Question Paper Preview

Question Paper Name:	Metallurgical Engineering 30th April 2019 Shift1
Subject Name:	Metallurgical Engineering
Share Answer Key With Delivery Engine:	Yes
Actual Answer Key:	Yes

Mathematics

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

Question Number : 1 Question Id : 67809439257 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The adjoint of $A = \begin{pmatrix} 1 & 4 & -2 \\ -2 & -5 & 4 \\ 1 & -2 & 1 \end{pmatrix}$ is

Options :

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

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

3. $\begin{pmatrix} 3 & 0 & 6 \\ 6 & 3 & 0 \\ 9 & 6 & 3 \end{pmatrix}$

4. $\begin{pmatrix} 3 & 2 & 1 \\ 4 & 1 & -1 \\ 0 & 3 & 4 \end{pmatrix}$

Question Number : 2 Question Id : 67809439258 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If A is a square matrix of order 3 then (adj A).A=

Options :

1. A. (adj A)

2. A× (adj A)

3. A- (adj A)

4. A+ (adj A)

Question Number : 3 Question Id : 67809439259 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The inverse of $A=\begin{pmatrix}2 & 3\\ 2 & 5\end{pmatrix}$ is

Options :

1. $\begin{pmatrix}5/4 & -3/4\\ 1/2 & 1/2\end{pmatrix}$

2. $\begin{pmatrix}5/4 & 3/4\\ -1/2 & 1/2\end{pmatrix}$

3. $\begin{pmatrix}5/4 & -5/4\\ -1/2 & 1/2\end{pmatrix}$

4. $\begin{pmatrix}5/4 & -3/4\\ -1/2 & 1/2\end{pmatrix}$

Question Number : 4 Question Id : 67809439260 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $A=\begin{pmatrix}3 & 2 & x\\ 4 & 1 & -1\\ 0 & 3 & 4\end{pmatrix}$ is a singular matrix then the value of x is

Options :

1. $11/12$

2. $-11/12$

3. $13/12$

4. $5/4$

Question Number : 5 Question Id : 67809439261 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If A=$\begin{pmatrix} 3 & 1 \\ -1 & 2 \end{pmatrix}$ then $A^2 - 5A + 7I$ is

Options :

1. $\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$

2. $\begin{pmatrix} 0 & 3 \\ 2 & 0 \end{pmatrix}$

3. $\begin{pmatrix} 0 & 0 \\ 0 & 0 \end{pmatrix}$

4. $\begin{pmatrix} 2 & 3 \\ 2 & 5 \end{pmatrix}$

Question Number : 6 Question Id : 67809439262 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Resolve $\frac{3x+7}{(x-1)(x-2)}$ into partial fractions

Options :

1. $\frac{12}{(x-2)} - \frac{10}{(x-1)}$

2. $\frac{13}{(x-2)} - \frac{10}{(x-1)}$

3. $\frac{13}{(x-5)} - \frac{10}{(x-1)}$

4. $\frac{13}{(x-2)} - \frac{10}{(x-7)}$

Question Number : 7 Question Id : 67809439263 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Resolve $\frac{5x^2+1}{x^3-1}$ into partial fractions

Options :

1. $\frac{12}{(x-2)} - \frac{10}{(x-1)}$

2. $\frac{13}{(x-2)} - \frac{10}{(x-1)}$

3. $\frac{13}{(x-5)} - \frac{10}{(x-1)}$

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

Question Number : 8 Question Id : 67809439264 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $tan^2\theta + sec\theta = 5$ then the value of $\cos\theta$ is

Options :

1. $-1/3$ *or* $1/2$

2. $-11/12$ *or* $1/2$

3. $13/12$ or $-1/3$

4. $5/4$ *or* $1/2$

Question Number : 9 Question Id : 67809439265 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $16sin^3\theta + 8cos^3\theta$ is

Options :

1. 3

2. 1

3. -3

4. 0

Question Number : 10 Question Id : 67809439266 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $sin\alpha = {}^{15}/_{17}$, $cos\beta = {}^{12}/_{13}$ then the value of $sin(\alpha + \beta)$ is

Options :

1. ${}^{110}/_{105}$

2. $-{}^{121}/_{152}$

3. ${}^{220}/_{221}$

4. ${}^{5}/_{4}$

Question Number : 11 Question Id : 67809439267 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $cos20^0 cos40^0 cos60^0 cos80^0$ is

Options :

1. ${}^{11}/_{12}$

2. ${}^{1}/_{16}$

3. ${}^{13}/_{12}$

4. ${}^{5}/_{4}$

Question Number : 12 Question Id : 67809439268 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\frac{\cos 17^0 + \sin 17^0}{\cos 17^0 - \sin 17^0}$ is

Options :

1. $\cos 20^0$

2. $\tan 65^0$

3. $\tan 60^0$

4. $\tan 62^0$

Question Number : 13 Question Id : 67809439269 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 : 14 Question Id : 67809439270 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 : 15 Question Id : 67809439271 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The general solution of $4\cos^2 x - 3 = 0$ 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 : 16 Question Id : 67809439272 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 : 17 Question Id : 67809439273 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 : 18 Question Id : 67809439274 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 : 19 Question Id : 67809439275 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. $\frac{\pi}{4}$

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

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

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

Question Number : 20 Question Id : 67809439276 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. 12

4. 13

Question Number : 21 Question Id : 67809439277 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 : 22 Question Id : 67809439278 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 : 67809439279 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The length of the latus rectum of the hyperbola: $\frac{x^2}{9}-\frac{y^2}{16}=1$ is

Options :

1. 9 units

2. 5 units

3. 6 units

4. 13 units

Question Number : 24 Question Id : 67809439280 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the length of latus rectum is $\frac{9}{2}$ and the distance between its foci is 10 then the equation of hyperbola is

Options :

1. $\frac{x^2}{16}+\frac{y^2}{9}=1$

2. $\frac{x^2}{18}-\frac{y^2}{9}=1$

3. $\frac{x^2}{16}-\frac{y^2}{6}=1$

4. $\frac{x^2}{16}-\frac{y^2}{9}=1$

Question Number : 25 Question Id : 67809439281 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The equation of the parabola with focus at (-3.2) and vertex (-2.2) is

Options :

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

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

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

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

Question Number : 26 Question Id : 67809439282 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 : 27 Question Id : 67809439283 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 : 28 Question Id : 67809439284 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 : 29 Question Id : 67809439285 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 : 30 Question Id : 67809439286 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 : 31 Question Id : 67809439287 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 : 32 Question Id : 67809439288 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The three sides of a trapezium are equal each being 6" long then the area of the trapezium when it is maximum is

Options :

1. 27 square units

2. 33 square units

3. $27\sqrt{3}$ square units

4. $29\sqrt{3}$ square units

Question Number : 33 Question Id : 67809439289 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The interval in which the function $f(x) = x^2 logx$ is an increasing function is

Options :

1. $(1\ ,\ e^{-1/2}\ )$

2. $(2\ ,\ e^{-1/2}\ )$

3. $(0\ ,\ e^{1/2}\ )$

4. $(0\ ,\ e^{-1/2}\ )$

Question Number : 34 Question Id : 67809439290 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The stationary points and the corresponding values of the function $f(x) = x^3 - 9x^2 + 15x - 1$ is

Options :

1. 6,-26

2. 3,-26

3. 6,26

4. -6,-26

Question Number : 35 Question Id : 67809439291 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $u = \log\left(\frac{x^2+y^2}{x+y}\right)$ then $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y}$ =

Options :

1. 2

2. 4

3. 5

4. 1

Question Number : 36 Question Id : 67809439292 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 : 37 Question Id : 67809439293 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 : 38 Question Id : 67809439294 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 : 39 Question Id : 67809439295 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 : 40 Question Id : 67809439296 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\int_1^{\frac{\pi}{2}} sin^2x\,dx$ is

Options :

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

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

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

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

Question Number : 41 Question Id : 67809439297 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 : 42 Question Id : 67809439298 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\int_0^{\pi/4} \sqrt{1+sin2x}\, dx =$

Options :

1. -1

2. -3

3. 3

4. 1

Question Number : 43 Question Id : 67809439299 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\int_0^{\pi/2} \frac{sinx}{1+cos^2x}\, dx =$

Options :

1. $\pi/4$

2. $-\pi/4$

3. $\pi/3$

4. $\pi/2$

Question Number : 44 Question Id : 67809439300 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 : 45 Question Id : 67809439301 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 : 46 Question Id : 67809439302 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 : 47 Question Id : 67809439303 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. $c_1e^{-x} + c_2e^{-2x}$

2. $c_1e^{x} + c_2e^{2x}$

3. $c_1e^{-x} + c_2e^{2x}$

4. $c_1e^{2x} + c_2e^{3x}$

Question Number : 48 Question Id : 67809439304 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 : 49 Question Id : 67809439305 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Form the differential equation representing the family of curves $x^2 = 4ay$, where a is any arbitrary constant

Options :

1. $x\frac{dy}{dx} - 2y = 0$

2. $x\frac{dy}{dx} + 2y = 0$

3. $x\frac{dy}{dx} - 6y = 0$

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

Question Number : 50 Question Id : 67809439306 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The solution of $\frac{dy}{dx} + y\cot x = \cos x$ is

Options :

1. $y\sin x = \frac{-\cos 2x}{4} + c$

2. $y\sin x = \frac{\cos 2x}{4} + c$

3. $y\sin x = \frac{-\cos 5x}{4} + c$

4. $y\cos x = \frac{-\cos 2x}{4} + c$

Physics

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

Question Number : 51 Question Id : 67809439307 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In the equation $\frac{\alpha}{t^2} = Fv + \frac{\beta}{x^2}$ the dimensional formula for [α], [β] is (here t = time, F= force, v = velocity, x = distance)

Options :

1. $MLT^{-1},\ MLT^{-3}$

2. $ML^2T,\ ML^4T^2$

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

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

Question Number : 52 Question Id : 67809439308 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following quantities has not been expressed in proper units?

Options :

1. Young's modulus=N/m^2

2. Surface tension=N/m

3. Pressure = N/m^2

4. Energy=kg m/s

Question Number : 53 Question Id : 67809439309 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Three vectors A, B and C satisfy the relation A.B=0 and A.C=0. The vector A is parallel to

Options :

1. B

2. C

3. B.C

4. BxC

Question Number : 54 Question Id : 67809439310 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If three vectors A, B and C are 12, 5 and 13 in magnitude such that C=A+B, then the angle between A and B is

Options :

1. 60^0

2. 90^0

3. 120^0

4. 30^0

Question Number : 55 Question Id : 67809439311 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A stone dropped from a certain height, can reach the ground in 5s. It is stopped after 3 seconds of its fall and then allowed to fall again. The time taken by the stone to reach the ground for the remaining distance is

Options :

1. 2 s

2. 6 s

3. 4 s

4. 1 s

Question Number : 56 Question Id : 67809439312 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The range of projectile fired at an angle of 15^0 is 50m. If it is fired with the same speed at an angle of 45^0, its range will be

Options :

1. 25 m

2. 37 m

3. 50 m

4. 100 m

Question Number : 57 Question Id : 67809439313 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A freely falling body acquires a velocity 'v' m/s in falling through a distance of 80m. How much further distance should it fall, so as to acquire a velocity of '2v' m/s?(Take g=10 m/s^2)

Options :

1. 240 m

2. 200 m

3. 400 m

4. 280 m

Question Number : 58 Question Id : 67809439314 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A block is projected along a rough horizontal road with a speed of 10 m/s. If the coefficient of kinetic friction is 0.10, how far will it travel before coming to rest ?

Options :

1. 50 m

2. 60 m

3. 40 m

4. 10 m

Question Number : 59 Question Id : 67809439315 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

What force is required to push a 200 N body up a 30^0 smooth incline with an acceleration of 2 m/s^2? The force is to be applied along the plane is (Take g=10 m/s^2)

Options :

1. 40 N

2. 60 N

3. 80 N

4. 140 N

Question Number : 60 Question Id : 67809439316 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A block of mass 2 kg rests on a rough inclined plane making an angle of 30^0 with the horizontal. The coefficient of static friction between the block and the plane is 0.7. The frictional force on the block is

Options :

1. 9.8N

2. 0.78 x 9.8 N

3. 9.8 x $\sqrt{3}$ N

4. 0.7 x 9.8$\sqrt{3}$ N

Question Number : 61 Question Id : 67809439317 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A man moves on a straight horizontal road with a block of mass 2 kg in his hand. If he covers a distance of 40 m with an acceleration of 0.5 m/s^2, the work done by the man on the block during the motion is (Take g=10 m/s^2)

Options :

1. 40 J

2. 1 J

3. 80 J

4. 20 J

Question Number : 62 Question Id : 67809439318 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a factory it is desired to lift 2000 kg of metal through a distance of 12 m in 1 minute. The minimum horse power of the engine to be used is

Options :

1. 3.5

2. 5.3

3. 4.3

4. 5.8

Question Number : 63 Question Id : 67809439319 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Energy harnessed from flowing water is called --------- energy

Options :

1. Hydel

2. Solar

3. Tidal

4. Geothermal

Question Number : 64 Question Id : 67809439320 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

When a particle executing simple harmonic motion passes through the mean position, it has

Options :

1. minimum K.E and maximum P.E.

2. maximum K.E and maximum P.E.

3. maximum K.E and minimum P.E.

4. mimimum K.E. and mimimum P.E.

Question Number : 65 Question Id : 67809439321 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A particle of mass 200 g executes a simple harmonic motion. The restoring force is provided by a spring of spring constant 80 N/m. The time period is

Options :

1. 0.2 s

2. 0.41 s

3. 0.31 s

4. 0.5 s

Question Number : 66 Question Id : 67809439322 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The temperature at which the speed of sound will be double of its value at 0^0C is

Options :

1. 819^0 C

2. 850^0C

3. 919^0C

4. 900^0C

Question Number : 67 Question Id : 67809439323 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the source of sound moves towards an observer, then

Options :

1. The frequency of the source is increased

2. The velocity of sound in the medium is increased

3. The wavelength of sound in the medium towards the observer is decreased

4. The amplitude of vibration of the particles is increased.

Question Number : 68 Question Id : 67809439324 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A cinema hall has a volume of 7500 m^3. The total absorption in the hall if the reverberation time of 1.5 s is to be maintained is

Options :

1. 800 OWU

2. 925 OWU

3. 950 OWU

4. 825 OWU

Question Number : 69 Question Id : 67809439325 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

One mole of oxygen is heated at constant pressure starting at 0^0C. The heat energy that must be supplied to the gas to double its volume is

Options :

1. 2.5 x 273 x R

2. 3.5 x 273 x R

3. 2.5 x 546 x R

4. 3.5 x 546 x R

Question Number : 70 Question Id : 67809439326 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A vessel contains a gas at a temperature of 27^0C and a pressure of 20 atm. If one half of the gas is released and the temperature of the remaining gas is raised by 50^0C, the new pressure will be

Options :

1. 12.24 atm

2. 11.67 atm

3. 13.79 atm

4. 11 atm

Question Number : 71 Question Id : 67809439327 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The temperature of 5 gm of air is raised from 0^0 C to 1^0 C. The increase in the internal energy of air is (C_v = 0.172 cal/gm/ ^{0} C and J = 4.18 x 10^7 erg/cal)

Options :

1. 3.595 x 10^7 erg

2. 3 x 10^7 erg

3. 4.5 x 10^7 erg

4. 2.595 x 10^7 erg

Question Number : 72 Question Id : 67809439328 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In all reversible processes entropy of the system

Options :

1. decreases

2. increases

3. remains constant

4. remains zero

Question Number : 73 Question Id : 67809439329 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If one mole of a monoatomic gas ('Y'=5/3) is mixed with one mole of a diatomic gas ('Y'=7/5), the value of 'Y' for the mixture is

Options :

1. 1.40

2. 1.50

3. 1.53

4. 3.07

Question Number : 74 Question Id : 67809439330 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Electrons are emitted with zero velocity from a certain metal surface when it is exposed to radiations of wavelength 7000 A^0. The work function of the metal is

Options :

1. 1 eV

2. 1.52 eV

3. 2.52 eV

4. 1.77 eV

Question Number : 75 Question Id : 67809439331 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A superconducting material exhibits

Options :

1. zero conductivity and complete diamagnetism

2. zero resistivity and complete paramagnetism

3. infinite conductivity and complete paramagnetism

4. zero resistivity and complete diamagnetism

Display Number Panel: Yes
Group All Questions: No

Question Number : 76 Question Id : 67809439332 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The splitting of spectral lines in a strong magnetic field is called

Options :

1. Stark effect

2. Pauli Exclusion Principle

3. Zeeman effect

4. Aufbau Principle

Question Number : 77 Question Id : 67809439333 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Bohr's model can explain

Options :

1. The spectrum of hydrogen atom only

2. The spectrum of hydrogen molecule

3. The solar spectrum

4. Spectrum of an atom or ion containing one electron only

Question Number : 78 Question Id : 67809439334 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The maximum number of electrons that a d-orbital can accommodate is

Options :

1. 2

2. 6

3. 10

4. 14

Question Number : 79 Question Id : 67809439335 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Magnesium Atomic number is 12, which of the following is the electronic configuration

Options :

1. $1S^2\ 2S^1\ 2P^6\ 3S^2$

2. $1S^2\ 2S^2\ 2P^5\ 3S^2$

3. $1S^2\ 2S^2\ 2P^6\ 3S^2$

4. $1S^2\ 2S^2\ 2P^6\ 3S^1 3d^1$

Question Number : 80 Question Id : 67809439336 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

N_2 molecule contains

Options :

1. Covalent bond

2. Ionic bond

3. Hydrogen bond

4. Metalic bond

Question Number : 81 Question Id : 67809439337 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

One mole of any of the particles contains

Options :

1. $6.023X\ 10^{-23}$

2. $6.022X\ 10^{23}$

3. $60.23X\ 10^{23}$

4. $6.023X\ 10^{25}$

Question Number : 82 Question Id : 67809439338 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The normality of the solution obtained by dissolving 4 gm of NaOH in 1Litre is

Options :

1. 1N

2. 0.1N

3. 0.5N

4. 0.02N

Question Number : 83 Question Id : 67809439339 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Molecular weight of H_2SO_4 is

Options :

1. 92

2. 96

3. 98

4. 99

Question Number : 84 Question Id : 67809439340 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A Lewis acid is a substance which

Options :

1. Accept protons

2. Accept a lone pair of electrons

3. Donate protons

4. Donate a lone pair of electrons

Question Number : 85 Question Id : 67809439341 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

P^H of a solution is 9.5, the solution is

Options :

1. Basic

2. Acidic

3. Neutral

4. Amphoteric

Question Number : 86 Question Id : 67809439342 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Laws of electrolysis were given by

Options :

1. Ostwald

2. Faraday

3. Arrhenius

4. Volta

Question Number : 87 Question Id : 67809439343 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Common electrolyte used in the salt bridge is

Options :

1. NaOH

2. $NaCO_3$

3. KCl

4. KOH

Question Number : 88 Question Id : 67809439344 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Standard Reduction Potential of an element is equal to

Options :

1. 1 X Its reduction potential

2. -1 X Its standard oxidation potential

3. -1 X Its reduction potential

4. 1 X Its standard oxidation potential

Question Number : 89 Question Id : 67809439345 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The standard emf for the cell reaction, $Zn+Cu^{+2} \rightarrow Cu + Zn^{2+}$ is 1.10 V at 25°C. The emf of the cell reaction when 0.1 M Cu^{+2} and 0.1 M Zn^{+2} solutions are used at 25°C is

Options :

1. 1.10V
2. 0.11V
3. -1.10V
4. -0.11V

Question Number : 90 Question Id : 67809439346 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which chemical is responsible for permanent hardness of water?

Options :

1. KCl
2. $MgCl_2$
3. NaCl
4. AgCl

Question Number : 91 Question Id : 67809439347 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Permutit is chemically

Options :

1. Sodium Silicate
2. Aluminium Silicate
3. Hydrated Sodium alumino silicate
4. Calicium silicate

Question Number : 92 Question Id : 67809439348 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The cation exchange resin possesses

Options :

1. Acidic group

2. Basic group

3. Amphoteric group

4. Benzo group

Question Number : 93 Question Id : 67809439349 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Chemically the rust is

Options :

1. Fe_2O_3

2. Fe_2O_3. FeO

3. $Fe_2O_3.XH_2O$

4. Fe_2O_3 . NH_3

Question Number : 94 Question Id : 67809439350 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Galvanizing is the process of coating iron with

Options :

1. Mg

2. Cu

3. Au

4. Zn

Question Number : 95 Question Id : 67809439351 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is not a thermoplastic ?

Options :

1. Bakelite

2. Polystyrene

3. Polythene

4. Nylon

Question Number : 96 Question Id : 67809439352 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Isoprene is a monomer of

Options :

1. Starch

2. Cellulose

3. Natural rubber

4. Lignin

Question Number : 97 Question Id : 67809439353 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Buna-S is a copolymer of

Options :

1. Butadiene and Styrene

2. Butadiene and Acrylonitrile

3. Butadiene and Isoprene

4. Formaldehyde and Styrene

Question Number : 98 Question Id : 67809439354 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Main constituent of natural gas is

Options :

1. Ethane

2. Methane

3. Butane

4. Carbon Monoxide

Question Number : 99 Question Id : 67809439355 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Ozone layer is present at

Options :

1. Staratosphere

2. Inosphere

3. Thermosphere

4. Atmosphere

Question Number : 100 Question Id : 67809439356 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The amount of DO required to aerobically decompose biodegradable organic matter of a given volume of water is

Options :

1. Biochemical Oxygen Demand

2. Biological Oxygen Demand

3. Chemical Oxygen demand

4. Biomagnification

Metallurgical Engineering

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

Question Number : 101 Question Id : 67809439357 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Valuable mineral particles are liberated from the gangue particles during _____ stage of mineral processing

Options :

1. Comminution

2. Dewatering

3. Concentration

4. Sizing

Question Number : 102 Question Id : 67809439358 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Mesh number indicates the number of holes per _____

Options :

1. Linear meter

2. Liner mm

3. Linear cm

4. Linear inch

Question Number : 103 Question Id : 67809439359 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The crushing faces in a jaw crusher are made of _____

Options :

1. Aluminium alloy

2. Mild steel

3. Mn steel

4. Bronze

Question Number : 104 Question Id : 67809439360 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is the mineral of Titanium?

Options :

1. Sphalerite

2. Barite

3. Galena

4. Rutile

Question Number : 105 Question Id : 67809439361 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The product of _____ is more suitable for extraction of metal by hydrometallurgy.

Options :

1. Volatilizing roasting

2. Chlorodizing roasting

3. Oxidizing roasting

4. Sulphating roasting

Question Number : 106 Question Id : 67809439362 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Heating of coal in the absence of air is called _____

Options :

1. Gasification

2. Deoxidization

3. Carbonization

4. Coalification

Question Number : 107 Question Id : 67809439363 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Proximate analysis of coal is done to determine moisture, _____

Options :

1. Ash, Sulphur and Volatile matter

2. Ash, Fixed carbon and Volatile matter

3. Sulphur, Nitrogen and Fixed carbon

4. Ash, Sulphur and Phosphorus

Question Number : 108 Question Id : 67809439364 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is called “blue gas”?

Options :

1. Coke oven gas

2. Water gas

3. Natural gas

4. Producer gas

Question Number : 109 Question Id : 67809439365 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is a neutral refractory?

Options :

1. Silica

2. Dolomite

3. High alumina

4. Chromite

Question Number : 110 Question Id : 67809439366 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Differential structural changes in the refractory during its usage causes its distortion which is known as _____

Options :

1. Permeability

2. Cold crushing strength

3. Spalling resistance

4. Warpage

Question Number : 111 Question Id : 67809439367 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The calorific value of the producer gas is _____ Kcal/Nm^3

Options :

1. 9000 - 11200

2. 20500

3. 1250 - 1550

4. 800-850

Question Number : 112 Question Id : 67809439368 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The law of conservation of energy in thermodynamics is expressed in the form of _____

Options :

1. Zeroth law of thermodynamics

2. First law of thermodynamics

3. Second law of thermodynamics

4. Third law of thermodynamics

Question Number : 113 Question Id : 67809439369 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The slope of the line in Ellingham diagram represents _____

Options :

1. ΔH°

2. $-\Delta S^{\circ}$

3. $-\Delta H^{\circ}$

4. ΔS°

Question Number : 114 Question Id : 67809439370 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Weight percentage of nitrogen in liquid iron will be directly proportional to _____

Options :

1. Square of the partial pressure of nitrogen gas

2. Square root of the partial pressure of nitrogen gas

3. Partial pressure of the nitrogen gas

4. Activity of the nitrogen gas

Question Number : 115 Question Id : 67809439371 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In an adiabatic process which of the following is true?

Options :

1. dE=0

2. dq=0

3. dW=0

4. dG=0

Question Number : 116 Question Id : 67809439372 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Intensive thermodynamic variables are _____

Options :

1. Independent of the number of moles in the system

2. Dependent on the volume of the system

3. Dependent on the mass the of the system

4. Independent of the temperature of the system

Question Number : 117 Question Id : 67809439373 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

At equilibrium spacing in a crystalline solid, which of the following is true for net inter atomic force(F) and internal energy(U)

Options :

1. F is zero and U is zero

2. F is zero and U is minimum

3. F is minimum and U is zero

4. F is minimum and U is minimum

Question Number : 118 Question Id : 67809439374 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The Ellingham lines of different metal oxides are _____to each other.

Options :

1. Parallel

2. Perpendicular

3. Intersect

4. Exactly at 45^0

Question Number : 119 Question Id : 67809439375 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The prediction of stability of a specific oxide refractory under a designated

atmosphere can be given by _____

Options :

1. Equilibrium constant

2. Gibb's rule

3. Fugacity

4. Diffusion

Question Number : 120 Question Id : 67809439376 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

_____ is the basic structural unit of the crystal structure.

Options :

1. Molecule

2. Unit cell

3. Atom

4. Lattice

Question Number : 121 Question Id : 67809439377 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is wrong about a phase diagram?

Options :

1. It gives information on transformation rates.

2. Relative amount of different phases can be found under given equilibrium conditions.

3. It indicates the temperature at which different phases start to melt.

4. Solid solubility limits are depicted by it.

Question Number : 122 Question Id : 67809439378 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

During homogeneous nucleation, critical size of a particle _____ with increase in undercooling

Options :

1. Increases
2. Decreases
3. Remains constant
4. May increase or decrease

Question Number : 123 Question Id : 67809439379 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which one of the following alloy systems exhibit complete solid solubility?

Options :

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

Question Number : 124 Question Id : 67809439380 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The Hexagonal Close Packed (HCP) has a coordination number of ____

Options :

1. 8
2. 10
3. 12
4. 16

Question Number : 125 Question Id : 67809439381 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In metals, the most probable mechanism of diffusion is _____

Options :

1. Vacancy mechanism

2. Interstitial mechanism

3. Direct interchange mechanism

4. Indirect interchange mechanism

Question Number : 126 Question Id : 67809439382 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Maximum percentage of carbon in ferrite which is a solid solution of carbon & α-iron is _____

Options :

1. 0.025

2. 0.25

3. 2.5

4. 6.63

Question Number : 127 Question Id : 67809439383 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Eutectic product in Fe-C system is called as _____.

Options :

1. Pearlite

2. Bainite

3. Ledeburite

4. Spheroidite

Question Number : 128 Question Id : 67809439384 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Peritectoid reaction is

Options :

1. $L \rightarrow S_1 + S_2$

2. $L_1 \rightarrow L_2 + S_1$

3. $S_1 \rightarrow S_2 + S_3$

4. $S_1 + S_2 \rightarrow S_3$

Question Number : 129 Question Id : 67809439385 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The unit of diflux J is _____

Options :

1. atoms $m^{-2} s^{-1}$

2. atoms $m^2 s^{-1}$

3. atoms $m^2 s^{-2}$

4. atoms $m^{-2} s^{-2}$

Question Number : 130 Question Id : 67809439386 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the radius of an atom in a simple cubic crystal is r, the body diagonal of the unit cell is

Options :

1. $r\sqrt{3}$

2. $2r\sqrt{3}$

3. $4r/\sqrt{3}$

4. $3r/4$

Question Number : 131 Question Id : 67809439387 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The hardenability of steels decreases with _____

Options :

1. Increase in carbon content

2. Increase in solutionizing temperature

3. Increase in strength

4. Decrease in grain size

Question Number : 132 Question Id : 67809439388 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In the case of hardening of steels, which of the following case hardening process does not require quenching?

Options :

1. Flame hardening

2. Induction hardening

3. Nitriding

4. Carburizing

Question Number : 133 Question Id : 67809439389 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The problem of sensitization can be found in _____

Options :

1. Ferritic stainless steels

2. Austenitic stainless steels

3. Martensitic stainless steels

4. Precipitation hardening stainless steels

Question Number : 134 Question Id : 67809439390 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is an alpha stabilizer in titanium alloys?

Options :

1. Al

2. Cr

3. Mn

4. Fe

Question Number : 135 Question Id : 67809439391 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The transformation from austenite to martensite does not depend on time.

Because

Options :

1. Diffusion during transformation occurs very fast

2. It is a diffusion less process

3. Martensite is stable phase, so it can readily form

4. Nucleation and growth of marten site is rapid

Question Number : 136 Question Id : 67809439392 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following compound is obtained by Furnace cooling of iron-carbon mixture?

Options :

1. Coarse pearlite

2. Fine pearlite

3. Bainite

4. Martensite

Question Number : 137 Question Id : 67809439393 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following exemplifies an age hardening alloy?

Options :

1. Brass

2. Babbit metal

3. Duralumin

4. Bronze

Question Number : 138 Question Id : 67809439394 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The basic step in any heat treatment process of steel is the formation of ____

Options :

1. Ferrite

2. Pearlite

3. Austenite

4. Martensite

Question Number : 139 Question Id : 67809439395 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

What is the purpose of Molybdenum in steel alloying?

Options :

1. To increase brittleness

2. To increase dynamic and high-temperature strength and hardness.

3. To reduce brittleness, combine with sulfur

4. To increase grain size

Question Number : 140 Question Id : 67809439396 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The process of heating hardened steel to any temperature below the lower critical temperature, followed by any desired rate of cooling is known as _____

Options :

1. Normalizing

2. Spheroidizing

3. Carburizing

4. Tempering

Question Number : 141 Question Id : 67809439397 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is not added to the steel as alloying addition?

Options :

1. Sulphur

2. Chromium

3. Nickel

4. Copper

Question Number : 142 Question Id : 67809439398 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In which of the following cooling medium the slowest cooling rate can be obtained?

Options :

1. Air

2. Brine

3. Fused salt

4. Mixture of oil and water

Question Number : 143 Question Id : 67809439399 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The reducer in the modern Blast Furnace is

Options :

1. Coal

2. Coke

3. Char Coal

4. Semi Coke

Question Number : 144 Question Id : 67809439400 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Pre heating of air is done in _____ region of the blast furnace

Options :

1. Stoves

2. Throat

3. Stack

4. Hearth

Question Number : 145 Question Id : 67809439401 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

----------will have the maximum diameter of blast furnace.

Options :

1. Throat

2. Bosh

3. Hearth

4. Stack

Question Number : 146 Question Id : 67809439402 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The Lining used in Hearth region should be resistant to _____

Options :

1. CO attack only

2. Breakout only

3. Chemical attack

4. Both CO attack and breakout

Question Number : 147 Question Id : 67809439403 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. Pulverized coal injection through tuyeres

Question Number : 148 Question Id : 67809439404 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

SL/RN process is used to produce _____

Options :

1. Liquid iron

2. Solid iron

3. Sponge iron

4. Liquid cast iron

Question Number : 149 Question Id : 67809439405 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In continuous casting of steel, the mould is subjected to vertical oscillations in order to ____

Options :

1. Allow easy flotation of inclusions

2. Ensure good casting homogeneity

3. Increase the heat transfer rate from the steel to mould

4. Prevent the skin sticking to the mould

Question Number : 150 Question Id : 67809439406 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The volumetric contraction resulting on solidification appears in the form of a cavity known as _____

Options :

1. Scab

2. Pipe

3. Hairline cracking

4. Double skin

Question Number : 151 Question Id : 67809439407 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Roof of a basic open hearth furnace is lined with the _____bricks

Options :

1. Silica

2. Fireclay

3. Chrome magnesite

4. Dolomite

Question Number : 152 Question Id : 67809439408 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Double slag practice is adopted in LDAC steel making, if _____content in hot metal is very high.

Options :

1. Silicon

2. Phosphorous

3. Sulphur

4. Carbon

Question Number : 153 Question Id : 67809439409 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is used as deoxidizer in steel making process?

Options :

1. Fe-Cr

2. Fe-Si

3. Fe-W

4. Fe-V

Question Number : 154 Question Id : 67809439410 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In steel making by LD process, the element that gets removed first is _____

Options :

1. Manganese

2. Phosphorus

3. Silicon

4. Carbon

Question Number : 155 Question Id : 67809439411 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In the extraction of copper by pyrometallurgy, the purity of copper that can be obtained by fire refining is about _____%.

Options :

1. 98.7

2. 96.3

3. 99.7

4. 95.5

Question Number : 156 Question Id : 67809439412 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Parke's process is used for the elimination of _____ during the refining of lead.

Options :

1. Copper

2. Lead

3. Silver

4. Iron

Question Number : 157 Question Id : 67809439413 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Minimum percentage of alumina that is required to avoid anode effect is _____

Options :

1. 2

2. 3

3. 5

4. 7

Question Number : 158 Question Id : 67809439414 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Chemical formula of sphalerite is _____

Options :

1. ZnO

2. ZnS

3. ZrO_2

4. SnO_2

Question Number : 159 Question Id : 67809439415 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In Pidgeon process, _____ is used to reduce MgO

Options :

1. Fe-Cr

2. Fe-W

3. Fe-Si

4. Fe-V

Question Number : 160 Question Id : 67809439416 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following process is used to produce ductile zirconium?

Options :

1. Vanarkel's process

2. Kroll's process

3. Bayer's process

4. Worcra Process

Question Number : 161 Question Id : 67809439417 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The electrolyte used in the electrolytic reefing of copper is _____

Options :

1. $CuSO_4 + H_2SO_4$

2. $HCL + HNO_3$

3. $FeCl_3 + HNO_3$

4. $H_2SO_4 + ZrSO_4$

Question Number : 162 Question Id : 67809439418 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is used to decrease the melting point of alumina in Hall- Herault process?

Options :

1. $CuSO_4$

2. Cryolite

3. Gypsum

4. Limonite

Question Number : 163 Question Id : 67809439419 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In Dow process sea water contains_____ % magnesium

Options :

1. 1.3

2. 13.0

3. 0.13

4. 5.0

Question Number : 164 Question Id : 67809439420 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

_____ reduces $TiCl_4$ to ductile Titanium

Options :

1. Magnesium

2. Oxygen

3. Sodium

4. Copper

Question Number : 165 Question Id : 67809439421 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

---------- indenter is used in Vickers hardness test

Options :

1. Steel ball

2. Brale

3. Square based pyramid

4. Spherical diamond

Question Number : 166 Question Id : 67809439422 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

---------- theory explains the brittle fracture.

Options :

1. Hall-Petch

2. Griffith

3. Frank reed

4. Arrhenius

Question Number : 167 Question Id : 67809439423 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The notch angle of a standard sample in impact testing is _____.

Options :

1. 30^0

2. 45^0

3. 60^0

4. 90^0

Question Number : 168 Question Id : 67809439424 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following equation is used to evaluate the mean stress of fatigue?

Options :

1. Pascal's equation

2. Soderberg equation

3. Heisenberg's equation

4. Goodman relation

Question Number : 169 Question Id : 67809439425 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

_____experiences creep at room temperature.

Options :

1. Iron

2. Copper

3. Nickel

4. Lead

Question Number : 170 Question Id : 67809439426 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is not a Non-destructive test?

Options :

1. Radiography test

2. Compression test

3. Ultrasonic test

4. Eddy current test

Question Number : 171 Question Id : 67809439427 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following non-destructive testing is used to determine dimensions of any object?

Options :

1. Liquid penetration test

2. Torsion test

3. Eddy current test

4. Compression test

Question Number : 172 Question Id : 67809439428 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which among the following is the last step in magnetic particle test method?

Options :

1. Observation and inspection

2. Circular magnetization

3. Demagnetization

4. Magnetization

Question Number : 173 Question Id : 67809439429 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Rolling load _____ with increase in roll diameter

Options :

1. Increases

2. Decreases

3. Remains constant

4. Uncertain

Question Number : 174 Question Id : 67809439430 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The plastic deformation of single crystals occurs by ----------

Options :

1. Slip

2. Twinning

3. Both slip and twinning

4. Age hardening

Question Number : 175 Question Id : 67809439431 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Greater forging capacity can be achieved with _____

Options :

1. Mechanical press

2. Hydraulic press

3. Power hammer

4. Hang forging

Question Number : 176 Question Id : 67809439432 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The volume ---------- for any plastic deformation process.

Options :

1. Increases

2. Decreases

3. Remains same

4. May increase or decrease

Question Number : 177 Question Id : 67809439433 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Spring back phenomenon occurs in _____

Options :

1. Forging

2. Hot peening

3. Spinning

4. Bending

Question Number : 178 Question Id : 67809439434 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Increase in the amount of deformation _____

Options :

1. Decreases the recrystallization temperature

2. Increases the recrystallization temperature

3. Amount of deformation will not affect the recrystallization temperature

4. Recrystallization temperature depends on chemical composition

Question Number : 179 Question Id : 67809439435 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The maximum extrusion ratios which can be obtained in hot working of non-ferrous metals can be _____

Options :

1. 4:1

2. 40:1

3. 200:1

4. 400:1

Question Number : 180 Question Id : 67809439436 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Tungsten filaments for lamps are manufactured by _____

Options :

1. Punching

2. Forging

3. Powder metallurgy

4. Rolling

Question Number : 181 Question Id : 67809439437 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Hydrogen loss method is used to find the _____ content in powders

Options :

1. Sulphur

2. Oxygen

3. Nitrogen

4. Carbon

Question Number : 182 Question Id : 67809439438 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Production of fine powders by breaking the molten metal stream in fine droplets by high pressure fluid jets is known as _____

Options :

1. Condensation

2. Shotting

3. Atomization

4. Carbonyl process

Question Number : 183 Question Id : 67809439439 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In cupola, Molten metal is tapped through _____

Options :

1. Bottom of the cupola

2. Taken out by using siphons

3. Tapping spout

4. Slag hole

Question Number : 184 Question Id : 67809439440 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Carbon transforms into graphite if the silicon content in the G.C.Iron is ____

Options :

1. 0.5-1.0%

2. 1.0-1.5%

3. > 1.5%

4. Silicon doesn't promote the carbon to graphite transformation

Question Number : 185 Question Id : 67809439441 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is the negative allowance provided to pattern?

Options :

1. Contraction allowance

2. Shake allowance

3. Machining allowance

4. Taper allowance

Question Number : 186 Question Id : 67809439442 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

When a graph is drawn between mesh number vs weight of sand retained in particular sieve, the graph should contain _____ peak/peaks

Options :

1. Double

2. Single

3. Three

4. It should be parallel to X-axis

Question Number : 187 Question Id : 67809439443 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The middle part of the three box sand mould is called as

Options :

1. Drag

2. Cope

3. Cheek

4. Sprue

Question Number : 188 Question Id : 67809439444 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following material can be used to make pattern in investment casting?

Options :

1. Wood

2. Cast iron

3. Expanded polystyrene

4. Lead

Question Number : 189 Question Id : 67809439445 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The main limitation of the die casting process is_____

Options :

1. Production cost

2. Production rate

3. Size of the casting

4. Surface finish of the casting

Question Number : 190 Question Id : 67809439446 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is an endo-thermic reaction that occurs in cupola?

Options :

1. $C+O_2=CO_2$

2. $2Mn+O_2=2MnO$

3. $Si+O_2=SiO_2$

4. $CO_2+C=2CO$

Question Number : 191 Question Id : 67809439447 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The defect caused by misalignment of cope and drag is known as _____

Options :

1. Cold shot

2. Misrun

3. Shift

4. Hot tears

Question Number : 192 Question Id : 67809439448 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In fusion welding, penetration is the ratio of _____

Options :

1. Width of the weld to its depth

2. Length of the weld to its depth

3. Depth of the weld to its width

4. Depth of the weld to its length

Question Number : 193 Question Id : 67809439449 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following welding processes do not use flux during welding?

Options :

1. Submerged arc

2. Oxy fuel

3. Flux cored

4. Friction

Question Number : 194 Question Id : 67809439450 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The neutral flame in gas welding contains _____

Options :

1. Oxygen & Acetylene gas in equal proportions

2. More oxygen than acetylene

3. less oxygen than acetylene

4. No gas is used

Question Number : 195 Question Id : 67809439451 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In an arc welding process, with increase in heat input, the voltage applied --------

Options :

1. Increases

2. Decreases

3. Remains same

4. May increase or decrease

Question Number : 196 Question Id : 67809439452 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In the welding machine, which of the following is used to convert AC supply to DC supply?

Options :

1. Rectifier set

2. Generator set

3. Step up transformer

4. Step down transformer

Question Number : 197 Question Id : 67809439453 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In which of the following welding processes, heat for joining is created by the chemical reaction?

Options :

1. Arc welding

2. Tungsten inert gas welding

3. Resistance welding

4. Thermit welding

Question Number : 198 Question Id : 67809439454 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which kind of resistance is experienced in upset butt welding?

Options :

1. Electrical resistance

2. Magnetic resistance

3. Thermal resistance

4. Air resistance

Question Number : 199 Question Id : 67809439455 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Distortion in welding occurs due to _____

Options :

1. Use of excessive current

2. Improper clamping methods

3. Use of wrong electrodes

4. Oxidation of weld pool

Question Number : 200 Question Id : 67809439456 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Electrodes used in spot welding are made up of which material?

Options :

1. Tungsten
2. Mild steel
3. Lead
4. Copper and Aluminium