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 : 67809418424 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $A = \begin{pmatrix} 2 & -1 & 0 \\ 3 & 4 & 7 \end{pmatrix}$ and $B = \begin{pmatrix} 5 & 2 & -3 \\ 1 & 0 & -2 \end{pmatrix}$ then $2A+3B =$

Options :

1. $\begin{pmatrix} 19 & 4 & -9 \\ 9 & 8 & 8 \end{pmatrix}$

2. $\begin{pmatrix} -19 & -4 & 9 \\ 9 & 8 & -8 \end{pmatrix}$

3. $\begin{pmatrix} 18 & 4 & -9 \\ 9 & 8 & 8 \end{pmatrix}$

4. $\begin{pmatrix} 17 & 5 & -9 \\ 8 & 8 & 9 \end{pmatrix}$

Question Number : 2 Question Id : 67809418425 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $A = \begin{pmatrix} 2 & -3 & 0 \\ 1 & 4 & -1 \end{pmatrix}$ and $B = \begin{pmatrix} 6 & 1 \\ 3 & 0 \\ 5 & 2 \end{pmatrix}$ then $(AB)^T$ =

Options :

1. $A^T B^T$

2. B^TA^T

3. $(BA)^T$

4. AB^T

Question Number : 3 Question Id : 67809418426 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If two rows or two columns of a determinant are identical then the value of the determinant is

Options :

1. 2

2. -1

3. 0

4. -2

Question Number : 4 Question Id : 67809418427 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\begin{vmatrix} 265 & 240 & 219 \\ 240 & 225 & 198 \\ 219 & 198 & 181 \end{vmatrix}$ is

Options :

1. -1

2. 0

3. 1

4. 2

Question Number : 5 Question Id : 67809418428 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The adjoint of the square matrix $A = \begin{pmatrix} 2 & 5 & 1 \\ 3 & 1 & 2 \\ 4 & 3 & 1 \end{pmatrix}$ is

Options :

1. $\begin{pmatrix} -5 & -2 & 9 \\ 5 & -2 & -1 \\ 5 & 14 & -13 \end{pmatrix}$

2. $\begin{pmatrix} 5 & 2 & 9 \\ 5 & -2 & -1 \\ 5 & 14 & -13 \end{pmatrix}$

3. $\begin{pmatrix} -5 & -2 & 9 \\ -5 & -2 & -1 \\ -5 & 14 & -13 \end{pmatrix}$

4. $\begin{pmatrix} -5 & -2 & -9 \\ 5 & 2 & 1 \\ 5 & 14 & -13 \end{pmatrix}$

Question Number : 6 Question Id : 67809418429 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Resolve into partial fractions: $\frac{5}{(2x-1)(3x-1)} =$

Options :

1. $\frac{8}{2x-1} + \frac{5}{3x-1}$

2. $\frac{10}{2x-1} - \frac{15}{3x-1}$

3. $\frac{11}{3x-1} + \frac{7}{2x-1}$

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

Question Number : 7 Question Id : 67809418430 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Resolve into partial fractions: $\frac{3x-1}{(x-1)(x-2)(x-3)} =$

Options :

1. $\frac{2}{x-1} + \frac{5}{x-2} - \frac{4}{x-3}$

2. $\frac{-1}{x-1}+\frac{5}{x-2}-\frac{4}{x-3}$

3. $\frac{1}{x-1}+\frac{5}{x-2}+\frac{4}{x-3}$

4. $\frac{1}{x-1}-\frac{5}{x-2}+\frac{4}{x-3}$

Question Number : 8 Question Id : 67809418431 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $\tan A=\frac{1}{2}$ and $\tan B=\frac{1}{3}$ then $\tan(A-B)=$

Options :

1. $\frac{1}{7}$

2. $\frac{-1}{7}$

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

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

Question Number : 9 Question Id : 67809418432 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\cot 2A+\tan A=$

Options :

1. $\sin 2A$

2. $\cos 2A$

3. $\sec 2A$

4. $\operatorname{cosec} 2A$

Question Number : 10 Question Id : 67809418433 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\frac{1-\cos 2A+\sin 2A}{1+\cos 2A+\sin 2A} =$

Options :

1. sinA
2. cosA
3. tanA
4. cotA

Question Number : 11 Question Id : 67809418434 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $sin\frac{\pi}{5} sin\frac{2\pi}{5} sin\frac{3\pi}{5} sin\frac{4\pi}{5} =$

Options :

1. $\frac{4}{15}$
2. $\frac{5}{16}$
3. $\frac{-5}{16}$
4. $\frac{7}{15}$

Question Number : 12 Question Id : 67809418435 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $cos20^0 + cos100^0 + cos140^0 =$

Options :

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

Question Number : 13 Question Id : 67809418436 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\sum a(b^2 + c^2)cosA$ is

Options :

1. 2abc

2. 4abc

3. 3abc

4. 5abc

Question Number : 14 Question Id : 67809418437 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $(a-b)^2cos^2\left(\frac{C}{2}\right) + (a+b)^2sin^2\left(\frac{C}{2}\right)$ is

Options :

1. C^3

2. C

3. C^5

4. C^2

Question Number : 15 Question Id : 67809418438 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $2tan^{-1}\left(\frac{1}{3}\right) + tan^{-1}\left(\frac{1}{7}\right)$ is

Options :

1. $\pi/4$

2. $\pi/2$

3. $\pi/6$

4. $\pi/3$

Question Number : 16 Question Id : 67809418439 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The general solution of $4cos^2x - 3 = 0$ is

Options :

1. $2n\pi \pm \frac{\pi}{6}$

2. $2n\pi \pm \frac{7\pi}{6}$

3. $3n\pi \pm \frac{5\pi}{6}$

4. $2n\pi \pm \frac{11\pi}{6}$

Question Number : 17 Question Id : 67809418440 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $tan^{-1}x + tan^{-1}y + tan^{-1}z = \frac{\pi}{2}$, then the value of $xy + yz + zx$ is

Options :

1. -1

2. 3

3. 5

4. 1

Question Number : 18 Question Id : 67809418441 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The modulus of a complex number $\sqrt{3} + i$ is

Options :

1. -2

2. 3

3. 2

4. 5

Question Number : 19 Question Id : 67809418442 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $x+\frac{1}{x}=2\cos\theta$ then the value of $x^n+\frac{1}{x^n}$ is

Options :

1. $2\cos n\theta$

2. $-2\cos n\theta$

3. $3\cos\theta$

4. $2\sin n\theta$

Question Number : 20 Question Id : 67809418443 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The centre of the circle: $x^2+y^2-2x+6y-6=0$ is

Options :

1. $(1,3)$

2. $(2,3)$

3. $(1,-3)$

4. $(-1,3)$

Question Number : 21 Question Id : 67809418444 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The radius of the circle: $5x^2+5y^2-6x+8y-75=0$ is

Options :

1. -4

2. 4

3. 2

4. 3

Question Number : 22 Question Id : 67809418445 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The equation of the parabola with vertex $(2,-1)$ and focus $(2,-3)$ is

Options :

1. $x^2 - 4x + 8y + 12 = 0$

2. $x^2 - 4x - 8y - 12 = 0$

3. $x^2 + 4x - 8y - 12 = 0$

4. $x^2 + 5x - 8y - 11 = 0$

Question Number : 23 Question Id : 67809418446 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The centre of the ellipse: $9x^2 + 25y^2 - 18x + 100y - 116 = 0$ is

Options :

1. $(2,-1)$

2. $(-1,-2)$

3. $(1,-2)$

4. $(1,2)$

Question Number : 24 Question Id : 67809418447 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The focus of the hyperbola: $\frac{x^2}{25} - \frac{y^2}{144} = 1$ is

Options :

1. $(-13,0)$

2. $(13,0)$

3. $(13,-1)$

4. $(13,1)$

Question Number : 25 Question Id : 67809418448 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The length of the major axis of the ellipse: $4x^2 + 3y^2 = 48$ is

Options :

1. 10

2. 11

3. 8

4. 13

Question Number : 26 Question Id : 67809418449 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\lim_{x\to 1}\frac{x^3-1}{x-1}$ is

Options :

1. 3

2. -3

3. 2

4. 1

Question Number : 27 Question Id : 67809418450 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $y=\frac{a+bx}{b-ax}$ then the derivative of y with respect to x is

Options :

1. $\frac{a^2+b^2}{(b-ax)^2}$

2. $\frac{a^2+b^2}{(b+ax)^2}$

3. $\frac{a^2-b^2}{(b-ax)^2}$

4. $\frac{a+b}{(b-ax)^2}$

Question Number : 28 Question Id : 67809418451 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $y = x^3 e^x$ then $\frac{dy}{dx}$ is

Options :

1. $(x-3)x^2e^x$

2. $(x-2)x^3e^x$

3. $(x+3)x^2e^x$

4. $(x-1)x^3e^x$

Question Number : 29 Question Id : 67809418452 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $y = \sec x + \tan x$ then $\frac{dy}{dx}$ is

Options :

1. $y\cos x$

2. $y\sec x$

3. $-y\sin x$

4. $y\tan x$

Question Number : 30 Question Id : 67809418453 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $y = \frac{2+3\sinh x}{3+2\sinh x}$ then the derivative of y with respect to x is

Options :

1. $\frac{5\cosh x}{(3+2\sinh x)^2}$

2. $\frac{5\sinh x}{(3+2\sinh x)^2}$

3. $\frac{5\sin x}{(3-2\cosh x)^2}$

4. $\frac{\sinh^2 x}{(2-3\sinh x)^2}$

Question Number : 31 Question Id : 67809418454 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $y = \sqrt{\frac{1-\cos x}{1+\cos x}}$ then $\frac{dy}{dx}$ is

Options :

1. $\sec^2\left(\frac{x}{2}\right)$

2. $\cos^2\left(\frac{x}{2}\right)$

3. $\frac{1}{2}\cos^2\left(\frac{x}{2}\right)$

4. $\frac{1}{2}\sec^2\left(\frac{x}{2}\right)$

Question Number : 32 Question Id : 67809418455 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The angle between the curves $y = x^2 + 3x - 7$ and $y^2 = 2x + 5$ at $(2,3)$ is

Options :

1. $\tan\theta = 2$

2. $\sec\theta = 2$

3. $\cos\theta = 1$

4. $\sin\theta = 3$

Question Number : 33 Question Id : 67809418456 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The range of x for which the function $x^3 - 3x^2 - 45x + 2$ is increasing with x is

Options :

1. $(3,-5)$

2. $(-3,-5)$

3. $(3,5)$

4. $(-3,5)$

Question Number : 34 Question Id : 67809418457 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The maximum value of the function $2x^3 - 12x^2 + 18x + 5$ is

Options :

1. 13

2. 12

3. 10

4. 15

Question Number : 35 Question Id : 67809418458 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If u is a homogeneous function of x and y with degree n then $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} =$

Options :

1. $-nu$

2. n^2u

3. nu

4. $nu^2 + u$

Question Number : 36 Question Id : 67809418459 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\int \frac{\cos\sqrt{x}}{\sqrt{x}} dx$ is

Options :

1. $2\sin\sqrt{x} + c$

2. $3\sin\sqrt{x}+c$

3. $2\sin x+c$

4. $\sin\sqrt{x}+c$

Question Number : 37 Question Id : 67809418460 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\int \frac{dx}{\sqrt{a^2-x^2}}$ is

Options :

1. $\cos^{-1}\left(\frac{x}{a}\right)+c$

2. $\sin^{-1}\left(\frac{x}{a}\right)+c$

3. $\sinh^{-1}\left(\frac{x}{a}\right)+c$

4. $\sin^{-1}\left(\frac{a}{x}\right)+c$

Question Number : 38 Question Id : 67809418461 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\int \frac{dx}{4x^2+4x+17}$ is

Options :

1. $\frac{1}{8}\tan^{-1}\left(\frac{2x+1}{4}\right)+c$

2. $\frac{1}{4}\cot^{-1}\left(\frac{2x+1}{4}\right)+c$

3. $\frac{1}{8}\sin^{-1}\left(\frac{2x+1}{4}\right)+c$

4. $\frac{1}{3}\tan^{-1}\left(\frac{2x+1}{4}\right)+c$

Question Number : 39 Question Id : 67809418462 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\int \log x \, dx$ is

Options :

1. $x \log x + x + c$

2. $x^2 \log x - x + c$

3. $x \log x - x + c$

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

Question Number : 40 Question Id : 67809418463 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\int_1^4 \left(\sqrt{x} + \frac{1}{\sqrt{x}}\right) dx$ is

Options :

1. $\frac{20}{3}$

2. $-\frac{20}{3}$

3. $\frac{10}{3}$

4. $\frac{15}{3}$

Question Number : 41 Question Id : 67809418464 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\int_0^{\pi/2} \sin^2 x \, dx$ is

Options :

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

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

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

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

Question Number : 42 Question Id : 67809418465 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The area enclosed between the curve $y^2 = 4ax$ and the line $x = 2y$ is

Options :

1. $\frac{64}{5}$ sq. units

2. $\frac{64}{3}$ sq. units

3. $\frac{65}{4}$ sq. units

4. $\frac{63}{4}$ sq. units

Question Number : 43 Question Id : 67809418466 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\lim_{n\to\infty}\left[\frac{1}{n+1}+\frac{1}{n+2}+\cdots..+\frac{1}{n+n}\right]$ is

Options :

1. $\log 2$

2. $\log 3$

3. $-\log 2$

4. $\log n$

Question Number : 44 Question Id : 67809418467 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Form the differential equation by eliminating the arbitrary constant a from $ay^2 = x^3$

Options :

1. $\frac{dy}{dx} = \frac{3y}{2x}$

2. $\frac{dy}{dx} = \frac{2x}{3y}$

3. $\frac{dy}{dx} = \frac{x}{y}$

4. $\frac{dy}{dx} = \frac{2y}{x}$

Question Number : 45 Question Id : 67809418468 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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

Options :

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

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

3. $\cos^{-1}x + \sec^{-1}x = c$

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

Question Number : 46 Question Id : 67809418469 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The solution of $\frac{dy}{dx} = (4x + y + 1)^2$ is

Options :

1. $\frac{1}{2}\tan^{-1}\left(\frac{4x+y+1}{2}\right) = x + c$

2. $\frac{1}{2}\cot^{-1}\left(\frac{4x+y+1}{2}\right) = x + c$

3. $-\frac{1}{2}\tan^{-1}\left(\frac{4x+y+1}{2}\right) = x + c$

4. $\frac{1}{2}\tan^{-1}\left(\frac{4x-y-1}{2}\right) = x + c$

Question Number : 47 Question Id : 67809418470 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The solution of exact differential equation $2xy\,dx + x^2dy = 0$ is

Options :

1. $x^2y^2 = c$

2. $x^2y = c$

3. $x^3y = c$

4. $x^2y^3 = c$

Question Number : 48 Question Id : 67809418471 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The solution of $\frac{dy}{dx} + y = e^{-x}$ is

Options :

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

2. $(x - c)e^{x}$

3. $(x + c)e^{x}$

4. $(x + c)e^{-2x}$

Question Number : 49 Question Id : 67809418472 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The particular integral of $(D^2 + 5D + 6)y = e^x$ is

Options :

1. $\frac{-e^{-x}}{12}$

2. $\frac{e^{2x}}{12}$

3. $\frac{e^{x}}{12}$

4. $\frac{e^{x}}{6}$

Question Number : 50 Question Id : 67809418473 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The complementary function of $(D^2 + 3D + 2)y = 8sin5x$ is

Options :

1. $c_1 e^{-x} + c_2 e^{-2x}$

2. $c_1 e^{x} + c_2 e^{2x}$

3. $c_1 e^{-x} + c_2 e^{2x}$

4. $c_1 e^{2x} + c_2 e^{3x}$

Physics

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

Question Number : 51 Question Id : 67809418474 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is not the unit of energy?

Options :

1. watt second

2. Pascal metre

3. Newton metre

4. Kilowatt hour

Question Number : 52 Question Id : 67809418475 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The height of Mercury barometer is 76 cm and density of Mercury is 13.6 g/cc. The corresponding height of water barometer in SI system is

Options :

1. 10.336 m

2. 103.36 m

3. 3.6m

4. 1.0336 m

Question Number : 53 Question Id : 67809418476 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Angle made by the vector $(\sqrt{3}\ \bar{i} + \bar{j})$ with the X-axis is

Options :

1. $\pi/2$

2. $\pi/4$

3. $\pi/3$

4. $\pi/6$

Question Number : 54 Question Id : 67809418477 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The minimum number of unequal forces in a plane that can keep a particle in equilibrium is

Options :

1. 4

2. 2

3. 3

4. 6

Question Number : 55 Question Id : 67809418478 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A body is thrown with a velocity of $(4\bar{i} + 3\bar{j})$ m/s. The maximum height attained by the body is (g=10 ms^{-2})

Options :

1. 2.5 m

2. 4.5 m

3. 0.8 m

4. 0.45 m

Question Number : 56 Question Id : 67809418479 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A person in a lift, which ascends up with acceleration 10ms^{-2}, drops a stone from a height of 10m. The time of descent is (g=10 ms^{-2})

Options :

1. 0.5 s

2. 1 s

3. 1.5 s

4. 2 s

Question Number : 57 Question Id : 67809418480 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For a projectile, the ratio of maximum height reached to the square of time of flight is

Options :

1. 5:4

2. 5:2

3. 5:1

4. 10:1

Question Number : 58 Question Id : 67809418481 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The ratio of distances travelled by a body, starting from rest and travelling with uniform acceleration, in successive intervals of time of equal duration will be

Options :

1. 1:2:3

2. 1:4:9

3. 1:3:5

4. 1:9:16

Question Number : 59 Question Id : 67809418482 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A force of 12 N acts on a body of mass 4 kg placed on a rough surface. The coefficient of friction between body and surface is 0.2 and take g= 10 ms^{-2}. The acceleration of the body in ms^{-2} is

Options :

1. 1

2. 0.5

3. 0.25

4. Zero

Question Number : 60 Question Id : 67809418483 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Brakes stop a train in a certain distance d. When the braking force is made one fourth, the brakes will stop the train in a distance which is

Options :

1. d/2
2. 4d
3. 2d
4. d

Question Number : 61 Question Id : 67809418484 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The product of linear momentum and velocity of a body represents

Options :

1. Kinetic energy of the body
2. Potential energy of the body
3. Half the Kinetic energy of the body
4. Twice the kinetic energy of the body

Question Number : 62 Question Id : 67809418485 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A man weighing 60 kg eats plum cake whose energy content is 9800 calories. If all this energy could be utilised by him, he can ascend to a height of

Options :

1. 17 m
2. 100 m
3. 70 m
4. 60m

Question Number : 63 Question Id : 67809418486 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A crane can lift up 10,000 kg of coal in 1 hour from a mine of depth 180m. If the efficiency of the crane is 80%, its input power must be ($g=10\ ms^{-2}$)

Options :

1. 62.5 kW
2. 6.25 kW
3. 50 kW
4. 5 kW

Question Number : 64 Question Id : 67809418487 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The graph of acceleration as a function of displacement in the case of a body executing simple harmonic motion is

Options :

1. Parabola
2. Hyperbola
3. Straight line with positive slope
4. Straight line with negative slope

Question Number : 65 Question Id : 67809418488 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The pendulum of length 'L' swings from mean position to mean position 'n' times in one second.The value of acceleration due to gravity is

Options :

1. π^2n^2L
2. $2\pi^2n^2L$

3. $(\pi^2 n^2 L)/2$

4. $4\pi^2 n^2 L$

Question Number : 66 Question Id : 67809418489 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

When a source of sound is in motion towards a stationary observer, the effect observed is

Options :

1. Decrease in velocity of sound

2. Increase in velocity of sound

3. increase in frequency of sound

4. decrease in frequency of sound

Question Number : 67 Question Id : 67809418490 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The voice of a male person is different from that of a female person because

Options :

1. Two sounds have different phases

2. Two persons are of different size

3. Two sounds travel with different velocities

4. Two sounds have different pitch

Question Number : 68 Question Id : 67809418491 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the sound absorption of a hall is changed by 2%, then the percentage change in the reverberation time is

Options :

1. 2%

2. 4%

3. 1%

4. No change

Question Number : 69 Question Id : 67809418492 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In which of the following process, the internal energy of the system remains constant?

Options :

1. Adiabatic

2. Isothermal

3. Isobaric

4. Isochoric

Question Number : 70 Question Id : 67809418493 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Heat required to raise the temperature of one gram of water through 1 K is

Options :

1. 1.0 Kcal

2. 0.1 Kcal

3. 0.01 Kcal

4. 0.001 Kcal

Question Number : 71 Question Id : 67809418494 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The specific heat of a gas in an isothermal process is

Options :

1. infinity

2. Zero

3. Finite positive

4. Finite negative

Question Number : 72 Question Id : 67809418495 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Specific heat of aluminium is 0.25 cal/g/°C. The water equivalent of an aluminium vessel of mass one kilogram is

Options :

1. 40 cal/°C

2. 400 cal/°C

3. 250 cal/°C

4. 25 cal/°C

Question Number : 73 Question Id : 67809418496 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

What should be the percentage increase in the pressure so that the volume of a gas may decrease by 5% at constant temperature?

Options :

1. 5%

2. 5.26%

3. 10%

4. 4.26%

Question Number : 74 Question Id : 67809418497 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the maximum kinetic energy of emitted photo electrons from a metal is 0.9 eV and work function is 2.2 eV, then the wavelength of incident radiation is

Options :

1. 4000Å
2. 8000Å
3. 3000Å
4. 2000Å

Question Number : 75 Question Id : 67809418498 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the angle of incidence of a ray is greater than the critical angle at the core – cladding interface in an optical fiber, then the ray travels

Options :

1. in the core
2. in the cladding
3. in the buffer
4. along the interface

Chemistry

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

Question Number : 76 Question Id : 67809418499 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Pauli's Exclusion principle states that two electrons in same orbital have

Options :

1. same spins

2. different spins

3. opposite spins

4. vertical spins

Question Number : 77 Question Id : 67809418500 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Orbits in which electrons move according to Bohr are

Options :

1. elliptical

2. cylindrical

3. circular

4. oval

Question Number : 78 Question Id : 67809418501 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Phosphorus has an atomic number of 15. A stable phosphorus atom has an electronic configuration of

Options :

1. $1s^2 2s^2 2p^6 3p^5$

2. $1s^2 2s^2 2p^6 3s^2 3p^3$

3. $1s^2 2s^2 2p^6 3s^2 3p^1 4s^2$

4. $1s^2 1p^6 1d^7$

Question Number : 79 Question Id : 67809418502 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

NaCl is classified as having what kind of bonds in the solid phase?

Options :

1. Covalent
2. Ionic
3. Polar
4. vander Waals

Question Number : 80 Question Id : 67809418503 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The Bond formed due to sharing of electrons is

Options :

1. Ionic bond
2. Metallic bond
3. Polar bond
4. Covalent bond

Question Number : 81 Question Id : 67809418504 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The normality of solution obtained by dissolving 5.3 grams of Na_2CO_3 in 1 litre solution is

Options :

1. 1N
2. 0.1N
3. 0.05N
4. 0.5N

Question Number : 82 Question Id : 67809418505 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The following solution has same molarity and normality

Options :

1. Na_2CO_3
2. NaCl
3. H_2SO_4
4. $K_2Cr_2O_7$

Question Number : 83 Question Id : 67809418506 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

5 moles of a solute is dissolved in 10 litres of solution. What is its molarity?

Options :

1. 5 M
2. 2M
3. 0.5M
4. 0.2M

Question Number : 84 Question Id : 67809418507 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Process in which acids (H^+) and bases (OH^-) react to form salts and water is called

Options :

1. Neutralization
2. Halogenation
3. Hydrogenation
4. Hydrolysis

Question Number : 85 Question Id : 67809418508 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A substance that donates a pair of electrons to form coordinate covalent bond is called

Options :

1. Lewis acid

2. Lewis base

3. Bronsted-Lowry acid

4. Bronsted-Lowry base

Question Number : 86 Question Id : 67809418509 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

One Faraday is equal to

Options :

1. 99650 C

2. 93100 C

3. 96500 C

4. 94500 C

Question Number : 87 Question Id : 67809418510 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The cell reaction of a cell is $Mg(s) + 2\ H^{+}(aq) \rightarrow Mg^{2+}(aq) + H_2(g)$. If the standard reduction potential of Zn is -2.372 V, then the emf of the cell is

Options :

1. +2.372 V

2. − 2.372 V

3. 0.00 V

4. -1.372 V

Question Number : 88 Question Id : 67809418511 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Galvanic cells are the cells which convert

Options :

1. Electrical energy to chemical energy

2. Chemical energy to electrical energy

3. Chemical energy to free energy

4. Potential energy to kinetic energy

Question Number : 89 Question Id : 67809418512 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Mass of substance produced at electrode is directly proportional to the quantity of electricity passed. This is known as

Options :

1. Faraday's second law

2. Faraday's first law

3. Newton's third law

4. Newton's first law

Question Number : 90 Question Id : 67809418513 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Hardness of water is expressed in terms of equivalent of

Options :

1. Na_2CO_3

2. K_2CO_3

3. $MgCO_3$

4. $CaCO_3$

Question Number : 91 Question Id : 67809418514 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Temporary hardness is caused by

Options :

1. Carbonates of calcium and magnesium

2. Chlorides of calcium and magnesium

3. Sulphates of calcium and magnesium

4. Nitrates of Calcium

Question Number : 92 Question Id : 67809418515 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The exhausted zeolite bed can be regenerated by washing with

Options :

1. NaCl

2. dil. NaOH

3. dil. HCl

4. Distilled water

Question Number : 93 Question Id : 67809418516 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Corrosion is an example of

Options :

1. Oxidation

2. Reduction

3. Electrolysis

4. Halogenation

Question Number : 94 Question Id : 67809418517 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The composition of rust is

Options :

1. $Fe(OH)_3$

2. $FeCl_3$

3. FeO

4. $Fe_2O_3.xH_2O$

Question Number : 95 Question Id : 67809418518 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which one of the following statement is not true?

Options :

1. Natural rubber has the trans-configuration at every double bond

2. Buna-S is a copolymer of butadiene and styrene

3. Natural rubber is a 1, 4-polymer of isoprene

4. In vulcanization, the formation of sulphur bridges between different chains makes rubber harder and stronger

Question Number : 96 Question Id : 67809418519 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The monomers of Buna-S rubber are

Options :

1. Styrene and butadiene

2. Styrene and 2-propene

3. Isoprene and butadiene

4. Styrene and sulphur

Question Number : 97 Question Id : 67809418520 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The plastics which soften when heat is applied with or without pressure, but require cooling to set them to shape are called as

Options :

1. Thermosofting materials

2. Thermosetting materials

3. Thermoplastic materials

4. Thermostatting materials

Question Number : 98 Question Id : 67809418521 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which one of the following statement is not true about ideal fuel?

Options :

1. High calorific value

2. High moisture content

3. Low cost

4. Moderate ignition temperature

Question Number : 99 Question Id : 67809418522 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Environmental pollution affects

Options :

1. Humans only

2. Plants only

3. Biotic components

4. Both abiotic and biotic components

Question Number : 100 Question Id : 67809418523 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Layer of atmosphere in which ozone layer lies is

Options :

1. Troposphere

2. Stratosphere

3. Exosphere

4. Mesosphere

Metallurgical Engineering

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

Question Number : 101 Question Id : 67809418524 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The percentage of the mineral occurring as free particles in the ore in relation to the total content refers to?

Options :

1. Degree of recovery

2. Degree of liberation

3. Degree of concentration

4. Degree of yield

Question Number : 102 Question Id : 67809418525 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is used to produce feed for primary and secondary crushing?

Options :

1. Inclined Crusher

2. Grizzles

3. Trommel

4. Screens

Question Number : 103 Question Id : 67809418526 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A typical collector used in Sulphide mineral floatation is

Options :

1. Pine Oil

2. Potassium ethyl Xanthate

3. Oleic Acid

4. Polyacrilamide

Question Number : 104 Question Id : 67809418527 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In comminution process, relationship between reduction ratio(R), feed particle size (f) and product particle size(p) is given by_____

Options :

1. $R = p/f$

2. $R \alpha fp$

3. $R = f^p$

4. R = f/p

Question Number : 105 Question Id : 67809418528 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Zone refining is based on the principle that_____

Options :

1. Impurities of low boiling metals can be separated

2. Impurities are more soluble in molten metal than in solid metal

3. Different components of a mixture are differently adsorbed on an adsorbent.

4. Vapors of volatile compound can be decomposed in pure metal.

Question Number : 106 Question Id : 67809418529 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is not a manufactured fuel?

Options :

1. Furnace oil

2. Bagasse

3. Semi-coke

4. Kerosene

Question Number : 107 Question Id : 67809418530 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Natural gas is essentially

Options :

1. Methane

2. Propane+ butane

3. 30% CO+15% H_2+45%N_2

4. 50% methane +50% H_2

Question Number : 108 Question Id : 67809418531 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Pyrometric cone equivalent (PCE) of a refractory is the measure of its

Options :

1. Spalling resistance

2. Fusion point

3. Resistance to slag penetration

4. Resistance to carbon monoxide attack

Question Number : 109 Question Id : 67809418532 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Gross and net calorific value of fuel will be the same

Options :

1. if its ash content is zero

2. if its carbon content is very low

3. if its hydrogen/hydrogen compounds content is zero

4. under no circumstances

Question Number : 110 Question Id : 67809418533 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Cold crushing strength (C.C.S) of fireclay bricks is about _____ kg/cm^2

Options :

1. 50 – 100

2. 200-400

3. 400-600

4. 600-800

Question Number : 111 Question Id : 67809418534 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is the most matured form of coal?

Options :

1. Lignite

2. Bituminous

3. Semi-anthracite

4. Anthracite coal

Question Number : 112 Question Id : 67809418535 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Ellingham diagrams are drawn between

Options :

1. ΔG^0 and T

2. ΔH^0 and T

3. ΔS^0 and T

4. ΔG^0 and ΔS^0

Question Number : 113 Question Id : 67809418536 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For a spontaneous process:

Options :

1. The free energy is zero

2. The free energy increases

3. The free energy decreases, whereas the entropy increases

4. The free energy and entropy both increase

Question Number : 114 Question Id : 67809418537 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The enthalpy change of a substance when one mole of it is completely burnt in oxygen is called

Options :

1. Heat of formation

2. Heat of combustion

3. Heat of solution

4. Heat of fusion

Question Number : 115 Question Id : 67809418538 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The unit of fugacity is same as that of the

Options :

1. Pressure

2. Temperature

3. Volume

4. Molar concentration

Question Number : 116 Question Id : 67809418539 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

_____ explains the equilibrium constant for any chemical reaction.

Options :

1. Henry's law

2. Hess's law

3. Raoult's law

4. Law of mass action

Question Number : 117 Question Id : 67809418540 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The first law of thermodynamics is mathematically stated as _____

Options :

1. $dQ = dE + dW$

2. $dQ = dE - dW$

3. $dE = dW + dW$

4. $dH = dE + dW$

Question Number : 118 Question Id : 67809418541 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is a limitation of Ellingham diagrams?

Options :

1. They cannot give information about the reduction temperature of metal oxides

2. Oxygen pressure in equilibrium with a metal and its oxide cannot be determined

3. They do not give information about reaction rates

4. They are not useful in metal extraction processes

Question Number : 119 Question Id : 67809418542 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For an ideal gas, the activity coefficient is always _____ at all pressures

Options :

1. Negative

2. Unity

3. Zero

4. Unpredictable

Question Number : 120 Question Id : 67809418543 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a substitutional solid solution , a large solute atom induces _____ around it.

Options :

1. Compressive stresses

2. Tensile stresses

3. Shear stresses

4. Tangent stresses

Question Number : 121 Question Id : 67809418544 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Ledeburite is a mixture of _____ & _____

Options :

1. Ferrite and Cementite

2. Ferrite and Austenite

3. Ferrite and Pearlite

4. Austenite and Cementite

Question Number : 122 Question Id : 67809418545 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Austenite is formed due to _____ reaction between delta iron and liquid

Options :

1. Eutectic

2. Eutectoid

3. Peritectic

4. Peritectoid

Question Number : 123 Question Id : 67809418546 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The crystal structure of martensite is _____

Options :

1. BCC

2. FCC

3. Complex orthorhombic

4. BCT

Question Number : 124 Question Id : 67809418547 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is an austenite stabilizer?

Options :

1. Tungsten

2. Molybdenum

3. Manganese

4. Vanadium

Question Number : 125 Question Id : 67809418548 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The solid solubility of solute in solvent in a phase diagram is given by _____ line

Options :

1. Solidus

2. Solvus

3. Liquidus

4. Eutectoid

Question Number : 126 Question Id : 67809418549 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Probably the fastest diffusing species in Fe is _____

Options :

1. H

2. Ni

3. W

4. C

Question Number : 127 Question Id : 67809418550 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The units for diffusivity, D, are ----------

Options :

1. $m^2\ sec^1$

2. $m^2\ sec^{-1}$

3. $m^{-2}\ sec^{-1}$

4. $m^{-2}\ sec^1$

Question Number : 128 Question Id : 67809418551 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Under steady state conditions, the diffusion flux is proportional to _____ gradient

Options :

1. Pressure
2. Volume
3. Concentration
4. Pressure and volume

Question Number : 129 Question Id : 67809418552 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

_____is the method which is not used for determining phase diagrams

Options :

1. Thermal analysis
2. Dilatometry
3. XRD
4. Calirometry

Question Number : 130 Question Id : 67809418553 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The peritectic reaction in binary system is given by

Options :

1. $L=\alpha+\beta$
2. $\alpha= L+\beta$
3. $\Upsilon= \alpha+\beta$
4. $L+\alpha=\beta$

Question Number : 131 Question Id : 67809418554 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following treatments will improve maximum machinability of hyper eutectoid steel?

Options :

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

Question Number : 132 Question Id : 67809418555 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Hardenability of steel is a measure of

Options :

1. Carbon content
2. Cementite content
3. The depth to which the steel will harden on quenching
4. Pearlite content

Question Number : 133 Question Id : 67809418556 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The fastest cooling rate is achieved when steel is quenched in

Options :

1. air
2. oil
3. water
4. brine

Question Number : 134 Question Id : 67809418557 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The structure produced by austempering of steel is _____

Options :

1. Bainite

2. Martensite

3. Troostite

4. Austenite

Question Number : 135 Question Id : 67809418558 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

_____ heat treatment is suitable for Al-Cu alloys

Options :

1. Martempering

2. Hardening

3. Austempering

4. Age hardening

Question Number : 136 Question Id : 67809418559 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Nitriding treatment is suitable for _____ steels

Options :

1. Low carbon

2. Medium carbon

3. High carbon

4. Alloy

Question Number : 137 Question Id : 67809418560 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following treatment is used to eliminate retained austenite?

Options :

1. Patenting

2. Austempering

3. Quenching

4. Sub-Zero treatment

Question Number : 138 Question Id : 67809418561 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

_____ stainless steel can be hardened by heat treatment

Options :

1. Austenitic

2. Ferritic

3. Martensitic

4. Bainitic

Question Number : 139 Question Id : 67809418562 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Hadfield manganese steel contains _____% Manganese

Options :

1. 2

2. 4

3. 8

4. 12

Question Number : 140 Question Id : 67809418563 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following occurs due to diffusion less transformation?

Options :

1. Pearlite

2. Ledeburite

3. Martensite

4. Bainite

Question Number : 141 Question Id : 67809418564 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

_____ is a treatment used to produce finest pearlite of constant inter lamellar spacing

Options :

1. Austempering

2. Patenting

3. Tempering

4. Martempering

Question Number : 142 Question Id : 67809418565 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

As per the TTT diagrams Bainite will form in eutectoid plain carbon steel when heated at 850^0C followed by

Options :

1. Air-cooling to room temperature

2. Isothermal holding between eutectoid temperature and the nose

3. Quenching to room temperature

4. Isothermal holding between the nose and the Ms temperature

Question Number : 143 Question Id : 67809418566 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Tap to tap time is maximum in the case of

Options :

1. L.D converter

2. Kaldo process

3. Bessemer converter

4. Open hearth

Question Number : 144 Question Id : 67809418567 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The most stable oxide product formed during refining of pig iron is _____

Options :

1. MgO

2. SiO_2

3. CaO

4. MnO

Question Number : 145 Question Id : 67809418568 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The refractories used in the hearth portion of Blast furnace are

Options :

1. Graphite

2. Fireclay

3. Alumina

4. Magnesia

Question Number : 146 Question Id : 67809418569 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

_____is the cause of hanging in the blast furnace

Options :

1. High blast temperature

2. High blast pressure

3. Charging of lump iron ore

4. High top pressure

Question Number : 147 Question Id : 67809418570 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In which of the following steel making process air is blown from the bottom of furnace?

Options :

1. L.D converter

2. Kaldo process

3. Open hearth process

4. Bessemer process

Question Number : 148 Question Id : 67809418571 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Slag foaming index increases with

Options :

1. Decrease in viscosity of slag

2. Increase in basicity

3. Decrease in volume of particulates

4. Increase in viscosity of slag

Question Number : 149 Question Id : 67809418572 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

What is the temperature of pre-heated blast air in the tuyere?

Options :

1. 120-200°C

2. 1000-1300°C

3. 500-800°C

4. 1500-1600°C

Question Number : 150 Question Id : 67809418573 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Considerable amount of nitrogen present in steel makes it unsuitable for deep drawing purposes. Steel made by which of the following processes is prone to have maximum nitrogen in it?

Options :

1. L.D. Process

2. Open hearth process

3. Bessemer process

4. Electric arc furnace

Question Number : 151 Question Id : 67809418574 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Degree of deoxidation achieved is maximum in the case of _____steel

Options :

1. Rimmed steel

2. Semi-killed steel

3. Killed steel

4. All steels will have same degree of deoxidation

Question Number : 152 Question Id : 67809418575 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Dephosphorisation during L.D. steel making is favoured, if the slag is _____

Options :

1. Highly viscous

2. Very hot

3. Acidic in nature

4. Basic in nature

Question Number : 153 Question Id : 67809418576 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Grade of pig iron is decided by its _____ content

Options :

1. Silicon

2. Manganese

3. Sulphur

4. Carbon

Question Number : 154 Question Id : 67809418577 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which is the weakest deoxidiser of molten steel?

Options :

1. Titanium

2. Vanadium

3. Tungsten

4. Chromium

Question Number : 155 Question Id : 67809418578 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The technique that is used for reduction of oxidized copper is _____

Options :

1. Slagging

2. Refining

3. Converting

4. Poling

Question Number : 156 Question Id : 67809418579 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The protective layer that zinc forms on the surface of steel is _____

Options :

1. ZnO

2. $ZnO(Fe, Mn)_2O_3$

3. Zinc sulphate

4. $ZnCO_3$

Question Number : 157 Question Id : 67809418580 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. Pure metal chlorides serve as main raw material

2. Reduction is done only by sodium

3. Reduction chamber should be free of oxygen

4. It is used for extraction of titanium and zirconium

Question Number : 158 Question Id : 67809418581 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following alloy that is added to lead base bullion for debismuthizing?

Options :

1. Ca+Mg

2. Ca+Mn

3. Ca+Fe

4. Mg+Fe

Question Number : 159 Question Id : 67809418582 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Condensers in imperial smelting process consist of a bath of _____

Options :

1. Molten lead

2. Molten zinc

3. Molten iron

4. Molten copper

Question Number : 160 Question Id : 67809418583 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Bayer's process is suitable and economical, only when silica percentage of bauxite is

Options :

1. Very high

2. < 0.5

3. ≤ 3

4. > 5

Question Number : 161 Question Id : 67809418584 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is not a continuous copper production process?

Options :

1. WORCRA process

2. INCO process

3. Noranda process

4. Mitsubishi process

Question Number : 162 Question Id : 67809418585 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Spelter is a concentrate of _____

Options :

1. Zinc

2. Lead

3. Tin

4. Copper

Question Number : 163 Question Id : 67809418586 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Metal that is used in sound and vibration damping is _____

Options :

1. Copper

2. Zinc

3. Lead

4. Iron

Question Number : 164 Question Id : 67809418587 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

What is white metal?

Options :

1. Cu

2. $Cu_2S.FeS$

3. Cu_2S

4. Cu_2O

Question Number : 165 Question Id : 67809418588 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

_____ hardness test is used to find the hardness of a razer blade

Options :

1. Brinell

2. Vickers

3. Rockwell

4. Rockwell superficial

Question Number : 166 Question Id : 67809418589 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The relation between true stress and engineering stress is _____

Options :

1. $\sigma = s(e+1)$

2. $s=\sigma(e+1)$

3. $\varepsilon = (s-1)$

4. $\sigma = s(e-1)$

Question Number : 167 Question Id : 67809418590 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The toughness of a material can be determined using _____ test

Options :

1. Impact

2. Fatigue

3. Torsion

4. Creep

Question Number : 168 Question Id : 67809418591 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The spacing between beach marks in fatigue fracture depends on _____

Options :

1. Stress amplitude

2. Strain amplitude

3. Yield strength

4. Fatigue limit

Question Number : 169 Question Id : 67809418592 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following will reduce the ductile-brittle transition temperature?

Options :

1. Addition of Carbon

2. Addition of Sulphur

3. Addition of Phosphorous

4. Addition of Manganese

Question Number : 170 Question Id : 67809418593 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Magnetic particle testing is most likely to find subsurface discontinuities in:

Options :

1. Soft steels with high permeability

2. Soft steels with low permeability

3. Hardened steels with low permeability

4. Hardened steels with high permeability

Question Number : 171 Question Id : 67809418594 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Eddy current testing requires that the material tested be _____

Options :

1. Magnetic

2. Non-magnetic

3. Conductive

4. Insulated

Question Number : 172 Question Id : 67809418595 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following techniques is used to detect the defects in a number of components at a time?

Options :

1. X-ray
2. γ-ray
3. Ultrasonic
4. Dye penetrant

Question Number : 173 Question Id : 67809418596 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The critical resolved shear stress is maximum when λ is _____degrees

Options :

1. 30
2. 45
3. 90
4. 180

Question Number : 174 Question Id : 67809418597 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The point where three or more dislocation lines meet is known as _____

Options :

1. Point of intersection
2. Node
3. Burgers point
4. Jog

Question Number : 175 Question Id : 67809418598 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Strain hardening is not observed during _____

Options :

1. Cold working

2. Cold forging

3. Hot working

4. Cold rolling

Question Number : 176 Question Id : 67809418599 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following rolling mills can reduce a slab directly to strip in one pass?

Options :

1. Two high

2. Three high

3. Four high

4. Planetary mill

Question Number : 177 Question Id : 67809418600 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following forming process involves purely compressive stresses?

Options :

1. Forging

2. Stretch forming

3. Bending

4. Spinning

Question Number : 178 Question Id : 67809418601 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Earing is a defect observed in _____

Options :

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

Question Number : 179 Question Id : 67809418602 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Sinking process produces _____

Options :

1. Sheets
2. Tubes
3. Rods
4. Wires

Question Number : 180 Question Id : 67809418603 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following process produces powders of high purity?

Options :

1. Atomization
2. Gaseous reduction
3. Grinding
4. Electrolytic deposition

Question Number : 181 Question Id : 67809418604 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Porous strips of nickel can be prepared by _____

Options :

1. Gravity sintering

2. Powder forging

3. Powder spraying

4. Powder rolling

Question Number : 182 Question Id : 67809418605 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The role of cobalt in hard metals is _____

Options :

1. Act as a bind metal

2. Increase compressive strength of cutting tools

3. Promote liquid phase sintering process leading to high density

4. Maximize transverse rupture strength

Question Number : 183 Question Id : 67809418606 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The top most part in a sand mould is called as _____

Options :

1. Drag

2. Cope

3. Cheek

4. Sprue

Question Number : 184 Question Id : 67809418607 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

_____ patterns are used when repetitive production of castings is required in large quantities.

Options :

1. Polystyrene
2. Metal
3. Thermocol
4. Wax

Question Number : 185 Question Id : 67809418608 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Addition of which of the following material increases the hit strength of the mould?

Options :

1. Coal dust
2. Iron oxide
3. Wood flour
4. Dextrin

Question Number : 186 Question Id : 67809418609 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following material is used to make pattern for investment casting process?

Options :

1. Plaster of paris
2. Ceramic powder
3. Frozen mercury
4. Aluminium

Question Number : 187 Question Id : 67809418610 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Hallow castings can be produced without cores by _____

Options :

1. CO_2 moulding

2. Squeeze casting

3. True centrifugal casting

4. Gravity die casting

Question Number : 188 Question Id : 67809418611 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following metals cannot be produced by Die casting process?

Options :

1. Zinc

2. Lead

3. Aluminium

4. Alloy steel

Question Number : 189 Question Id : 67809418612 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

What kind of grain structure can be found just immediate to the mould wall made of metal?

Options :

1. Dendritic grain structure

2. Coarse grains

3. Fine equiaxed grains

4. Columnar grains

Question Number : 190 Question Id : 67809418613 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is used for making or repairing corners in mould?

Options :

1. Slick

2. Trowel

3. Lifter

4. Cloth

Question Number : 191 Question Id : 67809418614 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Distortion of castings will be caused by:

Options :

1. Tampering

2. Tempering

3. Tensile stresses

4. Severe quenching practice and thermal stresses

Question Number : 192 Question Id : 67809418615 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Deep penetration in TIG welding can be obtained by using electrode tip of _____ shape.

Options :

1. Flat

2. Ball

3. Conical

4. Diamond

Question Number : 193 Question Id : 67809418616 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

When the amount of acetylene is greater than oxygen, it is called _____

Options :

1. Oxidising flame
2. Neutral flame
3. 3X feather
4. Reducing flame

Question Number : 194 Question Id : 67809418617 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The melting point of filler material in brazing process is

Options :

1. $<450^0C$
2. $> 450^0C$
3. $< 300^0C$
4. $<270^0C$

Question Number : 195 Question Id : 67809418618 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following process is generally not recommended for welding of dissimilar metals?

Options :

1. TIG
2. EBW
3. Oxy acetylene welding
4. LBW

Question Number : 196 Question Id : 67809418619 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Thermit welding utilizes the heat produced by

Options :

1. Acetylene Gas

2. Exothermic reaction

3. Plasma gas

4. Electric power

Question Number : 197 Question Id : 67809418620 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The thickness of the heat affected zone (HAZ) depends on?

Options :

1. Electrical conductivity

2. Thermal conductivity

3. Magnetic properties

4. Shielding gas

Question Number : 198 Question Id : 67809418621 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Grey cast iron is mostly welded by _____ welding, because it facilitates graphitization.

Options :

1. TIG

2. MIG

3. Submerged arc

4. Oxyacetylene flame

Question Number : 199 Question Id : 67809418622 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

_____welding will be the best process for butt welding of two 25mm thick plates

Options :

1. Gas

2. Submerged arc

3. Electroslag

4. TIG

Question Number : 200 Question Id : 67809418623 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Material used for coating the electrode is called _____

Options :

1. Slow

2. Binder

3. Flux

4. Protective layer