Number : 119 Question Id : 1592076134 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Metals with fine grain structure possess

**Options :**

1. ✖ low fatigue strength

2. ✖ low toughness

3. ✖ superior electrical and thermal conductivity

4. ✔ high strength and hardness

**Question Number : 120 Question Id : 1592076135 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Twinned boundary in polycrystalline metals belongs to

**Options :**

1. ✖ point defect

2. ✖ line defect

3. ✔ surface defect

4. ✖ volume defect

**Question Number : 121 Question Id : 1592076136 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Formation of solid solution is governed by

**Options :**

1. ✖ Lever rule

2. ✖ Phase rule

3. ✔ Hume-Ruthery rule

4. ✖ Kelvin-Planks rule

**Question Number : 122 Question Id : 1592076137 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Gibbs phase rule can be represented by the equation

**Options :**

1. ✔ $P + F = C + 2$

2. ✖ $P - C = F - 2$

3. ✖ $P + C = F + 2$

4. ✖ $P + F = C - 2$

**Question Number : 123 Question Id : 1592076138 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The reaction that takes place within the solid state is

**Options :**

1. ✖ Eutectic

2. ✖ Peritectic

3. ✖ Monotectic

4. ✔ Eutectoid

**Question Number : 124 Question Id : 1592076139 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following constituents is expected in equilibrium cooling of a hypereutectoid steel from austenite state

**Options :**

1. ✖ Ferrite and pearlite

2. ✔ cementite and pearlite

3. ✖ ferrite and bainite

4. ✖ cementite and martensite

**Question Number : 125 Question Id : 1592076140 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The complete transformation of austenite into pearlite is represented by

**Options :**

1. ✔ $A_1$ line

2. ✖ $A_3$ line

3. ✖ $A_{cm}$ line

4. ✖ $A_4$ line

**Question Number : 126 Question Id : 1592076141 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Austenite is an interstitial solid solution of carbon in

**Options :**

1. ✖ α-iron

2. ✖ β-iron

3. ✔ γ-iron

4. ✖ δ-ron

**Question Number : 127 Question Id : 1592076142 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The presence of hydrogen in steel causes

**Options :**

1. ✖ reduced neutron absorption

2. ✖ improved weldability

3. ✔ embrittlement

4. ✖ corrosion resistance

**Question Number : 128 Question Id : 1592076143 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Tempering is the heat treatment process applicable to

**Options :**

1. ✖ Low carbon steels

2. ✖ Hypo eutectoid steels

3. ✖ Hyper eutectoid steels

4. ✔ Low carbon steels and medium carbon steels

**Question Number : 129 Question Id : 1592076144 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Full annealing process is done

**Options :**

1. ✖ By water quenching

2. ✖ By air cooling

3. ✔ By very slow cooling

4. ✖

By oil cooling

**Question Number : 130 Question Id : 1592076145 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Steps involved in a heat treatment process are:

**Options :**

1. ✖ Heating, cooling, holding

2. ✔ Heating, holding, cooling

3. ✖ Holding, cooling, heating

4. ✖ Holding, heating, cooling

**Question Number : 131 Question Id : 1592076146 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Time dependent permanent deformation of material is called as

**Options :**

1. ✖ Toughness

2. ✔ Hardness

3. ✖ Fatigue

4. ✖ Creep

**Question Number : 132 Question Id : 1592076147 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The surface hardness in a low-carbon steels can be generally improved by which heat treatment process?

**Options :**

1. ✖ Hardening

2. ✖ Nitriding

3. ✔ Carburizing

4.

✖ Tempering

**Question Number : 133 Question Id : 1592076148 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Martensitic transformations

**Options :**

1. ✖ Are diffusion-controlled

2. ✔ Are shear processes

3. ✖ Yield two products of different compositions

4. ✖ Yield only one product

**Question Number : 134 Question Id : 1592076149 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following is not considered as heat treatment process for steels?

**Options :**

1. ✖ Hardening

2. ✖ Normalizing

3. ✔ Brazing

4. ✖ Cyaniding

**Question Number : 135 Question Id : 1592076150 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which one of the following is a case hardening process?

**Options :**

1. ✖ Recrystallization

2. ✖ Strain hardening

3. ✔ Carburizing

4. ✖ Spheroidizing

**Question Number : 136 Question Id : 1592076151 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : Non**

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

**Correct Marks : 1 Wrong Marks : 0**

Steel containing low percentage of nickel, chromium & tungsten are termed as the

**Options :**

1. ✔ Plain carbon steels

2. ✖ Alloy steels

3. ✖ Tool steels

4. ✖ Stainless steels

**Question Number : 137 Question Id : 1592076152 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

In HSS tool materials the element tungsten can be completely replaced, without changing the material property by

**Options :**

1. ✔ Molybdenum

2. ✖ Carbon

3. ✖ Cobalt

4. ✖ Vanadium

**Question Number : 138 Question Id : 1592076153 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

By austempering process the following microstructure is produced

**Options :**

1. ✖ Martensite

2. ✖ Cementite and ferrite

3. ✔ Bainite

4. ✖ Ledeburite

**Question Number : 139 Question Id : 1592076154 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Maximum height of the modern blast furnace is decided mainly by the

**Options :**

1. ✖ strength of the coke available

2. ✖ maximum wind rate to be blown

3. ✔ production capacity of the blast furnace

4. ✖ maximum hot blast temperature to be used

**Question Number : 140 Question Id : 1592076155 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Argillacious iron ores are rich in

**Options :**

1. ✖ Silica

2. ✖ Alumina

3. ✔ Clayey matter

4. ✖ Coaley matter

**Question Number : 141 Question Id : 1592076156 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Slag rate in Indian blast furnace is in the range of _____ kg/ton of pig iron.

**Options :**

1. ✖ 150 – 250

2. ✔ 350 – 500

3. ✖ 250 – 350

4. ✖ 1000 – 1500

**Question Number : 142 Question Id : 1592076157 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

For a blast furnace operating at a top pressure of 1.5 $kg/cm^2$, the blast pressure may be about _____$kg/cm^2$.

**Options :**

1. ✖ 0.5

2. ✖ 1.5

3. ✔ 2.5

4. ✖ 5.5

**Question Number : 143 Question Id : 1592076158 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The following zone attains the highest temperature in blast furnace

**Options :**

1. ✖ Mushy zone

2. ✖ Cohesive zone

3. ✖ Hearth zone

4. ✔ Tuyere zone

**Question Number : 144 Question Id : 1592076159 Question Type : MCQ Optio**

**Display Question Number : Yes Is Question Mandatory : No Calculator : Non**

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

**Correct Marks : 1 Wrong Marks : 0**

The viscosity of basic slag depends substantially on the content of

**Options :**

1. ✖ CaO and MgO

2. ✔ $Al_2O_3$ and MgO

3. ✖ $Fe_2O_3$ and MnO

4. ✖ $SiO_2$ and CaO

**Question Number : 145 Question Id : 1592076160 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Segregation increases for an ingot with

**Options :**

1. ✔ Increasing solidification time

2. ✖ Increase in melting temperature of the alloy

3. ✖

Increase in casting temperature of the alloy

Decreasing melting temperature of the alloy

4. ✖

**Question Number : 146 Question Id : 1592076161 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Bottle-top mould is useful for

**Options :**

1. ✔ Making a capped rimming steel ingot

2. ✖ Producing rimmed as well as semi-killed steel ingots

3. ✖ Producing killed steel ingots

4. ✖ Not useful for ingot production

**Question Number : 147 Question Id : 1592076162 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Solidification shrinkage is greater for

**Options :**

1. ✖ Rimmed steels

2. ✖ Semi-killed steels

3. ✔ Killed steels

4. ✖ LD steel

**Question Number : 148 Question Id : 1592076163 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

OBM process is also called

**Options :**

1. ✖ pneumatic process

2. ✔ oxygen bottom blowing process

3. ✖ side blowing process

4. ✖

Bessemer nitrogen blowing process

**Question Number : 149 Question Id : 1592076164 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

In the froth flotation process copper sulphate is added to act as

**Options :**

1. ✖ Frother

2. ✖ Collectors

3. ✔ Activator

4. ✖ Depressor

**Question Number : 150 Question Id : 1592076165 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following is a step involved in Hydro metallurgy

**Options :**

1. ✖ Drying

2. ✔ Leaching

3. ✖ Calcination

4. ✖ Smelting

**Question Number : 151 Question Id : 1592076166 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The process of extracting Magnesium from sea water is called

**Options :**

1. ✔ Dow process

2. ✖ Pidgeon process

3. ✖ Kroll's process

4. ✖ Van Arkell's process

**Question Number : 152 Question Id : 1592076167 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

In the process of extracting copper which of the following activity happens in the converter

**Options :**

1. ✖ Oxidation of sulphide content

2. ✖ separation of metal sulphide from the gangue

3. ✔ oxidation of iron and sulphur

4. ✖ refinement of blister copper

**Question Number : 153 Question Id : 1592076168 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which one of the following impurities is found in tin

**Options :**

1. ✖ kainite

2. ✖ cassiterite

3. ✔ wolframite

4. ✖ sphalerite

**Question Number : 154 Question Id : 1592076169 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

From which of the following ores titanium can be extracted economically

**Options :**

1. ✔ rutile

2. ✖ sphene

3. ✖ anatase

4. ✖ perovskite

**Question Number : 155 Question Id : 1592076170 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Thorium is extracted by one of the following techniques

**Options :**

1. ✖ pyrometallurgy

2. ✔ hydrometallurgy

3. ✖ electrometallurgy

4. ✖ thermometallurgy

**Question Number : 156 Question Id : 1592076171 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The Van Arkel method is a metallurgical method to refine

**Options :**

1. ✖ lead

2. ✖ aluminium

3. ✔ zirconium

4. ✖

titanium

**Question Number : 157 Question Id : 1592076172 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

What is the correct relationship between stress and strain in a linearly elastic material?

**Options :**

1. ✖ Stress is proportional to the square of the strain.

2. ✖ Stress is proportional to the logarithm of the strain.

3. ✖ Stress is proportional to the cube of the strain.

4. ✔ Stress is proportional to the strain.

**Question Number : 158 Question Id : 1592076173 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

What factors influence the onset of necking in a ductile material under tensile stress?

**Options :**

1. ✖ Strain rate and temperature.

2. ✔ Strain rate and material composition.

3. ✖ Stress and material composition.

4. ✖ Stress and temperature.

**Question Number : 159 Question Id : 1592076174 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which hardness test involves measuring the diameter of the indentation left by a pointed, diamond-shaped indenter?

**Options :**

1. ✖ Brinell hardness test

2. ✔ Vickers hardness test

3. ✖ Rockwell hardness test

4. ✖

Shore hardness test

**Question Number : 160 Question Id : 1592076175 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following non-destructive testing techniques is based on the principle of electromagnetic induction?

**Options :**

1. ✖ Liquid penetrant testing

2. ✖ Ultrasonic testing

3. ✖ Radiographic testing

4. ✔ Eddy current testing

**Question Number : 161 Question Id : 1592076176 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

A creep test is conducted on a material at a temperature of 500°C and a stress of 50 MPa. After 100 hours, the strain is found to be 0.5%. What is the creep rate of the material?

**Options :**

1. ✖ 0.0005 per hour

2. ✔ 0.005 per hour

3. ✖ 0.05 per hour

4. ✖ 0.5 per hour

**Question Number : 162 Question Id : 1592076177 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following factors does not affect the fatigue strength of a material?

**Options :**

1. ✖ Mean stress

2. ✖ Surface finish

3. ✖ Loading frequency

4. ✔

Chemical composition

**Question Number : 163 Question Id : 1592076178 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The following method is Not responsible for increase in fatigue strength of a component

**Options :**

1. Increase the part dimensions ✔

2. Increase the surface finish ✖

3. Strain hardening ✖

4. Nitriding ✖

**Question Number : 164 Question Id : 1592076179 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

A cylindrical specimen of a metal alloy has a length of 50 mm and a diameter of 10mm. It is subjected to a tensile force of 50 kN, resulting in an elongation of 0.5 mm. If the original length of the specimen was 50 mm and its original diameter was 10 mm, what is the engineering stress and strain in the specimen?

**Options :**

1. ✖ 100 MPa and 0.001

2. ✔ 125 MPa and 0.00125

3. ✖ 150 MPa and 0.0015

4. ✖ 175 MPa and 0.00175

**Question Number : 165 Question Id : 1592076180 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

A notched bar impact test is performed on a metal specimen with a V-notch of depth 2 mm and angle 45°. The height of the specimen is 10 mm, and the width is 10 mm. The energy absorbed by the specimen during the test is 20 J. What is the impact strength of the specimen?

**Options :**

1. ✖ $10\ J/m^2$

2. ✖ $20\ J/m^2$

3. ✔ $50\ J/m^2$

4. ✖ $100\ J/m^2$

**Question Number : 166 Question Id : 1592076181 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following defects can be detected using the liquid penetrant inspection method?

**Options :**

1. ✖ Subsurface porosity

2. ✔ Fatigue cracks

3. ✖ Lack of fusion

4. ✖ Shrinkage cavities

**Question Number : 167 Question Id : 1592076182 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following materials is most suitable for radiographic inspection?

**Options :**

1. ✖ Glass

2. ✖ Plastic

3. ✖ Wood

4. ✔ Metal

**Question Number : 168 Question Id : 1592076183 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Find the incorrect statement: The basic rules in drawing Mohr's circle are

**Options :**

1. ✔ An angle of θ on the physical element is represented by the same angle on Mohr's circle

2. ✖ The same sense of rotation (clockwise or counterclockwise) should be used

A shear stress causing a clockwise rotation about any point in the physical element is plotted above the horizontal axis of the Mohr's circle

3. ✖

A point on Mohr's circle gives the magnitude and direction of the normal and shear stresses on any plane in the physical element

4. ✖

**Question Number : 169 Question Id : 1592076184 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The stress-strain curve obtained by _____ is of fundamental interest in plasticity when the curve is plotted in terms of true stress and true strain.

**Options :**

1. ✖ Uniaxial compression loading

2. ✖ Biaxial compression loading

3. ✔ Uniaxial tensile loading

4. ✖ Biaxial tensile loading

**Question Number : 170 Question Id : 1592076185 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Anelastic behaviour of metals is identified by

**Options :**

1. ✖ Recoverable elastic strain

2. ✔ Amount of plastic strain decrease with temperature after the reversal of the load

3. ✖ Amount of plastic strain decrease with temperature with the application of the load

4. ✖ Amount of increase in plastic strain with temperature with the application of the load

**Question Number : 171 Question Id : 1592076186 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Find the odd one out: Fabrication process is

**Options :**

1. ✖ Bending

2. ✖ Wire drawing

3. ✖ Tube drawing

4. ✔ Rolling

**Question Number : 172 Question Id : 1592076187 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

For an isotropic material, the yield criterion must be

**Options :**

1. ✖ Independent of the choice of axes

2. ✖ Dependent of choice of axes

3. ✖ Independent of plastic deformation

4. ✔ Independent of elastic deformation

**Question Number : 173 Question Id : 1592076188 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

During strain hardening increases in strain require _____ the initial yield stress $\sigma_0$

**Options :**

1. ✖ Higher values of stress than

2. ✖ Lower values of stress than

3. ✔ Equal values of stress to

4. ✖ Beyond fracture stress than

**Question Number : 174 Question Id : 1592076189 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The displacement components such as $e_{xy}$, $e_{yx}$, etc. produce

**Options :**

1. ✖ Uniaxial tension

2. ✖ Rigid-body rotation

3. ✖ Shear strain and rigid-body rotation

4. ✔ Shear strain

**Question Number : 175 Question Id : 1592076190 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following technique is best suited to produce cobalt – tungsten carbide cutting tools?

**Options :**

1. ✔ Hot Isostatic Pressing

2. ✖ Investment casting

3. ✖ Forging

4. ✖ Superplastic forming

**Question Number : 176 Question Id : 1592076191 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following metals is most likely to recrystallize during hot working?

**Options :**

1. ✖ Aluminium

2. ✖ $\alpha$ – iron

3. ✔ Cartridge brass

4. ✖ Zirconium

**Question Number : 177 Question Id : 1592076192 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Metals that have a high recovery rate during hot working

**Options :**

1. ✖ Readily recrystallize

2. ✔ Do not recrystallize

Do not have texture

3. ✖

Do not have preferred orientation

4. ✖

**Question Number : 178 Question Id : 1592076193 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The true stain in terms of fractional reduction (r) is

**Options :**

1. ✔ $\in = \ln \frac{1}{1-r}$

2. ✖ $\in = \ln(1-r)$

3. ✖ $\in = \ln \frac{1}{1+r}$

4. ✖ $\in = \ln(1+r)$

**Question Number : 179 Question Id : 1592076194 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following material requires the largest shrinkage allowance, while making a pattern for casting

**Options :**

1. ✖ brass

2. ✖ aluminium

3. ✖ cast iron

4. ✔ plain carbon steel

**Question Number : 180 Question Id : 1592076195 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The sand which prevent the two surfaces from sticking together is called

**Options :**

1. ✖ green sand

2. ✖ dry sand

3. ✖ facing sand

4. ✔ parting sand

**Question Number : 181 Question Id : 1592076196 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The property of moulding sand which enable to allow the escape of gasses from the mould

**Options :**

1. ✔ permeability

2. ✖ flowability

3. ✖ high strength

4. ✖ collapsibility

**Question Number : 182 Question Id : 1592076197 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Foundry sand mixed with organic binders is called

**Options :**

1. ✔ core sand

2. ✖ green sand

3. ✖ loam sand

4. ✖ backing sand

**Question Number : 183 Question Id : 1592076198 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The primary purpose of sprue in a casting mould is to

**Options :**

1. ✖ feed the casting at a rate consistent with the rate of solidification

2. ✖ help feed the casting until all solidification takes place

3. ✖ act as a reservoir for molten metal

4.

✔ feed molten metal from the pouring basin to the gate

**Question Number : 184 Question Id : 1592076199 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Centrifugal casting products have

**Options :**

1. ✖ fine grain structure with low density

2. ✖ segregation of slag towards the outer skin of the casting

3. ✖ large grain structure with high porosity

4. ✔ fine grain structure with high density

**Question Number : 185 Question Id : 1592076200 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The most preferred process for casting a turbine blades is

**Options :**

1. ✖ sand casting

2. ✖ die casting

3. ✔ investment casting

4. ✖ shell moulding

**Question Number : 186 Question Id : 1592076201 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The process employed for making cores is

**Options :**

1. ✖ Die casting

2. ✖ centrifugal casting

3. ✔ $CO_2$ process

4. ✖ shell moulding

**Question Number : 187 Question Id : 1592076202 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Discontinuity in casting due to lack of fusion between two streams of liquid metal is called

**Options :**

1. ✖ misrun

2. ✔ cold shut

3. ✖ hot tear

4. ✖ swell

**Question Number : 188 Question Id : 1592076203 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Liquid penetrate test is used for detecting

**Options :**

1. ✔ surface cracks

2. ✖ scabs

3. ✖ distortion

4. ✖ internal crack

**Question Number : 189 Question Id : 1592076204 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The region between the liquidus and solidus lines is called

**Options :**

1. ✖ solid zone

2. ✖ liquid zone

3. ✔ mushy zone

4. ✖ recovery zone

**Question Number : 190 Question Id : 1592076205 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

A weld used to temporarily hold the work in position is

**Options :**

1. ✖ bead weld

2. ✖ spot weld

3. ✖ fillet weld

4. ✔ tack weld

**Question Number : 191 Question Id : 1592076206 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The following gas flame in gas welding that is suggested for welding of Zinc base alloys

**Options :**

1. ✔ Oxidising flame

2. ✖ Neutral flame

3. ✖ Carburizing flame

4. ✖ Both oxidising and neutral flame

**Question Number : 192 Question Id : 1592076207 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which one among the following welding processes NOT used for overhead welding

**Options :**

1. ✖ SMAW

2. ✖ MAG

3. ✔ SAW

4. ✖ TIG

**Question Number : 193 Question Id : 1592076208 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

What are the two most commonly inert gases used in TIG welding Process?

**Options :**

1. ✖

Argon and $CO_2$

2. ✖ Helium and $CO_2$

3. ✔ Argon and Helium

4. ✖ Argon and Nitrogen

**Question Number : 194 Question Id : 1592076209 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Helium shielding gas having high flow rate than argon flow rate for the same condition of MIG welding process because

**Options :**

1. ✔ Helium is lighter than air

2. ✖ Helium is extracted from the natural gas

3. ✖ Atomic weight is 40

4. ✖ Of high penetration

**Question Number : 195 Question Id : 1592076210 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

What is best shape of pure tungsten electrode in TIG welding process

**Options :**

1. ✖ Conical point end

2. ✖ Flat end

3. ✔ Full round ball at the tip

4. ✖ Pencil pointed tip

**Question Number : 196 Question Id : 1592076211 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

A groove or channel in the parent metal at the toe of the weld is due to

**Options :**

1. ✖ Lack of fusion

2. ✔ Under cut

3. ✖ Lack of penetration

4. ✖ Overlap

**Question Number : 197 Question Id : 1592076212 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Name the resistance welding process in which disc electrodes are used

**Options :**

1. ✔ Seam welding machine

2. ✖ Spot welding machine

3. ✖ Projection welding machine

4. ✖ Butt welding machine

**Question Number : 198 Question Id : 1592076213 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : Non**

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

**Correct Marks : 1 Wrong Marks : 0**

The laser beam welding is NOT suitable for

**Options :**

1. ✖ High electric conductivity materials

2. ✖ low electric conductivity materials

3. ✖ low thermal conductivity materials

4. ✔ High reflective materials

**Question Number : 199 Question Id : 1592076214 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The electron beam machine process is suitable for

**Options :**

1. ✔ High electric conductivity materials

2. ✖ Low electric conductivity materials

3. ✖

High thermal conductivity materials

4. ✖ Low melting point materials

**Question Number : 200 Question Id : 1592076215 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

In Heat Affected Zone (HAZ) in welding process, the material undergoes

**Options :**

1. ✔ Microstructural changes but not melt

2. ✖ Both melting and microstructural changes

3. ✖ Melting but not microstructural changes

4. ✖ Neither melting nor microstructural changes