

# Question Paper Preview

**Question Paper Name:** Metallurgical Engineering  
**Subject Name:** Metallurgical Engineering

Mathematics

Number of Questions: 50  
Display Number Panel: Yes  
Group All Questions: No

**Question Number : 1 Question Id : 6780945804 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

If the traces of A and B are 20 and -8 then the trace of (A+B) is \_\_\_\_

Options :

1. 12
2. -12
3. 28
4. -28

**Question Number : 2 Question Id : 6780945805 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

If  $A = \begin{bmatrix} x & 1 \\ 1 & 0 \end{bmatrix}$  is an involutory matrix then  $x =$

Options :

1. 0
2. -2
3. -1
4. 2

**Question Number : 3 Question Id : 6780945806 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The determinant of  $\begin{bmatrix} \log e & \log e^2 & \log e^3 \\ \log e^2 & \log e^3 & \log e^4 \\ \log e^3 & \log e^4 & \log e^5 \end{bmatrix}$  is \_\_\_\_\_

Options :

- 0
- 1
- $4 \log e$
- $5 \log e$

Question Number : 4 Question Id : 6780945807 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If  $A = \begin{bmatrix} 1 & 1 & 0 \\ 2 & 1 & 3 \\ 0 & 1 & 2 \end{bmatrix}$  then  $\det(\text{adj}A) =$  \_\_\_\_\_

Options :

- $\det A$
- $\det A^2$
- $-\det A$
- $(\det A)^2$

Question Number : 5 Question Id : 6780945808 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If  $A, B$  are two matrices and  $AB=B, BA=A$  then  $A^2 + B^2 =$

Options :

- $A+B$
- $A-B$
- $AB$
- 0

Question Number : 6 Question Id : 6780945809 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If  $\frac{3x+2}{(x+1)(2x^2+3)} = \frac{A}{x+1} + \frac{Bx+C}{2x^2+3}$ , then  $A+C-B =$  \_\_\_\_

Options :

1. 0
2. 2
3. 3
4. 5

Question Number : 7 Question Id : 6780945810 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. -2:1
2. 2:1
3. 1:2
4. 3:1

Question Number : 8 Question Id : 6780945811 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of  $\tan 855^\circ =$  \_\_\_\_

Options :

1. 1
2.  $\frac{1}{\sqrt{2}}$
3. -1
4.  $-\frac{1}{\sqrt{2}}$

Question Number : 9 Question Id : 6780945812 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If  $\tan \alpha = \frac{m}{m+1}$  and  $\tan \beta = \frac{1}{2m+1}$  then  $\tan(\alpha + \beta) =$  \_\_\_\_

Options :

1. -1
2. 0
3. 1
4. 2

Question Number : 10 Question Id : 6780945813 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of  $6 \sin 20^\circ - 8 \sin^3 20^\circ =$

Options :

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

Question Number : 11 Question Id : 6780945814 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If  $3 \sin \theta + 4 \cos \theta = 5$  then the value of  $4 \sin \theta - 3 \cos \theta =$

Options :

1. 0
2. -1
3. 1
4. 2

Question Number : 12 Question Id : 6780945815 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The sine function with period 3 is

Options :

1.  $\sin \frac{2\pi x}{3}$
2.  $\sin \frac{\pi x}{3}$

3.  $\sin 3\pi x$

3.

4.  $\sin \frac{3\pi x}{2}$

4.

Question Number : 13 Question Id : 6780945816 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The maximum value of  $3\sin^2 x + 5\cos^2 x$  is \_\_\_\_\_

Options :

1. 8

1.

2. 3

2.

3. 5

3.

4. 34

4.

Question Number : 14 Question Id : 6780945817 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The equation  $\sqrt{3}\sin x + \cos x = 4$  has \_\_\_\_\_

Options :

1. Only one solution

1.

2. two solutions

2.

3. Infinite solutions

3.

4. no solution

4.

Question Number : 15 Question Id : 6780945818 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The solution of  $\cos^{-1}(\sqrt{3}x) + \cos^{-1}x = \frac{\pi}{2}$  is \_\_\_\_\_

Options :

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

1.

2.  $\frac{1}{5}$

2.

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

3.

4.  $-\frac{1}{5}$

Question Number : 16 Question Id : 6780945819 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of  $\sin \theta + \sin(\theta + 120^\circ) - \sin(120^\circ - \theta) =$  \_\_\_\_\_

Options :

1. 0
2.  $\sin \theta$
3. 1
4.  $-\sin \theta$

Question Number : 17 Question Id : 6780945820 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The principal solution of  $3\text{Cosec}A = 4\text{Sin}A$  is \_\_\_\_\_

Options :

1.  $\frac{\pi}{4}$
2.  $\pm \frac{\pi}{3}$
3.  $\pm \frac{\pi}{6}$
4.  $\pm 2\pi$

Question Number : 18 Question Id : 6780945821 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If  $|z^2 - 1| = |z|^2 + 1$ , then  $z$  lies in \_\_\_\_\_

Options :

1. The real axis
2. a circle
3. The imaginary axis
4. a parabola

Question Number : 19 Question Id : 6780945822 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If  $\left(\frac{1+i}{1-i}\right)^3 - \left(\frac{1-i}{1+i}\right)^3 = a+ib$ , then  $a$  and  $b$  are \_\_\_\_\_

Options :

1. 1,1
2. 2,-2
3. 0,-2
4. 0,-1

Question Number : 20 Question Id : 6780945823 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the line  $y = 2x + c$  is a tangent to  $x^2 + y^2 = 5$  then the value of  $c$  is \_\_\_\_\_

Options :

1. 2
2. 3
3. 4
4. 5

Question Number : 21 Question Id : 6780945824 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The vertex of the parabola  $x^2 + 8x + 12y + 4 = 0$  is

Options :

1. (-4,1)
2. (4,-1)
3. (-4,-1)
4. (4,1)

Question Number : 22 Question Id : 6780945825 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The number of tangents to the ellipse  $\frac{x^2}{4} + \frac{y^2}{2} = 1$  through (2,1) is \_\_\_\_\_

Options :

1. 0

2. 1
3. 2
4. 3

Question Number : 23 Question Id : 6780945826 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The length of the latus rectum of the hyperbola  $x^2 - 4y^2 = 4$  is \_\_\_\_\_

Options :

1. 2
2. 1
3. 4
4. 3

Question Number : 24 Question Id : 6780945827 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The length of the diameter of the circle  $x^2 + y^2 - 6x - 8y = 0$  is \_\_\_\_\_

Options :

1. 10
2. 15
3. 5
4. 20

Question Number : 25 Question Id : 6780945828 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the line  $2y = 5x + k$  touches the parabola  $y^2 = 6x$  then  $k =$  \_\_\_\_\_

Options :

1.  $\frac{2}{3}$
2.  $\frac{4}{3}$
3.  $\frac{3}{5}$
4.  $\frac{6}{5}$



Question Number : 26 Question Id : 6780945829 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

$$\lim_{x \rightarrow 2^+} \frac{x|x-2|}{x-2} = \underline{\hspace{2cm}}$$

Options :

1. 1
2. -1
3. 2
4. -2

Question Number : 27 Question Id : 6780945830 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

$$\text{If } f(x) = (1+x)^{\frac{2}{x}} \text{ is continuous at } x=0 \text{ then } f(0) = \underline{\hspace{2cm}}$$

Options :

1.  $e$
2.  $e^2$
3.  $e^3$
4.  $e^4$

Question Number : 28 Question Id : 6780945831 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

$$\text{If } x = a \sec \theta, y = b \tan \theta \text{ then } \frac{dy}{dx} = \underline{\hspace{2cm}}$$

Options :

1.  $\frac{b}{a} \sec \theta$
2.  $\frac{b}{a} \operatorname{cosec} \theta$
3.  $\frac{a}{b} \sec \theta$
4.  $\frac{a}{b} \operatorname{cosec} \theta$

If  $x^y = e^{x-y}$  then  $\frac{dy}{dx} =$  \_\_\_\_\_

Options :

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

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

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

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

Question Number : 30 Question Id : 6780945833 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If  $y = \sin^{-1}\left(\frac{x}{\sqrt{1+x^2}}\right)$  then  $\frac{dy}{dx} =$  \_\_\_\_\_

Options :

1.  $-\frac{1}{1+x^2}$

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

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

4.  $-\frac{2}{1+x^2}$

Question Number : 31 Question Id : 6780945834 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The slope of the normal to the curve  $x = a \sec \theta, y = a \tan \theta$  at  $\theta = \frac{\pi}{6}$  is \_\_\_\_\_

Options :

1. 2

2. 0

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

4. 1

Question Number : 32 Question Id : 6780945835 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The rate of change of area of a circle with respect to radius when  $r=5\text{cm}$  is

Options :

1.  $2\pi \text{ sq.cm/sec}$

2.  $10\pi \text{ sq.cm/sec}$

3.  $100\pi \text{ sq.cm/sec}$

4.  $20\pi \text{ sq.cm/sec}$

Question Number : 33 Question Id : 6780945836 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following function has maxima or minima?

Options :

1.  $e^x$

2.  $\log x$

3.  $x^3 + x^2 + x + 1$

4.  $\sin x$

Question Number : 34 Question Id : 6780945837 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the increase in the side of a square is 2% then the approximate percentage increase in the area of the square is \_\_\_\_\_

Options :

1. 2

2. 4

3. 6

4. 8

Question Number : 35 Question Id : 6780945838 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For the function  $f(x) = \log(x^2 + y^2)$ , which of the following is true?

Options :

1.  $f_x + f_y = 0$

2.  $f_{xx} + f_{yy} = 0$

3.  $f_x - f_y = 0$

4.  $f_{xx} - f_{yy} = 0$

Question Number : 36 Question Id : 6780945839 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

$$\int \operatorname{cosec}^5 \theta \cot \theta d\theta = \underline{\hspace{2cm}}$$

Options :

1.  $\frac{\cot^2 \theta}{2}$

2.  $\frac{-\operatorname{cosec}^5 \theta}{5}$

3.  $\frac{\operatorname{cosec}^6 \theta}{6}$

4.  $\frac{-\operatorname{cosec}^6 \theta}{6}$

Question Number : 37 Question Id : 6780945840 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

$$\int_2^3 \frac{dx}{x^2 - x} = \underline{\hspace{2cm}}$$

Options :

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

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

3.  $\log \frac{8}{3}$

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

Question Number : 38 Question Id : 6780945841 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If  $a < 0 < b$  then  $\int_a^b \frac{|x|}{x} dx = \underline{\hspace{2cm}}$

Options :

1.  $b - a$
2.  $a - b$
3.  $a + b$
4.  $0$

Question Number : 39 Question Id : 6780945842 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

$\int_0^1 x \tan^{-1} x dx = \underline{\hspace{2cm}}$

Options :

1.  $\frac{\pi}{4} - \frac{1}{2}$
2.  $\frac{\pi}{8} - \frac{1}{2}$
3.  $\frac{\pi}{4} + \frac{1}{2}$
4.  $\frac{\pi}{8} + \frac{1}{2}$

Question Number : 40 Question Id : 6780945843 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

$\lim_{n \rightarrow \infty} \sum_{r=1}^n \frac{1}{n} e^{\frac{r}{n}} = \underline{\hspace{2cm}}$

Options :

1.  $e$

2.  $(1+e)$
3.  $(1-e)$
4.  $(e-1)$

Question Number : 41 Question Id : 6780945844 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

$$\int_0^{\pi/4} \sec^6 x dx = \underline{\hspace{2cm}}$$

Options :

1.  $\frac{8}{3}$
2.  $\frac{28}{15}$
3.  $-\frac{28}{15}$
4.  $\frac{4}{5}$

Question Number : 42 Question Id : 6780945845 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The area bounded by the curve  $y = \log x$ ,  $x$ -axis and the straight line  $x - e = 0$  is            square units

Options :

1.  $e$
2.  $(e-1)$
3.  $0$
4.  $(1-e)$

Question Number : 43 Question Id : 6780945846 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The volume of the solid generated by rotating one arch of the curve  $y = \sin 3x$  about the  $x$ -axis is----

Options :

1.  $\pi^2$

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

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

4.  $\frac{\pi^2}{6}$

Question Number : 44 Question Id : 6780945847 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

$y = cx - c^2$  is the general solution of the differential equation

Options :

1.  $\left(\frac{dy}{dx}\right)^2 - x\left(\frac{dy}{dx}\right) + y = 0$

2.  $\frac{d^2y}{dx^2} = 0$

3.  $\frac{dy}{dx} = c$

4.  $\left(\frac{dy}{dx}\right)^2 + x\left(\frac{dy}{dx}\right) + y = 0$

Question Number : 45 Question Id : 6780945848 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The general solution of the differential equation  $\frac{dy}{dx} + \frac{y}{3} = 1$  is

Options :

1.  $y = 3 + ce^{\frac{x}{3}}$

2.  $y = 3 + ce^{-\frac{x}{3}}$

3.  $3y = c + e^{\frac{x}{3}}$

4.  $3y = c + e^{-\frac{x}{3}}$

Question Number : 46 Question Id : 6780945849 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The differential equation corresponding to the family of curves  $y = ae^{bx}$ , where  $a$  and  $b$  are arbitrary constants, is \_\_\_\_\_

Options :

1.  $\frac{d^2y}{dx^2} = y \frac{dy}{dx}$

2.  $y \frac{d^2y}{dx^2} - \frac{dy}{dx} = 0$

3.  $y \frac{d^2y}{dx^2} = \left(\frac{dy}{dx}\right)^2$

4.  $\frac{dy}{dx} - y^2 = 0$

Question Number : 47 Question Id : 6780945850 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An integrating factor of the differential equation

$(x^2y + y + 1)dx + (x + x^3)dy = 0$  is \_\_\_\_\_

Options :

1.  $e^x$

2.  $x^2$

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

4.  $x$

Question Number : 48 Question Id : 6780945851 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The differential equation whose solution is  $Ax^2 + By^2$ , where  $A, B$  are arbitrary constants are of ----

Options :

1.  $1^{\text{st}}$  order and  $1^{\text{st}}$  degree



2. 2<sup>nd</sup> order and 1<sup>st</sup> degree
3. 2<sup>nd</sup> order and 2<sup>nd</sup> degree
4. 1<sup>st</sup> order and 2<sup>nd</sup> degree

Question Number : 49 Question Id : 6780945852 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The general solution of the differential equation  $\frac{d^2x}{dt^2} - 4\frac{dx}{dt} + 5x = 0$  is

Options :

1.  $x = (c_1 \cos t + c_2 \sin t)e^{2t}$
2.  $t = (c_1 \cos x + c_2 \sin x)e^{2x}$
3.  $x = (c_1 \cos 2t + c_2 \sin 2t)e^t$
4.  $t = (c_1 \cos 2x + c_2 \sin 2x)e^x$

Question Number : 50 Question Id : 6780945853 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The particular integral of  $(D - 2)^2 x = \sin 2x$  is

Options :

1.  $\frac{\cos 2x}{8}$
2.  $\frac{\sin 2x}{8}$
3.  $\frac{-\cos 2x}{2}$
4.  $\frac{-\sin 2x}{2}$

Physics

Number of Questions:	25
Display Number Panel:	Yes
Group All Questions:	No

Question Number : 51 Question Id : 6780945854 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The unit of impulse is the same as that of

Options :

1. moment of force
2. linear momentum
3. force
4. pressure

Question Number : 52 Question Id : 6780945855 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the force is given by  $F = at+bt^2$  where  $t$  is the time. The dimensions of  $a$  and  $b$  are

Options :

1.  $MLT^{-4}, MLT^{-2}$
2.  $MLT^{-3}, MLT^{-4}$
3.  $ML^2T^{-3}, ML^2T^{-2}$
4.  $ML^2T^{-3}, ML^3T^{-4}$

Question Number : 53 Question Id : 6780945856 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Vector parallel to  $6\hat{i} + 8\hat{j}$  and having a magnitude of 5 is

Options :

1.  $4\hat{i} + 3\hat{j}$
2.  $12\hat{i} + 16\hat{j}$
3.  $16\hat{i} + 8\hat{j}$
4.  $3\hat{i} + 4\hat{j}$

Question Number : 54 Question Id : 6780945857 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If  $|\vec{A} \times \vec{B}| = K(AB)$  then angle between  $\vec{A}$  and  $\vec{B}$  is

Options :

1.  $\cos^{-1}K$
2.  $\cos^{-1}(1/K)$
3.  $\sin^{-1}K$
4.  $\sin^{-1}(1/K)$

Question Number : 55 Question Id : 6780945858 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A cricket ball is thrown at a speed of 28 m/s in a direction  $30^\circ$  above the horizontal. The maximum height reached by the ball is

Options :

1. 10 m
2. 20 m
3. 30 m
4. 40 m

Question Number : 56 Question Id : 6780945859 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Two bodies are projected at angles of  $45^\circ$  and  $60^\circ$  with the horizontal with same velocity simultaneously. Ratio of their horizontal ranges is

Options :

1.  $\sqrt{3} : 2$
2.  $2 : \sqrt{3}$
3. 1:2
4. 2:1

Question Number : 57 Question Id : 6780945860 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A ball thrown by a boy is caught 2 seconds later by another at some distance away on the same level. If the angle of projection is  $30^\circ$ , the velocity of projection is

Options :

1. 19.6 m/sec
2. 9.8 m/sec
3. 4.9 m/sec
4. 5.2 m/sec

Question Number : 58 Question Id : 6780945861 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A 200 m wide river flows with a velocity of 5 m/sec. A man crosses the river in the shortest time of 25 sec. If there is no flow and he swims with the same velocity, the time taken to cross the river is

Options :

1.  $\frac{200}{5\sqrt{3}}$  sec
2. 20 sec
3. 25 sec
4.  $25\sqrt{2}$  sec

Question Number : 59 Question Id : 6780945862 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A body of mass 1 Kg lies on an inclined plane of angle  $60^\circ$  to the horizontal. If the coefficient of friction is 0.4, the frictional force along the inclined plane is

Options :

1. 1.96 N
2. 0.98 N
3. 0.49 N
4. 0.245 N

Question Number : 60 Question Id : 6780945863 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A force of 20 Kg weight is required to just slide a wooden box weighing 50 Kg over ice. Then coefficient of static friction between the surfaces in contact is

Options :

1. 0.2

- 2. 0.4
- 3. 0.8
- 4. 0.1

Question Number : 61 Question Id : 6780945864 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A cyclist comes to a skidding stop in 10m. During this process, the force on the cycle due to the road is 200N and is directly opposed to the motion. The work done by the road on the cycle is

- Options :
- 1. 1000 J
  - 2. 2000J
  - 3. -1000J
  - 4. -2000J

Question Number : 62 Question Id : 6780945865 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A sphere of mass 4 Kg is dropped from a certain height. After 5s, its kinetic energy is (g=10 m/s<sup>2</sup>)

- Options :
- 1. 5J
  - 2. 50 J
  - 3. 5 KJ
  - 4. 50 KJ

Question Number : 63 Question Id : 6780945866 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An elevator weighing 500 kg is to be lifted up at a constant velocity of 0.20 m/s. What would be the minimum power of the motor to be used?

- Options :
- 1. 100 W
  - 2. 500 W

3. 980 W

4. 900 W

Question Number : 64 Question Id : 6780945867 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

At  $t=0$ , the displacement of a particle in SHM is half its amplitude. Its initial phase is (referring to mean position)

Options :

1.  $\frac{\pi}{6}$

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

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

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

Question Number : 65 Question Id : 6780945868 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The length of seconds pendulum is 100 cm. To have a period half of this value, the length is to be reduced by

Options :

1. 25 cm

2. 75 cm

3. 50 cm

4. 100 cm

Question Number : 66 Question Id : 6780945869 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Inside a big hall, the reverberation time is

Options :

1. directly proportional to volume

2. inversely proportional to sound absorption

both directly proportional to volume

and

inversely proportional to sound absorption

- 3.
4. depends on temperature

Question Number : 67 Question Id : 6780945870 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The voice of lion is different from that of a mosquito because

Options :

1. the sounds have different pitch
2. they are of different size
3. the two voices travel with different velocities
4. the sounds have different phases

Question Number : 68 Question Id : 6780945871 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A car is travelling at  $\frac{v}{10}$  m/s and sounds horn of frequency 990 Hz. The apparent frequency heard by a police chasing the car at  $\frac{v}{9}$  m/s ( $v$  is the velocity of sound) is

Options :

1. 990 Hz
2. 900 Hz
3. 100 Hz
4. 1000Hz

Question Number : 69 Question Id : 6780945872 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

When ice cube melts and becomes water, the ice-water system undergoes a change such that

Options :

1. entropy of the system decreases and internal energy decreases
2. entropy of the system decreases and internal energy increases

entropy of the system increases and internal energy increases

3.

entropy of the system increases and internal energy decreases

4.

Question Number : 70 Question Id : 6780945873 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A mass of 300 gm falls from a height of 3 m ( $g=9.8 \text{ m/s}^2$ ). Assuming that the whole energy is converted into heat, the amount of heat produced is

Options :

1. 2 cal

1.

2. 2.1 cal

2.

3. 4 cal

3.

4. 4.2 cal

4.

Question Number : 71 Question Id : 6780945874 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

During an adiabatic expansion of 2 moles of a gas, the change in internal energy was found to be equal to 100 J. The work done during the process will be equal to

Options :

1. zero

1.

2. -100 J

2.

3. 200 J

3.

4. 100 J

4.

Question Number : 72 Question Id : 6780945875 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The pressure and density of a diatomic gas ( $\gamma = \frac{7}{5}$ ) change adiabatically from

(P,d) to ( $P^1, d^1$ ). If  $\frac{d^1}{d} = 32$ , then  $\frac{P^1}{P}$  is

Options :

1. 128

1.

2. 32

2.



3. 256

4. 64

Question Number : 73 Question Id : 6780945876 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Boyle's law holds good for an ideal gas during

Options :

1. isobaric changes
2. isothermal changes
3. isochoric changes
4. isotopic changes

Question Number : 74 Question Id : 6780945877 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The threshold frequency of metal is  $\nu_0$ . When a light of frequency  $4\nu_0$  is incident on metal then the  $K.E_{\max}$  of emitted electrons is

Options :

1.  $2\nu_0 h$
2.  $3\nu_0 h$
3.  $4\nu_0 h$
4.  $\nu_0 h$

Question Number : 75 Question Id : 6780945878 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Superconductors are \_\_\_\_\_ materials

Options :

1. dielectric
2. paramagnetic
3. ferromagnetic
4. diamagnetic

Number of Questions: 25  
Display Number Panel: Yes  
Group All Questions: No

Question Number : 76 Question Id : 6780945879 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The Pauli exclusion principle is concerned with

Options :

1. Energy of orbital.
2. Spin of electron.
3. Energy of electron
4. Angular momentum of electron

Question Number : 77 Question Id : 6780945880 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

According to Bohr's model of hydrogen atom, the following is quantized

Options :

1. Linear momentum
2. Linear velocity
3. Angular momentum
4. Angular velocity

Question Number : 78 Question Id : 6780945881 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

How many 'd' – orbitals have two perpendicular nodal planes

Options :

1. Two
2. Three
3. Four
4. Five

Question Number : 79 Question Id : 6780945882 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In sodium chloride crystal, each  $\text{Na}^+$  ion is surrounded by

Options :

1. Two  $\text{Cl}^-$  ions
2. Four  $\text{Cl}^-$  ions
3. Six  $\text{Cl}^-$  ions
4. Eight  $\text{Cl}^-$  ions

Question Number : 80 Question Id : 6780945883 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which among the following molecule contains a  $\pi$  – bond

Options :

1.  $\text{H}_2$
2.  $\text{O}_2$
3.  $\text{F}_2$
4.  $\text{HCl}$

Question Number : 81 Question Id : 6780945884 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which among the following is insoluble in water?

Options :

1. Alcohol
2. Ammonia
3. Benzene
4. Acetone

Question Number : 82 Question Id : 6780945885 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The normality of 2.3 M  $\text{H}_2\text{SO}_4$  solution is

Options :

1. 0.46N
2. 0.23 N
3. 2.3 N

4. 4.6N

Question Number : 83 Question Id : 6780945886 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

8 grams of substance of molecular weight 40 is dissolved in 250 g of water. Then the molality of the solution is

Options :

1. 0.4
2. 0.8
3. 0.2
4. 0.6

Question Number : 84 Question Id : 6780945887 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The pH value of 0.05M Ba(OH)<sub>2</sub> solution is

Options :

1. 10
2. 12
3. 13
4. 11

Question Number : 85 Question Id : 6780945888 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following molecule is not a Lewis Base?

Options :

1. H<sub>2</sub>O
2. BF<sub>3</sub>
3. NH<sub>3</sub>
4. CO

Question Number : 86 Question Id : 6780945889 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

During the electrolysis of brine, 710 g of Cl<sub>2</sub> was liberated at anode. The weight of NaOH formed

Options :

1. 800 g
2. 400 g
3. 80 g
4. 40 g

Question Number : 87 Question Id : 6780945890 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In the Daniell cell, which electrode acts as anode?

Options :

1. Cu
2. Hg
3. Zn
4. Pt

Question Number : 88 Question Id : 6780945891 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The molar conductance of HCl is more than that of NaCl because

Options :

1. NaCl is more polar than KCl
2. NaCl is ionic while HCl is covalent
3. Ionic mobility of  $H^+$  is more than that of  $Na^+$
4.  $H^+$  get hydrated.

Question Number : 89 Question Id : 6780945892 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The units for electrochemical equivalent are

Options :

1. grams
2. grams ampere
3. Coulomb
4. Grams per coulomb

Question Number : 90 Question Id : 6780945893 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Zeolite softening process removes

Options :

1. Only permanent hardness of water
2. Only temporary hardness of water
3. Both temporary and permanent hardness of water
4. The dissolved gases in permanent hard water.

Question Number : 91 Question Id : 6780945894 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The permanent hardness of water is caused by the presence of

Options :

1. Bicarbonates of Ca and Mg
2. Carbonates of Na and K
3. Chlorides and Sulphates of Ca and Mg.
4. Phosphates of Na and K

Question Number : 92 Question Id : 6780945895 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The secondary treatment of water uses \_\_\_\_\_ to consume wastes in water.

Options :

1. Filtration
2. Sedimentation
3. Chemicals
4. Microorganisms

Question Number : 93 Question Id : 6780945896 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Difficult to monitor and very dangerous form of corrosion is

Options :

1. Galvanic
2. Pitting

3. Crevice

4. Stress

Question Number : 94 Question Id : 6780945897 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

When Pt and Co are electrically connected, which one gets corroded?

Options :

1. Co

2. Pt

3. None

4. both

Question Number : 95 Question Id : 6780945898 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

What rubber was invented when Dr. Joseph C. Patrick tried to make antifreeze?

Options :

1. Methyl rubber

2. Chloroprene

3. Bruna N

4. Thiokol

Question Number : 96 Question Id : 6780945899 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The first plastic ever synthesized was called \_\_\_\_\_.

Options :

1. Bakelite

2. Nylon

3. Dacron

4. Cellulose

Question Number : 97 Question Id : 6780945900 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

\_\_\_\_\_ is a brand of polyester textile fiber that is wrinkle resistant and strong

Options :

1. Cellulose
2. Dacron
3. Bakelite
4. Nylon

Question Number : 98 Question Id : 6780945901 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Water gas is a mixture of

Options :

1.  $H_2 + CO$
2.  $N_2 + CO$
3.  $H_2 + CO_2$
4.  $H_2 + CH_4$

Question Number : 99 Question Id : 6780945902 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is not a greenhouse gas?

Options :

1. CO
2.  $CO_2$
3. water vapour
4.  $CH_4$

Question Number : 100 Question Id : 6780945903 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Burning of fossil fuels causes

Options :

1. Global warming
2. Ozone depletion
3. Acid rain
4. Eutrophication



Number of Questions: 100  
Display Number Panel: Yes  
Group All Questions: No

Question Number : 101 Question Id : 6780945904 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

As per Rittenger's law, Energy for crushing of ore is proportional to

Options :

1. Surface to volume ratio
2. New surface area
3. (Surface to volume ratio)<sup>2</sup>
4. (Surface to volume ratio)<sup>1/2</sup>

Question Number : 102 Question Id : 6780945905 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Basis for Heavy media separation is

Options :

1. Specific gravity difference
2. Wettability
3. Shape
4. Size

Question Number : 103 Question Id : 6780945906 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Ilmenite is a mineral of

Options :

1. Thorium
2. Tungsten
3. Uranium
4. Titanium

Question Number : 104 Question Id : 6780945907 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Chemical formula for Cassiterite is

Options :

1. ZnS
2. CaF<sub>2</sub>
3. SnO<sub>2</sub>
4. SnS<sub>2</sub>

Question Number : 105 Question Id : 6780945908 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Commonly used collector in floatation is

Options :

1. Oleic acid
2. Pine oil
3. Sulphuric acid
4. Potassium ethyl xanthate

Question Number : 106 Question Id : 6780945909 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The main product of high temperature carbonization of coal is

Options :

1. Coke oven gas
2. Coal tar
3. Coke
4. Ammonia

Question Number : 107 Question Id : 6780945910 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Blast furnace gas constitute mainly of

Options :

1. N<sub>2</sub> & CO
2. N<sub>2</sub> & CH<sub>4</sub>
3. N<sub>2</sub>&H<sub>2</sub>
4. CH<sub>4</sub> & CO<sub>2</sub>

Question Number : 108 Question Id : 6780945911 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Reverberatory furnace is used for

Options :

1. Sintering of Iron ore
2. Steel melting
3. Heat treatment
4. Roasting/Reduction

Question Number : 109 Question Id : 6780945912 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Furnace efficiency is decreased by

Options :

1. Excess Carbon monoxide
2. Excess air flow rate
3. Reducing surface heat loss
4. Excess furnace load

Question Number : 110 Question Id : 6780945913 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Pyrometric cone equivalent (PCE) of a refractory is used for

Options :

1. Fusion point
2. Spalling resistance
3. Resistance to slag attack
4. Resistance to CO attack

Question Number : 111 Question Id : 6780945914 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. Alumina

2. Magnesia
3. Silica
4. Fireclay

Question Number : 112 Question Id : 6780945915 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Following is intensive property

Options :

1. Gibbs free energy
2. Volume
3. Entropy
4. Chemical potential

Question Number : 113 Question Id : 6780945916 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In thermodynamics, law of conservation of energy is related to

Options :

1. Third law
2. Second Law
3. First law
4. Zeroth law

Question Number : 114 Question Id : 6780945917 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The activity Coefficient of the solute in dilute solution

Options :

1. Increases with increase of concentration of the solute
2. Decreases with increase of concentration of the solute
3. is Unity at infinite dilution
4. Remains constant

Question Number : 115 Question Id : 6780945918 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Position of stable oxides in an Ellingham diagram is at

Options :

1. The middle
2. The top
3. The bottom
4. Anywhere

Question Number : 116 Question Id : 6780945919 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The free energy change for a chemical reaction is

Options :

1.  $RT \ln K$
2.  $-R \ln K$
3.  $-RT \ln K$
4.  $T \ln K$

Question Number : 117 Question Id : 6780945920 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Fugacity for an ideal gas is equal to

Options :

1. Zero
2. Its Pressure
3. Infinity
4. 1 atm

Question Number : 118 Question Id : 6780945921 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For a multi component system, the term chemical potential is equivalent to the

Options :

1. Molar concentration difference
2. Partial molar free energy
3. Molar free energy
4. Molar free energy change

In an adiabatic process

Options :

1. Temperature change is zero
2. Work done is path dependent
3. Heat transfer is zero
4. Enthalpy is constant

Materials with metallic bonding are

Options :

1. Hard and brittle
2. Ductile under stress
3. Gases
4. having low thermal conductivity

Burgers vector is

Options :

1. Parallel to an edge dislocation line
2. Perpendicular to screw dislocation line
3. Perpendicular to an edge dislocation line
4. Inclined to an edge dislocation line

Hardenability of steel indicates its

Options :

1. Carbon content
2. the depth to which the steel hardens
3. Hardness

Ferrite content

4.

Question Number : 123 Question Id : 6780945926 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Decrease in austenite grain size in steel increases

Options :

Impact toughness

1.

Creep strength

2.

Hardenability

3.

Machinability

4.

Question Number : 124 Question Id : 6780945927 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Solid solution of carbon in gamma iron is

Options :

Ferrite

1.

Pearlite

2.

Austenite

3.

Cementite

4.

Question Number : 125 Question Id : 6780945928 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Following element is austenite stabiliser

Options :

Cobalt

1.

Molybdenum

2.

Chromium

3.

Nickel

4.

Question Number : 126 Question Id : 6780945929 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An Fe – 0.8%C alloy is cooled slowly from 1000 °C to room temperature. The

resultant microstructure will consist of

Options :

1. 100% pearlite
2. 30% pearlite + 70% Ferrite
3. 50% Ferrite + 50% Pearlite
4. 35% Ferrite + 65% Pearlite

Question Number : 127 Question Id : 6780945930 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Peritectic reaction among the following is

Options :

1.  $L \xrightarrow{\text{Cooling}} \alpha + \beta$
2.  $\gamma \xrightarrow{\text{Cooling}} \alpha + \beta$
3.  $\alpha + L \xrightarrow{\text{Cooling}} \beta$
4.  $\alpha + \gamma \xrightarrow{\text{Cooling}} \beta$

Question Number : 128 Question Id : 6780945931 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Heat treatment used for improving ductility of hardened steel

Options :

1. Normalizing
2. Annealing
3. Tempering
4. Hardening

Question Number : 129 Question Id : 6780945932 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

DBTT of steel can be decreased by

Options :

1. Sub-zero treatment
2. Annealing



3. Hardening

4. lowering carbon content

Question Number : 130 Question Id : 6780945933 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Yield strength of a poly crystalline metal with an average grain size ' $d$ '

Options :

1.  $d^{1/2}$

2.  $d^{-1/2}$

3.  $d^{-1}$

4.  $d$

Question Number : 131 Question Id : 6780945934 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Raw material for malleable cast iron is

Options :

1. Grey cast iron

2. Nodular iron

3. White cast iron

4. Cast steel

Question Number : 132 Question Id : 6780945935 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Yield point phenomenon observed in low carbon steel is due to the element

Options :

1. Silicon

2. Chromium

3. Carbon

4. Phosphorous

Question Number : 133 Question Id : 6780945936 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Remedy to avoid weld decay in austenitic stainless steels is

Options :

1. Increasing carbon content
2. Decreasing Chromium content
3. Lowering Carbon content
4. Increasing Nickel content

Question Number : 134 Question Id : 6780945937 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Gun metal is an alloy of

Options :

1. Nickel, Tin and Copper
2. Copper, Nickel and Zinc
3. Copper, Tin and Zinc
4. Copper, Nickel and Manganese

Question Number : 135 Question Id : 6780945938 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

German silver is an alloy of

Options :

1. Cu, Al & Ag
2. Ag, Zn & Al
3. Cu, Ni & Zn
4. Ag, Ni & Zn

Question Number : 136 Question Id : 6780945939 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Alloying element used for Cryogenic application of steel

Options :

1. Cr
2. Mo
3. W
4. Ni

Question Number : 137 Question Id : 6780945940 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A soft magnetic material is having

Options :

1. High permeability
2. High coercivity
3. High retentivity
4. Low hardness

Question Number : 138 Question Id : 6780945941 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Sub-zero treatment is most applicable for

Options :

1. steels containing  $< 0.2\%$  carbon
2. steels not containing retained austenite
3. low alloy steel
4. High-speed steel tools

Question Number : 139 Question Id : 6780945942 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Silicon crystal can be converted to p-type semi-conductor by doping with

Options :

1. Phosphorous
2. Boron
3. Carbon
4. Nitrogen

Question Number : 140 Question Id : 6780945943 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Superalloys are

Options :

1. Al-based
2. Ni-based
3. Cu-based
4. Zn-based

Question Number : 141 Question Id : 6780945944 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Alloying element that shifts TTT curve to left side is

Options :

1. Ni
2. Cr
3. Mo
4. Co

Question Number : 142 Question Id : 6780945945 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Nitriding temperature is \_\_\_\_\_<sup>0</sup>C

Options :

1. 1150 – 1310
2. 550 - 590
3. 750 - 950
4. 800 – 900

Question Number : 143 Question Id : 6780945946 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Diameter of the Blast furnace is maximum at the

Options :

1. Throat
2. Hearth
3. Stack
4. Bosh

Question Number : 144 Question Id : 6780945947 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Binder used for making iron bearing pellets is

Options :

1. Tar
2. Lime
3. Bentonite

4. Pitch

Question Number : 145 Question Id : 6780945948 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

High top pressure in a Blast furnace increases ----- in the hot metal

Options :

1. Sulphur
2. Silicon
3. Phosphorous
4. Manganese

Question Number : 146 Question Id : 6780945949 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Solution loss reaction occurs in

Options :

1. LD steel making
2. Blast Furnace iron making
3. Hot metal pre treatment
4. Deoxidation

Question Number : 147 Question Id : 6780945950 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Condition for Dephosphorisation of pig iron is

Options :

1. Oxidising and neutral slag
2. Reducing and basic slag
3. Oxidising and basic slag
4. Reducing and acidic slag

Question Number : 148 Question Id : 6780945951 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Segregation is maximum in ----- steels

Options :

1. Killed

2. Capped
3. Semi-killed
4. Rimming

Question Number : 149 Question Id : 6780945952 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Tapping in L.D converter is at temperature of

Options :

1. 1440 °C
2. 1640 °C
3. 1340 °C
4. 1840 °C

Question Number : 150 Question Id : 6780945953 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Stainless steel is most commonly produced with ----- process

Options :

1. VOD
2. Electric arc furnace
3. AOD
4. BOF

Question Number : 151 Question Id : 6780945954 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Manganese recovery in steel making is possible by

Options :

1. Oxidising slag and high temperature
2. Oxidising slag and low temperature
3. Reducing slag and high temperature
4. Acidic slag and high temperature

Question Number : 152 Question Id : 6780945955 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

First impurity to get removed in LD steel making is

Options :

1. Phosphorous
2. Carbon
3. Silicon
4. Manganese

Question Number : 153 Question Id : 6780945956 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Final slag in LD steel making is

Options :

1. Reducing
2. Reducing and basic
3. Oxidizing and basic
4. Basic

Question Number : 154 Question Id : 6780945957 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Product of direct reduction process is

Options :

1. Liquid iron
2. Solid iron
3. Wrought iron
4. Sponge iron

Question Number : 155 Question Id : 6780945958 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Anode and cathode in the aluminium reduction cell are made respectively of

Options :

1. Iron bar and carbon
2. Carbon and iron bar
3. Aluminium and carbon
4. Carbon and Aluminium

Leaching of roasted zinc ore is done with

Options :

1. Concentrated Sulphuric acid
2. Dilute Sulphuric acid
3. Dilute nitric acid
4. Dilute hydro chloric acid

Question Number : 157 Question Id : 6780945960 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Bacterial leaching is useful for

Options :

1. Leaching of enriched ores
2. refining of metals
3. fast recovery of metal values
4. in situ-leaching of low-grade ores

Question Number : 158 Question Id : 6780945961 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Reducing agent in retort process of zinc extraction is

Options :

1. Hydrogen
2. Carbon dioxide
3. Coke
4. Steam

Question Number : 159 Question Id : 6780945962 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Parkes process is used in the extraction of

Options :

1. Aluminium
2. Silver
3. Zinc



4. Copper

Question Number : 160 Question Id : 6780945963 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Pidgeon process is for the extraction of

Options :

1. Lead
2. Magnesium
3. Tin
4. Aluminium

Question Number : 161 Question Id : 6780945964 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Matte smelting is used in extracting

Options :

1. Lead
2. Aluminium
3. Zinc
4. Copper

Question Number : 162 Question Id : 6780945965 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Carbonyl process is used for refining

Options :

1. Zinc
2. Nickel
3. Tungsten
4. Magnesium

Question Number : 163 Question Id : 6780945966 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Refining of silver is done by

Options :

1. Cupellation
2. Poling

3. Liquefaction

4. Van Arkel method

Question Number : 164 Question Id : 6780945967 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In the Bayer's process, bauxite is digested under pressure using

Options :

1. Ammonia

2. Sulphuric acid

3. Sodium hydroxide

4. Hydrochloric acid

Question Number : 165 Question Id : 6780945968 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Cupping test is to find ----- of sheet metal

Options :

1. Elasticity

2. Plasticity

3. Drawability

4. Malleability

Question Number : 166 Question Id : 6780945969 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Vicker's hardness is proportional to

Options :

1.  $D$

2.  $1/D$

3.  $1/D^2$

4.  $D^2$

Question Number : 167 Question Id : 6780945970 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Failure resistance of material in presence of existing defect is given by

Options :

1. Work hardenability
2. Fracture toughness
3. DBTT
4. Tensile strength.

Question Number : 168 Question Id : 6780945971 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If property varies with direction then material is said to be

Options :

1. Isotropic
2. Anisotropic
3. Plastic
4. Elastic

Question Number : 169 Question Id : 6780945972 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Cup and Cone fracture is observed in

Options :

1. Magnesium
2. Zinc
3. Low carbon steel
4. Cement

Question Number : 170 Question Id : 6780945973 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Rockwell hardness on the C scale is measured using an indenter

Options :

1. Square base diamond pyramid
2.  $120^\circ$  diamond cone
3. 10mm diameter steel ball
4. 3mm diameter steel ball

Question Number : 171 Question Id : 6780945974 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A property that cannot be obtained from Tensile test is

Options :

1. Young's modulus
2. Endurance limit
3. Yield strength
4. Ultimate tensile strength

Question Number : 172 Question Id : 6780945975 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Radiography technique of detecting defects is related to

Options :

1. Diffraction
2. Interference
3. Absorption
4. Reflection

Question Number : 173 Question Id : 6780945976 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Cold working of metals decreases

Options :

1. Hardness
2. Ductility
3. Yield strength
4. Electrical resistance

Question Number : 174 Question Id : 6780945977 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Recrystallization of following metal can occur at room temperature

Options :

1. Iron
2. Lead
3. Copper
4. Nickel

Question Number : 175 Question Id : 6780945978 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Particle shape obtained by inert gas atomization is

Options :

1. Angular
2. Spherical
3. Irregular
4. Mixed type

Question Number : 176 Question Id : 6780945979 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Following is Rolling defect

Options :

1. Edge cracking
2. Cold shut
3. Orange peel
4. Porosity

Question Number : 177 Question Id : 6780945980 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Work hardening in High stacking - fault energy metal is

Options :

1. High
2. Low
3. Nil
4. Moderate

Question Number : 178 Question Id : 6780945981 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Earing is a defect related to metal working operation of

Options :

1. Rolling
2. Deep drawing
3. Extrusion
4. Wire drawing

Spring back effect depends on

Options :

1. Elastic limit
2. Degree of bend
3. Bend radius
4. Sheet thickness

Flash in a close die forgings is

Options :

1. Excess temperature
2. Excess metal
3. used for filling all recesses
4. is having uniform cross section

Extrusion pressure is proportional to

Options :

1. Extrusion ratio  $R$
2. Reduction in area  $r$
3.  $\ln R$
4.  $\ln r$

Which of the following metal working is an indirect compression process

Options :

1. Forging
2. Extrusion

Wire drawing

3.

Stretch forming

4.

Question Number : 183 Question Id : 6780945986 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

As per Chvarinov's rule metal solidification time (t) is proportional to

Options :

(V/A)

1.

(A/V)<sup>2</sup>

2.

(V/A)<sup>2</sup>

3.

(V/A)<sup>1/2</sup>

4.

Question Number : 184 Question Id : 6780945987 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Method used for making Small Precision castings

Options :

Shell moulding

1.

Lost wax

2.

Centrifugal

3.

Die casting

4.

Question Number : 185 Question Id : 6780945988 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Allowance used for easy withdrawal of pattern from mould

Options :

Machining

1.

Distortion

2.

Draft

3.

Shrinkage

4.

Question Number : 186 Question Id : 6780945989 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Chaplets are used for

Options :

1. Directional solidification
2. Alignment of mould boxes
3. Supporting cores
4. Shear strength

Question Number : 187 Question Id : 6780945990 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a gating system, the ratio 1:2:4 indicates the areas of

Options :

1. Sprue : Ingate : Casting
2. Pouring basin: Ingate : Runner
3. Sprue : Runner : Ingate
4. Runner : Ingate :Casting

Question Number : 188 Question Id : 6780945991 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Eutectic Al-Si castings are modified by

Options :

1. Phosphorous
2. Sodium
3. Sulphur
4. Carbon

Question Number : 189 Question Id : 6780945992 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Aluminium alloy melting uses flux of

Options :

1. oxides
2. sulphides
3. silicates



4. chlorides

Question Number : 190 Question Id : 6780945993 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Improper joining of two parts of mould causes defect of

Options :

1. Blowhole
2. Scab
3. Flash
4. Porosity

Question Number : 191 Question Id : 6780945994 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Method used for making Turbine blade

Options :

1. Shell moulding
2. Forging
3. Die casting
4. Investment casting

Question Number : 192 Question Id : 6780945995 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Chemical energy based welding process is

Options :

1. Electroslag
2. Explosive
3. Thermit
4. SMAW

Question Number : 193 Question Id : 6780945996 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Pre-heating during welding aimed to

Options :

1. Reduce cooling rate
2. Reduce heat input

3. Increase heat input
4. Increase cooling rate

Question Number : 194 Question Id : 6780945997 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is added to flux waiting of a electrode to stabilise the arc

Options :

1.  $TiO_2$
2.  $SiO_2$
3.  $CaO$
4.  $MnO$

Question Number : 195 Question Id : 6780945998 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is not solid state welding process

Options :

1. Ultrasonic welding
2. Friction stir welding
3. Flux cored arc
4. Explosive welding

Question Number : 196 Question Id : 6780945999 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Non consumable electrode welding process is

Options :

1. Gas Metal arc welding
2. Submerged arc welding
3. Gas tungsten arc welding
4. Fluxed cored arc welding

Question Number : 197 Question Id : 6780946000 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Most easily weldable alloy is

Options :

1. Stainless steel
2. Mild steel
3. Aluminium alloy
4. Cast iron

Question Number : 198 Question Id : 6780946001 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In brazing process, the liquid metal fills the gap by the infiltration of

Options :

1. Gravity
2. Pressure
3. Capillary
4. Vaccum

Question Number : 199 Question Id : 6780946002 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Acetylene cylinder is filled with a material saturated with

Options :

1. Alcohol
2. Sulphuric acid
3. Acetone
4. Hydrochloric acid

Question Number : 200 Question Id : 6780946003 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Major problem in welding of Aluminium alloys is

Options :

1. Carbide formation
2. Poor electrical resistance
3. Poor thermal conductivity
4. Oxide film formation