**Question Paper Name:** Ceramic Technology 30th April 2019 Shift1

**Subject Name:** Ceramic Technology

**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 : 67809437657  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 : 67809437658  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 : 67809437659  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 : 67809437660  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 : 67809437661  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 : 67809437662  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

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

**Options :**

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

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

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

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

**Question Number : 7 Question Id : 67809437663 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

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

**Options :**

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

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

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

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

**Question Number : 8 Question Id : 67809437664 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 : 67809437665 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 : 67809437666 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 : 67809437667 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 : 67809437668 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 : 67809437669  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 : 67809437670  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 : 67809437671  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

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

Options :

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

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

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

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

**Question Number : 16  Question Id : 67809437672  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 : 67809437673  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

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

Options :

1. $C^3$

2. $C$

3. $C^5$

4. $C^2$

**Question Number : 18  Question Id : 67809437674  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

If $x + \dfrac{1}{x} = 2\cos\theta$ then the value of $x^n + \dfrac{1}{x^n}$ 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 : 67809437675 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 : 67809437676 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 : 67809437677 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 : 67809437678 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 : 67809437679 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

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

**Options :**

1. 9 units

2. 5 units

3. 6 units

4. 13 units

**Question Number : 24 Question Id : 67809437680 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

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

**Options :**

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

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

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

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

**Question Number : 25  Question Id : 67809437681  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 : 67809437682  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

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

Options :

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

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

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

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

**Question Number : 27  Question Id : 67809437683  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

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

**Options :**

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

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

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

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

**Question Number : 28  Question Id : 67809437684  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 : 67809437685  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 $x\dfrac{\partial u}{\partial x} + y\dfrac{\partial u}{\partial y} =$

**Options :**

1. $-nu$

2. $n^2 u$

3. $nu$

4.  $nu^2 + u$

**Question Number : 30  Question Id : 67809437686  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 : 67809437687  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 : 67809437688  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 : 67809437689 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The interval in which the function $f(x) = x^2 log x$ 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 : 67809437690 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 : 67809437691 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 : 67809437692 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. $x \log x - \dfrac{x^2}{2} + c$

**Question Number : 37 Question Id : 67809437693 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

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

**Options :**

1. $\log 2$

2. $\log 3$

3. $-\log 2$

4. $\log n$

**Question Number : 38 Question Id : 67809437694 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The value of $\int \dfrac{\cos \sqrt{x}}{\sqrt{x}} dx$ 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 : 67809437695 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. $\dfrac{64}{5}$ sq. units

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

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

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

**Question Number : 40 Question Id : 67809437696 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The value of $\int_{1}^{\frac{\pi}{2}} \sin^2 x \, dx$ is

**Options :**

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

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

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

4. $\dfrac{\pi}{4}$

**Question Number : 41 Question Id : 67809437697 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

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

**Options :**

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

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

3. $\dfrac{10}{3}$

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

**Question Number : 42 Question Id : 67809437698 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 : 67809437699 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

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

**Options :**

1. $\pi/4$

2. $-\pi/4$

3. $\pi/3$

4. $\pi/2$

**Question Number : 44 Question Id : 67809437700 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. $\dfrac{-e^{-x}}{12}$

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

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

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

**Question Number : 45 Question Id : 67809437701 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. $\dfrac{dy}{dx} = \dfrac{3y}{2x}$

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

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

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

**Question Number : 46 Question Id : 67809437702 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The solution of $\dfrac{dy}{dx} + y = e^{-x}$ 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 : 67809437703 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. $c_1 e^{2x} + c_2 e^{3x}$

**Question Number : 48 Question Id : 67809437704 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

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

**Options :**

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

2. $x^2 y = c$

3. $x^3 y = c$

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

**Question Number : 49 Question Id : 67809437705 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 : 67809437706 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

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

**Question Number : 51 Question Id : 67809437707 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 $[\alpha]$, $[\beta]$ 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 : 67809437708 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 : 67809437709 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 : 67809437710 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 : 67809437711 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 : 67809437712  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 : 67809437713  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

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

What force is required to push a 200 N body up a $30^0$ smooth incline with an acceleration of 2 m/s²? The force is to be applied along the plane is (Take g=10 m/s²)

Options :

1. 40 N

2. 60 N

3. 80 N

4. 140 N

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 √3 N

4. 0.7 x 9.8√3 N

**Question Number : 61 Question Id : 67809437717 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/s², the work done by the man on the block during the motion is ( Take g=10 m/s²)

**Options :**

1. 40 J

2. 1 J

3. 80 J

4. 20 J

**Question Number : 62 Question Id : 67809437718 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 : 67809437719 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

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.

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

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

**Options :**

1. $819^0$ C

2. $850^0$C

3. $919^0$C

4. $900^0$C

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 : 67809437724 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 : 67809437725 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

One mole of oxygen is heated at constant pressure starting at 0$^0$C. 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 : 67809437726 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

A vessel contains a gas at a temperature of 27⁰C and a pressure of 20 atm. If one half of the gas is released and the temperature of the remaining gas is raised by 50⁰C, 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 : 67809437727 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 : 67809437728 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 : 67809437729 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 : 67809437730 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 : 67809437731 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

**Question Number : 76  Question Id : 67809437732  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 : 67809437733  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 : 67809437734  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 : 67809437735 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 : 67809437736 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 : 67809437737 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

One mole of any of the particles contains

Options :

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

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

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

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

**Question Number : 82 Question Id : 67809437738 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 : 67809437739  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 : 67809437740  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 : 67809437741  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 : 67809437742 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 : 67809437743 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 : 67809437744 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

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

Which chemical is responsible for permanent hardness of water?

**Options :**

1. KCl

2. $MgCl_2$

3. NaCl

4. AgCl

Permutit is chemically

**Options :**

1. Sodium Silicate

2. Aluminium Silicate

3. Hydrated Sodium alumino silicate

4. Calicium silicate

**Question Number : 92  Question Id : 67809437748  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 : 67809437749  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 : 67809437750  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 : 67809437751  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 : 67809437752  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 : 67809437753  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 : 67809437754  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 : 67809437755  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 : 67809437756  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

Ceramic Technology

| | |
|---|---|
| **Number of Questions:** | 100 |
| **Display Number Panel:** | Yes |
| **Group All Questions:** | No |

**Question Number : 101  Question Id : 67809437757  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The formula of Kaolin is

**Options :**

1. $Al_2O_3 2SiO_2 2H_2O$

2. $Al_2O_3 4SiO_2 2H_2O$

3. $Al_2O_3 5SiO_2$

4. $Al_2O_3 6SiO_2$


**Question Number : 102  Question Id : 67809437758  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Which of the following is a primary clay?

**Options :**

1. Ball clay

2. China clay

3. Fire clay

4. Than ball clay


**Question Number : 103  Question Id : 67809437759  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Study of minerals is called

**Options :**

1. Geology

2. Petrology

3. Mineralogy

4. Oligology


**Question Number : 104  Question Id : 67809437760  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Hardness of Diamond on Moh's scale is

**Options :**

1. 7

2. 8

3. 9

4. 10

Question Number : 105  Question Id : 67809437761  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical

The word 'ceramic' is meant for _____.

Options :

1. soft material

2. hard material

3. burnt material

4. dry material

Question Number : 106  Question Id : 67809437762  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical

During sintering densification is not due to

Options :

1. atomic diffusion

2. surface diffusion

3. bulk diffusion

4. grain growth

Question Number : 107  Question Id : 67809437763  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical

The Muscovite is known as

Options :

1. White mica

2. Black mica

3. red mica

4. Brown mica

**Question Number : 108  Question Id : 67809437764  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Talc is used in ceramic processes as a

**Options :**

1. Floculent

2. Defloculent

3. Lubricant

4. Anti sticking agent

**Question Number : 109  Question Id : 67809437765  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Which of the following is a Renewable Energy Source?

**Options :**

1. Producer gas

2. Water gas

3. Hydrogen gas

4. Coal gas

**Question Number : 110  Question Id : 67809437766  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The structure of Alumina is

**Options :**

1. Cubic

2. Hexagonal

3. Tetragonal

4. Orthorhombic

**Question Number : 111 Question Id : 67809437767 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The fuller's earth is

**Options :**

1. Kaolinite

2. Montmorilonite

3. Mica

4. Diatomite

**Question Number : 112 Question Id : 67809437768 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The fumed silica is widely used to make

**Options :**

1. Glass

2. Castable refractories

3. Ceramic tiles

4. Cement

**Question Number : 113 Question Id : 67809437769 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The chemical formula of calcium feldspar

**Options :**

1. $CaO \ Al_2O_3 \ 2SiO_2$

2. $CaO \ MgO \ 2SiO_2$

3. $CaO \ Al_2O_3 \ SiO_2$

4. $CaO2Al_2O_3 \ 2SiO_2$

.Which of the following raw material is toxic?

**Options :**

1. Pyrophilite

2. Asbestos

3. Vermicellite

4. mica

The Andresen pipette is used to measure

**Options :**

1. Moisture content

2. Plasticity

3. Particle size

4. Surface area

Which law is used in sedimentation method?

**Options :**

1. Stoke's law

2. Raoult's law

3. Henrey's law

4. Gibb's law

Which of the following material is used in Fireclay refractories?

**Options :**

1. Grog

2. Magnesite

3. Chromite

4. Dolomite

**Question Number : 118  Question Id : 67809437774  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Which is not a characteristic property of ceramic material?

**Options :**
1. high temperature stability

2. high mechanical strength

3. low elongation

4. low hardness

**Question Number : 119  Question Id : 67809437775  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Major ingredient of traditional ceramics is

**Options :**
1. silica

2. clay

3. steel

4. Wood

**Question Number : 120  Question Id : 67809437776  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The following ceramic product is mostly used as pigment in paints

**Options :**
1. $TiO_2$

2. $SiO_2$

3. UO₂

4. ZrO₂

**Question Number : 121  Question Id : 67809437777  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Hot isostatic pressing is not a viable option, if the chief criterion is

**Options :**

1. strength without grain growth

2. low cost

3. zero porosity

4. processing refractory ceramics

**Question Number : 122  Question Id : 67809437778  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Which of the following is a primary rock?

**Options :**

1. limestone

2. Dolomite

3. Quartz

4. calcite

**Question Number : 123  Question Id : 67809437779  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Alabite is

**Options :**

1. sodium alumino silicate

2. sodium alumino calcium silicate

3. calcium silicate

4. sodium silicate

**Question Number : 124  Question Id : 67809437780  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The source of Zirconia is

**Options :**

1. Andalusite

2. Badylite

3. Kyanite

4. Silimanite

**Question Number : 125  Question Id : 67809437781  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Vitrified tiles have porosity of

**Options :**

1. 0%

2. 20%

3. 10%

4. 15%

**Question Number : 126  Question Id : 67809437782  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Common bricks come under

**Options :**

1. White ware

2. Porcelain

3. Heavy clay ware

4. Stone ware

**Question Number : 127  Question Id : 67809437783  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Bone ash is used in

Options :

1. Porcelain

2. Bone china

3. Stone ware

4. Earthen ware

**Question Number : 128  Question Id : 67809437784  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Which kiln is used for firing of Tiles?

Options :

1. Rotary kiln

2. Roller hearth kiln

3. Updraft kiln

4. Down draft kiln

**Question Number : 129  Question Id : 67809437785  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Which of the following is a flux?

Options :

1. Quartz

2. Clay

3. Zirconia

4. Feldspar

**Question Number : 130  Question Id : 67809437786  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Which of the following shaping method is used for sanitary ware?

1. Slip casting

2. Extrusion

3. Pressing

4. Jigger and Jollying

**Question Number : 131  Question Id : 67809437787  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Ceramics consist of

**Options :**

1. ionic & covalent bonding

2. covalent bonding

3. hydrogen bonding

4. co-ordinate covalent bond

**Question Number : 132  Question Id : 67809437788  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Which of the following is a periodic kiln ?

**Options :**

1. Tunnel kiln

2. Down draft kiln

3. Rotary kiln

4. Roller hearth kiln

**Question Number : 133  Question Id : 67809437789  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Which of the following oxide refractory has highest melting point?

**Options :**

1. Alumina

2. Thoria

3. Zirconia

4. Magnesia

**Question Number : 134  Question Id : 67809437790  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Which of the following is not a high alumina refractory material?

**Options :**

1. Diaspore

2. Kyanite

3. Silimanite

4. periclase

**Question Number : 135  Question Id : 67809437791  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Magnesite refractories are not generally used in

**Options :**

1. Electric furnace wall

2. Steel melting furnace

3. Open hearth furnace

4. Besmen converter

**Question Number : 136  Question Id : 67809437792  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Which of the following bricks has close value of RUL and PCE?

**Options :**

1. Silica bricks

2. Dolomite bricks

### 3. Fireclay bricks

### 4. High alumina bricks

**Question Number : 137 Question Id : 67809437793 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

…………………is the measure of strength of refractory under combined action of heat and load

**Options :**

1. PCE

2. CCS

3. RUL

4. CMOR

**Question Number : 138 Question Id : 67809437794 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

With increase in alumina content of fireclay brick, the PCE value

**Options :**

1. increases

2. decreases

3. remain unchanged

4. decreases linearly

**Question Number : 139 Question Id : 67809437795 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The Crown of glass melting furnace is constructed with

**Options :**

1. Magnesia bricks

2. Silica bricks

3. Fire clay bricks

4. Dolomite bricks

**Question Number : 140 Question Id : 67809437796 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The Hearth of Blast furnace is constructed with

**Options :**

1. AZS bricks

2. Alumina bricks

3. Carbon bricks

4. Magnesite bricks

**Question Number : 141 Question Id : 67809437797 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Which of the following is not a neutral refractory?

**Options :**

1. Magnesite

2. SiC

3. Chromite

4. Graphite

**Question Number : 142 Question Id : 67809437798 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Which is not an acidic refractory?

**Options :**

1. Silica

2. Fire clay

3. High alumina

4. Carbon

**Question Number : 143 Question Id : 67809437799 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

## Which is not an oxide refractory?

**Options :**

1. Fire clay

2. silica

3. Silicon carbide

4. Magnesite

**Question Number : 144 Question Id : 67809437800 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Magneiste bricks have poor resistance to attack by ………………….. slags

**Options :**

1. Basic

2. Lime

3. acidic

4. chrome

**Question Number : 145 Question Id : 67809437801 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

……………………. bricks should not be used in oxidizing atmosphere

**Options :**

1. Fireclay

2. Alumina

3. Carbon

4. Magnesite

**Question Number : 146 Question Id : 67809437802 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Porosity of silica brick varies from

**Options :**

1. 0-5%

2. 10-20%

3. 45-60%

4. 65-70%

**Question Number : 147 Question Id : 67809437803 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Periclase refractory mainly contains

**Options :**

1. CaO

2. MgO

3. $ZrO_2$

4. $SiO_2$

**Question Number : 148 Question Id : 67809437804 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

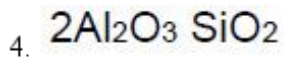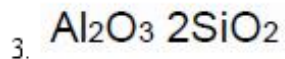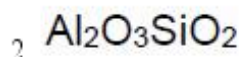Maximum alumina content in high alumina refractory is

**Options :**

1. 40%

2. 50%

3. 10%

4. 90%

**Question Number : 149 Question Id : 67809437805 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The formula of Mullite is

**Options :**

1. $3Al_2O_3 \ 2SiO_2$

2. $Al_2O_3SiO_2$

3. $Al_2O_3\ 2SiO_2$

4. $2Al_2O_3\ SiO_2$

**Question Number : 150  Question Id : 67809437806  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Which of the following types of glass accounts for about 90% of manufactured glass?

**Options :**

1. Potash-lime glass

2. Soda-lime glass

3. Potash-lead glass

4. Soda-lead glass

**Question Number : 151  Question Id : 67809437807  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The two types of soda-lime glass- flat glass and container glass differ in:

**Options :**

1. Application and production method

2. Application and chemical composition

3. Production method and chemical composition

4. Application, production method and chemical    composition

**Question Number : 152  Question Id : 67809437808  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Which type of glass is used in the manufacture of artificial gems, bulbs, lenses, etc?

**Options :**

1. Soda-lime glass

2. Special glass

3. Potash-lead glass

4. Common glass

**Question Number : 153  Question Id : 67809437809  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

What changes are observed when a glass is heated?

**Options :**

1. It becomes softer

2. It bursts

3. It solidifies

4. It disintegrates

**Question Number : 154  Question Id : 67809437810  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Chromatic glass is used in:

**Options :**

1. ICU and meeting rooms

2. Aquariums

3. Mobile screen protectors

4. Floors

**Question Number : 155  Question Id : 67809437811  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Which of following is not a process involved in glass production?

**Options :**

1. Extrusion

2. Forming and shaping

3. Heat treatment

## 4. Finishing

**Question Number : 156  Question Id : 67809437812  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**
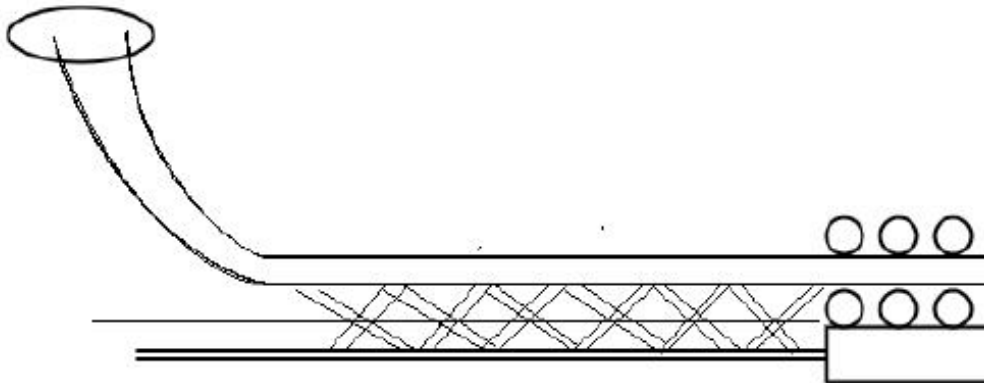
Which forming method is used for the production of narrow neck container glass bottles?

**Options :**

1. Blowing

2. Pressing

3. Drawing

4. Casting

**Question Number : 157  Question Id : 67809437813  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Which forming operation does the below figure represent?



**Options :**

1. Drawing

2. Pressing

3. Floating

4. Rolling

**Question Number : 158  Question Id : 67809437814  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The temperature at which a non-crystalline material transforms from a supercooled liquid to rigid glass is

**Options :**

1. Melting point

2. Glass transition temperature

3. Boiling point

4. Crystalline temperature

**Question Number : 159 Question Id : 67809437815 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Glasses show evidence of _____ fractures.

Options :

1. No

2. Brittle

3. Ductile

4. Oblique

**Question Number : 160 Question Id : 67809437816 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

What is the melting temperature of fused quartz?

Options :

1. 1118ºC

2. 1328ºC

3. 1528ºC

4. 1728ºC

**Question Number : 161 Question Id : 67809437817 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

What is the crown type of glass ?

Options :

1. Laboratory apparatus grade

2. Optical grade

3. Sealing type

4. Ultraviolet transmitting type

**Question Number : 162 Question Id : 67809437818 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

What are lead glasses used for?

**Options :**

1. Kitchenware

2. Optical components

3. Electronic tubes

4. Temperature thermometers

**Question Number : 163 Question Id : 67809437819 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Which of the following is a Network former?

**Options :**

1. $B_2O_3$

2. $Na_2O$

3. $CaO$

4. $K_2O$

**Question Number : 164 Question Id : 67809437820 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Fiber glass is invented by Russell Games Slayter in

**Options :**

1. 1932

2. 1934

3. 1936

4. 1938

**Question Number : 165  Question Id : 67809437821  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

A type of glass that darkens when exposed to sunlight is

**Options :**

1. Chromogenic glass

2. Thermo chromic glass

3. Photo chromic glass

4. Electro chromic

**Question Number : 166  Question Id : 67809437822  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

What is inside an insulated glass?

**Options :**

1. PVC

2. PVB

3. Dry air

4. Weather strip

**Question Number : 167  Question Id : 67809437823  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Why is natural cement used very limitedly?

**Options :**

1. Brown in Colour

2. Standard consistency is not met with

3. Sets too quickly

4. Particle size is too fine

**Question Number : 168  Question Id : 67809437824  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Who invented Portland cement and in which year?

**Options :**

1. William Aspdin, 1824

2. William Aspdin, 1840s

3. Joseph Aspdin, 1840s

4. Joseph Aspdin, 1824

**Question Number : 169 Question Id : 67809437825 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

What is the meaning of soundness of cement?

**Options :**

1. Ability to flow when mixed

2. Ability to make ringing noise when struck

3. Ability to form strong and sound structure

4. Ability to retain volume after setting.

**Question Number : 170 Question Id : 67809437826 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

What is the minimum initial setting time of Ordinary Portland cement?

**Options :**

1. 1 hour

2. 30 minutes

3. 15 minutes

4. 30 hours

**Question Number : 171 Question Id : 67809437827 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Use of coarser cement particles leads to:

**Options :**

1. Low durability

2. Higher strength

3. Low consistency

4. Higher soundness

**Question Number : 172 Question Id : 67809437828 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Green cement is:

**Options :**

1. Green coloured cement

2. Cement mixed with plant products

3. Cement mixed with recycled materials

4. Cement mixed with green alga

**Question Number : 173 Question Id : 67809437829 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

What is released during the production of clinker?

**Options :**

1. $CaCO_3$

2. $CO_2$

3. $Ca(OH)_2$

4. $CO$

**Question Number : 174 Question Id : 67809437830 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

In the soundness test, the whole assembly is immersed in water for

**Options :**

1. 30 minutes

2. 1 hour

3. 24 hours

4. **48 hours**

**Question Number : 175 Question Id : 67809437831 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Soundness of cement is tested by

**Options :**

1. Vicat apparatus

2. Le Chatalier apparatus

3. soundness meter

4. Duff Abrams apparatus

**Question Number : 176 Question Id : 67809437832 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The temperature of the antiferromagnetic to paramagnetic transition is called

**Options :**

1. antiferromagnetic curie temp.

2. Curie- Weiss temp

3. Neel temp

4. Debye temp.

**Question Number : 177 Question Id : 67809437833 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Which of the following is not a major contributor of engineering ceramics?

**Options :**

1. SiC

2. $SiO_2$

3. $Si_3N_4$

4. $Al_2O_3$

**Question Number : 178 Question Id : 67809437834 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The following ceramic product is mostly used as pigment in paints

Options :

1. $TiO_2$

2. $SiO_2$

3. $UO_2$

4. $ZrO_2$

**Question Number : 179  Question Id : 67809437835  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Alumina is a

Options :

1. Bioinert Ceramics

2. Bioactive ceramics

3. Bioresorbable ceramics

4. Bioinvolve ceramics

**Question Number : 180  Question Id : 67809437836  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Super conductors have a resistance of

Options :

1. 0

2. 5

3. 10

4. 3

**Question Number : 181  Question Id : 67809437837  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The most commonly used semiconductor is ………..

Options :

1. Germanium

2. Silicon

3. Carbon

4. Sulphur

**Question Number : 182  Question Id : 67809437838  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

An n-type semiconductor is ………

Options :

1. Positively charged

2. Negatively charged

3. Electrically neutral

4. Can't tell

**Question Number : 183  Question Id : 67809437839  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

A hole in a semiconductor is defined as ……………

Options :

1. A free electron

2. The incomplete part of an electron pair bond

3. A free proton

4. A free neutron

**Question Number : 184  Question Id : 67809437840  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The energy gap in Diamond is

Options :

1. 5.4eV

2. 2-3eV

3. 1.1eV

4. 0.08eV

Which of the following material has high dielectric constant ?

**Options :**

1. $BaZrO_3$

2. $BaTiO_3$

3. $SrTiO_3$

4. $ZrSiO_3$

In presence of which gas is the fuel burnt to generate energy in form of heat?

**Options :**

1. Oxygen

2. Hydrogen

3. Methane

4. Nitrogen

Which of the following fuel has the highest calorific value ?

**Options :**

1. Peat

2. Coke

3. Bituminous coal

4. Anthratic coal

# Which of the following kiln is used in cement making ?

Options :

1. Tunnel kiln

2. Down draft kiln

3. Rotary kiln

4. Roller hearth kiln

# A radiation pyrometer is used for temperatures

Options :

1. upto 100°C

2. 100-250°C

3. 250-500°C

4. above 500°C

# An optical pyrometer works on the principle of

Options :

1. Expansion of fuels

2. Mono-chromatic radiation

3. change of electric resistance

4. Total radiation

# The first coat applied on metal sheet for enameling is

Options :

1. cover coat

2. white coat

3. colored coat

4. Ground coat

**Question Number : 192  Question Id : 67809437848  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

A glassy coating on metal surface is called

**Options :**

1. Enamel

2. Glaze

3. Glass

4. glass-ceramic

**Question Number : 193  Question Id : 67809437849  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Which chemical is used for pickling of metal sheet?

**Options :**

1. citric acid

2. HF acid

3. HCl

4. Ammonia

**Question Number : 194  Question Id : 67809437850  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Which of the following process is used to release the stress in metal sheet ?

**Options :**

1. tempering

2. annealing

3. pickling

4. neutralizing

**Question Number : 195 Question Id : 67809437851 Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Which of the following coatings has a glass composition?

**Options :**

1. Paint

2. Galvanized

3. Enamel

4. Anodized

**Question Number : 196 Question Id : 67809437852 Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Which of the following is used as Opacifier in Glazes ?

**Options :**

1. $Na_2O$

2. $CaO$

3. $MgO$

4. $CaF_2$

**Question Number : 197 Question Id : 67809437853 Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Which glazes are used for temperature above 1200°C?

**Options :**

1. Soft glazes

2. Hard glazes

3. Medium glazes

4. Salt glazes

**Question Number : 198  Question Id : 67809437854  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Quenched glass is called

**Options :**

1. frit

2. glaze

3. enamel

4. cement

**Question Number : 199  Question Id : 67809437855  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

High amount of frit is used in

**Options :**

1. Soft glazes

2. Hard glazes

3. Medium glazes

4. Salt glazes

**Question Number : 200  Question Id : 67809437856  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The glaze used on sewer pipes is

**Options :**

1. Soft glazes

2. Hard glazes

3. Medium glazes

4. Salt glazes