### Mathematics

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

**Question Number : 1  Question Id : 67809417624  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

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

**Options :**

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

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

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

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

**Question Number : 2  Question Id : 67809417625  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

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

**Options :**

1. $A^T B^T$

3. $(BA)^T$

4. $AB^T$

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

Options :

1. 2

2. -1

3. 0

4. -2

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

Options :

1. -1

2. 0

3. 1

4. 2

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

Options :

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

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

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

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

**Question Number : 6 Question Id : 67809417629 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

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

**Options :**

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

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

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

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

**Question Number : 7 Question Id : 67809417630 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

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

**Options :**

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

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

3.

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

4.

**Question Number : 8  Question Id : 67809417631  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

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

**Options :**

1. $\dfrac{1}{7}$

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

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

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

**Question Number : 9  Question Id : 67809417632  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

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

**Options :**

1. $\sin 2A$

2. $\cos 2A$

3. $\sec 2A$

4. $\csc 2A$

**Question Number : 10  Question Id : 67809417633  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The value of $\dfrac{}{1+cos2A+sin2A}$ =

**Options :**

1. $sinA$

2. $cosA$

3. $tanA$

4. $cotA$

**Question Number : 11 Question Id : 67809417634 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

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

**Options :**

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

2. $\dfrac{5}{16}$

3. $\dfrac{-5}{16}$

4. $\dfrac{7}{15}$

**Question Number : 12 Question Id : 67809417635 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

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

**Options :**

1. $0$

2. $3$

3. $1$

4. $-3$

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

**Options :**

1. $2abc$

2. $4abc$

3. $3abc$

4. $5abc$

**Question Number : 14  Question Id : 67809417637  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

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

**Options :**

1. $C^3$

2. $C$

3. $C^5$

4. $C^2$

**Question Number : 15  Question Id : 67809417638  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

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

**Options :**

1. $\pi/4$

2. $\pi/2$

3. $\pi/6$

4. $\pi/3$

**Question Number : 16  Question Id : 67809417639  Display Question Number : Yes  Single Line Question Option : No  Option**

**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 : 17  Question Id : 67809417640  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

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

**Options :**

1. $-1$

2. $3$

3. $5$

4. $1$

**Question Number : 18  Question Id : 67809417641  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

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

**Options :**

1. $-2$

2. $3$

3. $2$

4. $5$

**Question Number : 19  Question Id : 67809417642  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

$x$                                                    $x''$

**Options :**

1. $2 \cos n\theta$

2. $-2 \cos n\theta$

3. $3 \cos \theta$

4. $2 \sin n\theta$

**Question Number : 20  Question Id : 67809417643  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

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

**Options :**

1. $(1,3)$

2. $(2,3)$

3. $(1,-3)$

4. $(-1,3)$

**Question Number : 21  Question Id : 67809417644  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

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

**Options :**

1. -4

2. 4

3. 2

4. 3

**Question Number : 22  Question Id : 67809417645  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

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 : 67809417646 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

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

**Options :**

1. $(2, -1)$

2. $(-1, -2)$

3. $(1, -2)$

4. $(1, 2)$

**Question Number : 24 Question Id : 67809417647 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

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

**Options :**

1. $(-13, 0)$

2. $(13, 0)$

3. $(13, -1)$

4. $(13, 1)$

**Question Number : 25 Question Id : 67809417648 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

1.

2. 11

3. 8

4. 13

**Question Number : 26  Question Id : 67809417649  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

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

**Options :**

1. 3

2. -3

3. 2

4. 1

**Question Number : 27  Question Id : 67809417650  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

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

**Options :**

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

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

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

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

**Question Number : 28  Question Id : 67809417651  Display Question Number : Yes  Single Line Question Option : No  Option**

**Options :**

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

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

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

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

**Question Number : 29  Question Id : 67809417652  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

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

**Options :**

1. $y \cos x$

2. $y \sec x$

3. $-y \sin x$

4. $y \tan x$

**Question Number : 30  Question Id : 67809417653  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. $(2-3\sin x)$

**Question Number : 31  Question Id : 67809417654  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

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

**Options :**

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

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

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

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

**Question Number : 32  Question Id : 67809417655  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

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

**Options :**

1. $\tan\theta = 2$

2. $\sec\theta = 2$

3. $\cos\theta = 1$

4. $\sin\theta = 3$

**Question Number : 33  Question Id : 67809417656  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. $(3, -5)$

3. $(3,5)$

4. $(-3,5)$

**Question Number : 34  Question Id : 67809417657  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

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

**Options :**

1. $13$

2. $12$

3. $10$

4. $15$

**Question Number : 35  Question Id : 67809417658  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. $n^2 u$

3. $nu$

4. $nu^2 + u$

**Question Number : 36  Question Id : 67809417659  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. $2 \sin \sqrt{x} + c$

3. $2 \sin x + c$

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

**Question Number : 37  Question Id : 67809417660  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

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

**Options :**

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

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

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

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

**Question Number : 38  Question Id : 67809417661  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

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

**Options :**

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

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

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

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

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 : 40  Question Id : 67809417663  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 : 41  Question Id : 67809417664  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

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

**Options :**

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

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

3.

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

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

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

**Options :**

1.  $\log 2$

2.  $\log 3$

3.  $-\log 2$

4.  $\log n$

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

**Options :**

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

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

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

**Question Number : 45  Question Id : 67809417668  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

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

**Options :**

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

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

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

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

**Question Number : 46  Question Id : 67809417669  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

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

**Options :**

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

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

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

4.

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. $x^2 y^3 = c$

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

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

**Options :**

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

2.  12

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

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

**Question Number : 50  Question Id : 67809417673  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.  $c_1 e^{2x} + c_2 e^{3x}$

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**Question Number : 51  Question Id : 67809417674  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Which of the following is not the unit of energy?

**Options :**

1.  watt second

2.  Pascal metre

4. Kilowatt hour

The height of Mercury barometer is 76 cm and density of Mercury is 13.6 g/cc. The

corresponding height of water barometer in SI system is

Options :

1. 10.336 m

2. 103.36 m

3. 3.6m

4. 1.0336 m

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

Options :

1. $\pi/2$

2. $\pi/4$

3. $\pi/3$

4. $\pi/6$

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

Options :

1. 4

3. 3

4. 6

A body is thrown with a velocity of $(4\,\bar{i} + 3\bar{j})$ m/s. The maximum height attained by

the body is (g=10 ms$^{-2}$)

**Options :**

1. 2.5 m

2. 4.5 m

3. 0.8 m

4. 0.45 m

A person in a lift, which ascends up with acceleration 10ms$^{-2}$, drops a stone from a height of

10m. The time of descent is (g=10 ms$^{-2}$)

**Options :**

1. 0.5 s

2. 1 s

3. 1.5 s

4. 2 s

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

**Options :**

2. 5:2

3. 5:1

4. 10:1

**Question Number : 58  Question Id : 67809417681  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

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

**Options :**

1. 1:2:3

2. 1:4:9

3. 1:3:5

4. 1:9:16

**Question Number : 59  Question Id : 67809417682  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

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

**Options :**

1. 1

2. 0.5

3. 0.25

4. Zero

**Question Number : 60  Question Id : 67809417683  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

brakes will stop the train in a distance which is

Options :

1. d/2

2. 4d

3. 2d

4. d

Question Number : 61  Question Id : 67809417684  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical

The product of linear momentum and velocity of a body represents

Options :

1. Kinetic energy of the body

2. Potential energy of the body

3. Half the Kinetic energy of the body

4. Twice the kinetic energy of the body

Question Number : 62  Question Id : 67809417685  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical

A man weighing 60 kg eats plum cake whose energy content is 9800 calories. If all this

energy could be utilised by him, he can ascend to a height of

Options :

1. 17 m

2. 100 m

3. 70 m

4. 60m

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

**Options :**

1. 62.5 kW

2. 6.25 kW

3. 50 kW

4. 5 kW

Question Number : 64 Question Id : 67809417687 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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

**Options :**

1. Parabola

2. Hyperbola

3. Straight line with positive slope

4. Straight line with negative slope

Question Number : 65 Question Id : 67809417688 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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

**Options :**

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

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

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

**Question Number : 66  Question Id : 67809417689  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

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

Options :

1. Decrease in velocity of sound

2. Increase in velocity of sound

3. increase in frequency of sound

4. decrease in frequency of sound

**Question Number : 67  Question Id : 67809417690  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

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

Options :

1. Two sounds have different phases

2. Two persons are of different size

3. Two sounds travel with different velocities

4. Two sounds have different pitch

**Question Number : 68  Question Id : 67809417691  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

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

reverberation time is

Options :

1. 2%

3. 1%

4. No change

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

**Options :**

1. Adiabatic

2. Isothermal

3. Isobaric

4. Isochoric

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

**Options :**

1. 1.0 Kcal

2. 0.1 Kcal

3. 0.01 Kcal

4. 0.001 Kcal

The specific heat of a gas in an isothermal process is

**Options :**

1. infinity

3. Finite positive

4. Finite negative

**Question Number : 72 Question Id : 67809417695 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

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

Options :

1. 40 cal/°C

2. 400 cal/°C

3. 250 cal/°C

4. 25 cal/°C

**Question Number : 73 Question Id : 67809417696 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

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

Options :

1. 5%

2. 5.26%

3. 10%

4. 4.26%

**Question Number : 74 Question Id : 67809417697 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

function is 2.2 eV, then the wavelength of incident radiation is

**Options :**

1. 4000Å

2. 8000Å

3. 3000Å

4. 2000Å

**Question Number : 75  Question Id : 67809417698  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

If the angle of incidence of a ray is greater  than the critical angle at the core – cladding

interface in an optical fiber, then the ray travels

**Options :**

1. in the core

2. in the cladding

3. in the buffer

4. along the interface

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

**Question Number : 76  Question Id : 67809417699  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

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

**Options :**

2. different spins

3. opposite spins

4. vertical spins

Question Number : 77 Question Id : 67809417700 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Orbits in which electrons move according to Bohr are

Options :

1. elliptical

2. cylindrical

3. circular

4. oval

Question Number : 78 Question Id : 67809417701 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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

Options :

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

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

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

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

Question Number : 79 Question Id : 67809417702 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Options :

1. Covalent

2. Ionic

3. Polar

4. vander Waals

**Question Number : 80  Question Id : 67809417703  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The Bond formed due to sharing of electrons is

Options :

1. Ionic bond

2. Metallic bond

3. Polar bond

4. Covalent bond

**Question Number : 81  Question Id : 67809417704  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

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

Options :

1. 1N

2. 0.1N

3. 0.05N

4. 0.5N

**Question Number : 82  Question Id : 67809417705  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

**Options :**

1. $Na_2CO_3$

2. $NaCl$

3. $H_2SO_4$

4. $K_2Cr_2O_7$

**Question Number : 83  Question Id : 67809417706  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

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

**Options :**

1. 5 M

2. 2M

3. 0.5M

4. 0.2M

**Question Number : 84  Question Id : 67809417707  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

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

**Options :**

1. Neutralization

2. Halogenation

3. Hydrogenation

4. Hydrolysis

**Question Number : 85  Question Id : 67809417708  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

1. Lewis acid

2. Lewis base

3. Bronsted-Lowry acid

4. Bronsted-Lowry base

**Question Number : 86  Question Id : 67809417709  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

One Faraday is equal to

Options :

1. 99650 C

2. 93100 C

3. 96500 C

4. 94500 C

**Question Number : 87  Question Id : 67809417710  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

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

Options :

1. $+2.372$ V

2. $-2.372$ V

3. 0.00 V

4. -1.372 V

**Question Number : 88  Question Id : 67809417711  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

1. Electrical energy to chemical energy

2. Chemical energy to electrical energy

3. Chemical energy to free energy

4. Potential energy to kinetic energy

Question Number : 89  Question Id : 67809417712  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical

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

Options :

1. Faraday's second law

2. Faraday's first law

3. Newton's third law

4. Newton's first law

Question Number : 90  Question Id : 67809417713  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical

Hardness of water is expressed in terms of equivalent of

Options :

1. $Na_2CO_3$

2. $K_2CO_3$

3. $MgCO_3$

4. $CaCO_3$

Temporary hardness is caused by

**Options :**

1. Carbonates of calcium and magnesium

2. Chlorides of calcium and magnesium

3. Sulphates of calcium and magnesium

4. Nitrates of Calcium

Question Number : 92  Question Id : 67809417715  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical

The exhausted zeolite bed can be regenerated by washing with

**Options :**

1. NaCl

2. dil. NaOH

3. dil. HCl

4. Distilled water

Question Number : 93  Question Id : 67809417716  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical

Corrosion is an example of

**Options :**

1. Oxidation

2. Reduction

3. Electrolysis

4. Halogenation

The composition of rust is

Options :

1. $Fe(OH)_3$

2. $FeCl_3$

3. $FeO$

4. $Fe_2O_3 \cdot xH_2O$

Question Number : 95  Question Id : 67809417718  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical

Which one of the following statement is not true?

Options :

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

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

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

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

Question Number : 96  Question Id : 67809417719  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical

The monomers of Buna-S rubber are

Options :

1. Styrene and butadiene

2. Styrene and 2-propene

3. Isoprene and butadiene

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

**Options :**

1. Thermosofting materials

2. Thermosetting materials

3. Thermoplastic materials

4. Thermostatting materials

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

**Options :**

1. High calorific value

2. High moisture content

3. Low cost

4. Moderate ignition temperature

Environmental pollution affects

**Options :**

1. Humans only

2. Plants only

4. Both abiotic and biotic components

**Question Number : 100 Question Id : 67809417723 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Layer of atmosphere in which ozone layer lies is

**Options :**

1. Troposphere

2. Stratosphere

3. Exosphere

4. Mesosphere

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

**Question Number : 101 Question Id : 67809417724 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

A network contains four resistors in series across an ideal voltage source. If the values of all the resistors are doubled then the voltage across each resistor will _____

**Options :**

1. be increased by 2 times

2. be increased by 4 times

3. be decreased by 2 times

4. not change

**Question Number : 102 Question Id : 67809417725 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

If each branch of a delta circuit has resistance of 1.732R. then each branch of its equivalent star circuit has resistance of _____

**Options :**

2. 1.732R

3. 0.577R

4. 0.333R

**Question Number : 103  Question Id : 67809417726  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Thevenin's equivalent circuit consists of _____

**Options :**

1. A voltage source in parallel with resistance

2. A voltage source in series with resistance

3. A current source in parallel with resistance

4. A current source in series with resistance

**Question Number : 104  Question Id : 67809417727  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Which of the following statement is correct?

**Options :**

1. Resistor is an active element

2. Inductor is an active element

3. Voltage source is a passive element

4. Current source is an active element

**Question Number : 105  Question Id : 67809417728  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The mutual inductance between two coupled coils with self inductances $L_1 = 9$ H and $L_2 = 4$ H with a coefficient of coupling of 0.5 is _____

**Options :**

1. 3 H

2. 6 H

3. 18 H

4. 36 H

**Question Number : 106  Question Id : 67809417729  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

If the distance between two charges is doubled, the force between them _____

**Options :**

3. increases four times
4. decreases four times

**Question Number : 107  Question Id : 67809417730  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The heat produced in a current carrying conductor is _____

**Options :**

1. $IRT$

2. $I^2RT$

3. $IR^2T$

4. $IRT^2$

**Question Number : 108  Question Id : 67809417731  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

If the number of conductors and speed of a Lap wound D.C. Generator is doubled then the generated e.m.f. will be _____

**Options :**

1. Remains same

2. Double the former value

3. Four times the former value

4. Eight times the former value

**Question Number : 109  Question Id : 67809417732  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

A 4 pole, D.C. wave wound Generator runs at 600 r.p.m. The flux per pole is 0.015 webers and generator no load voltage is 240Volts. The number of conductors are _____

**Options :**

1. 600

2. 800

3. 1000

4. 1200

**Question Number : 110  Question Id : 67809417733  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The simplest way to shift load from one D.C. shunt generator running in parallel with another is by _____

**Options :**

1. Adjusting their field rheostats

2. Inserting resistance in their armature circuits

3. Adjusting the speeds of their prime movers

4. Using equalizer connections

The voltage regulation of an over-compound D.C. generator is always _____

**Options :**

1. Positive

2. negative

3. zero

4. high

**Question Number : 112  Question Id : 67809417735  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

D.C. Shunt motors are commonly used in _____

**Options :**

1. Cranes

2. Electric Traction

3. Elevators

4. Lathe machines

**Question Number : 113  Question Id : 67809417736  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The voltage equation of a D.C. motor is _____

**Options :**

1. $V = E_b / I_a R_a$

2. $E_b = V - I_a R_a$

3. $V = E_b - I_a R_a$

4. $V = E_b - I_a^2 R_a$

**Question Number : 114  Question Id : 67809417737  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

A 4 pole 240V. d.c. series motor has a wave wound armature with 180 conductors. The armature resistance and field winding resistance are $0.10\Omega$ and $0.20\Omega$ respectively. If the motor is drawing 40A current at 0.015 webers flux per pole, then the speed under this condition is _____ r.p.m.

**Options :**

1. 2533.33

2. 2644.4

4. 2987.6

**Question Number : 115  Question Id : 67809417738  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The capacity of a battery is expressed in _____

**Options :**

1. watts

2. Volt hours

3. Ampere hours

4. Ohm hours

**Question Number : 116  Question Id : 67809417739  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Moving coil and moving iron instruments can be distinguished by looking at _____

**Options :**

1. Their range

2. pointer

3. scale

4. Size of terminals

**Question Number : 117  Question Id : 67809417740  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

In dynamometer wattmeter, number of coils used are _____

**Options :**

1. 2

2. 3

3. 4

4. 6

**Question Number : 118  Question Id : 67809417741  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Which of the following transducer is known as 'self generating transducer' ?

**Options :**

1. Passive transducer

2. Active transducer

3. Secondary transducer

4. Analog transducer

**Question Number : 119  Question Id : 67809417742  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

When a Megger is not in operation then its needle shows a resistance of _____

**Options :**

1. Zero ohms

2. 10 ohms

3. 100 ohms

**Question Number : 120 Question Id : 67809417743 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

In a pure inductive circuit, the voltage will be _____

**Options :**

1. In phase with current

2. Lags the current by 90 degrees

3. Leads the current by 90 degrees

4. Lags the current by 45 degrees

**Question Number : 121 Question Id : 67809417744 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The peak factor is the ratio of _____

**Options :**

1. Peak value to RMS value

2. RMS value to peak value

3. average value to RMS value

4. RMS value to average value

**Question Number : 122 Question Id : 67809417745 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

A series RLC circuit has a resonant frequency of $f_0$ Hz. If all the circuit element values are doubled. the new resonant frequency is _____

**Options :**

1. $2f_0$

2. $f_0$

3. $0.25f_0$

4. $0.5f_0$

**Question Number : 123 Question Id : 67809417746 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

A three phase balanced delta connected circuit has a load impedance of (6+j9) ohms per phase. What is its equivalent star connected load impedance per phase in ohms ?

**Options :**

1. (6+j9)

3. $(18+j27)$

4. $(12+j18)$

**Question Number : 124  Question Id : 67809417747  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

In two wattmeter method of measurement of power. if the two wattmeters readings are equal. then the power factor will be _____

**Options :**

1. zero

2. unity

3. 0.5

4. 0.866

**Question Number : 125  Question Id : 67809417748  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

A step-up transformer increases _____

**Options :**

1. voltage

2. current

3. power

4. frequency

**Question Number : 126  Question Id : 67809417749  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

A transformer having 1000 primary turns is connected to a 250V A.C. supply. For a secondary voltage of 400V, the number of secondary turns should be _____

**Options :**

1. 250

2. 400

3. 1250

4. 1600

**Question Number : 127  Question Id : 67809417750  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

equivalent resistance referred to secondary is _____

Options :

1. $0.5\Omega$

2. $0.02\Omega$

3. $0.04\Omega$

4. $2.5\Omega$

**Question Number : 128  Question Id : 67809417751  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

A 100kVA transformer has an iron loss of 900W and full load copper loss of 1600W. Its load kVA corresponding to maximum efficiency is _____

Options :

1. 56.3 kVA

2. 133.3 kVA

3. 75 kVA

4. 177.7 kVA

**Question Number : 129  Question Id : 67809417752  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

If two transformers A and B are operating in parallel, with voltage rating of transformer A is slightly greater than that of transformer B. If $E_A$ and $E_B$ are induced emfs. $Z_A$ and $Z_B$ are the impedances of transformers A and B then the circulating current $I_C$ is given by _____

Options :

1. $(E_A - E_B)/(Z_A + Z_B)$

2. $(E_A + E_B)/(Z_A + Z_B)$

3. $(Z_A - Z_B)/(E_A - E_B)$

4. $(Z_A + Z_B)/(E_A + E_B)$

**Question Number : 130  Question Id : 67809417753  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The phase shift in a star-star connected three phase transformer is

2. 30 degrees

3. 120 degrees

4. 180 degrees

**Question Number : 131  Question Id : 67809417754  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

An auto transformer supplies a load of 3kW at 115V at unity power factor. If the applied primary voltage is 230V, calculate the power transferred to the load inductively by neglecting losses.

**Options :**

1. 0.5kW

2. 1kW

3. 1.5kW

4. 2kW

**Question Number : 132  Question Id : 67809417755  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The frequency of a 4 pole alternator running at 1500 RPM will be _____

**Options :**

1. 100 Hz

2. 60 Hz

3. 50 Hz

4. 25 Hz

**Question Number : 133  Question Id : 67809417756  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The dark and bright lamp method is used for _____

**Options :**

1. Transfer of load

2. synchronizing

3. Balancing of load

4. Phase sequence

**Question Number : 134  Question Id : 67809417757  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

In an alternator, the armature reaction influences _____

**Options :**

1. Generated voltage per phase

2. frequency

3. Operating speed

4. Winding losses

**Question Number : 135  Question Id : 67809417758  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The power developed by a synchronous motor will be maximum when the load angle is _____

**Options :**

1. 0 degrees

2. 45 degrees

**Question Number : 136  Question Id : 67809417759  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

An over excited synchronous motor is used for _____

**Options :**

1. Fluctuating loads

2. Variable speed loads

3. Low torque loads

4. Power factor corrections

**Question Number : 137  Question Id : 67809417760  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

If the field of a synchronous motor is under excited, the power factor will be _____

**Options :**

1. zero

2. unity

3. lagging

4. leading

**Question Number : 138  Question Id : 67809417761  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

A 4-pole, 3-phase induction motor is running at 4% slip at full load. If the speed of the motor is 720 r.p.m., the supply frequency is _____

**Options :**

1. 15 Hz

2. 25 Hz

3. 50 Hz

4. 60 Hz

**Question Number : 139  Question Id : 67809417762  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The rotor power output of a 3-phase induction motor is 15kW and the corresponding slip is 4%. The rotor copper loss will be _____

**Options :**

1. 600W

2. 625W

3. 650W

4. 700W

**Question Number : 140  Question Id : 67809417763  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

When the rotor of a 3-phase induction motor is blocked. the slip is _____

**Options :**

1. 1

3. 0.1

4. 0

**Question Number : 141  Question Id : 67809417764  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Double squirrel cage induction motor has _____

**Options :**

1. Two series windings in stator

2. Two series windings in rotor

3. Two parallel windings in rotor

4. Two parallel windings in stator

**Question Number : 142  Question Id : 67809417765  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

A capacitor start, capacitor run Induction motor is basically _____

**Options :**

1. two phase motor

2. D.C. motor

3. Commutator motor

4. Synchronous motor

**Question Number : 143  Question Id : 67809417766  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Which of the following motor is most suitable for computer drive printers?

**Options :**

1. Reluctance motor

2. Hysteresis motor

3. Shaded pole motor

4. Stepper motor

**Question Number : 144  Question Id : 67809417767  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Ash content of Indian coal is approximately _____

**Options :**

1. 5%

2. 8%

3. 10%

4. 25%

A Kaplan turbine is _____

**Options :**

1. A low head axial flow turbine

2. A high head mixed flow turbine

3. Inward flow impulse turbine

4. Outward flow reaction turbine

**Question Number : 146  Question Id : 67809417769  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The nuclear reactor starts generation when _____

**Options :**

1. The safety rod is inserted into the core

2. The safety rod is withdrawn from the core

3. The shim rod is inserted into the core

4. The shim rod is withdrawn from the core

**Question Number : 147  Question Id : 67809417770  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The maximum demand of a consumer is 2kW and his daily energy consumption is 20 units. His load factor is _____

**Options :**

1. 10.15%

2. 41.66%

3. 50%

4. 75%

**Question Number : 148  Question Id : 67809417771  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

It is always economical to improve the power factor of an installation to _____

**Options :**

1. zero

2. unity

3. A little less than unity lag

4. A little less than unity lead

**Question Number : 149  Question Id : 67809417772  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

A 3-phase breaker is rated at 2000MVA, 33kV. Its breaking current will be _____

**Options :**

3. 70kA

4. 89kA

**Question Number : 150  Question Id : 67809417773  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The pickup value of a relay is 7.5A and fault current in relay coil is 37.5A. Its plug setting multiplier is _____

**Options :**

1. 10

2. 7.5

3. 2.5

4. 5

**Question Number : 151  Question Id : 67809417774  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

A mho relay is a _____

**Options :**

1. Voltage restrained directional relay

2. Voltage controlled over current relay

3. Directional restrained over current relay

4. Directional restrained over voltage relay

**Question Number : 152  Question Id : 67809417775  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Buchholz relay provides protection of the transformer from _____

**Options :**

1. External faults

2. Internal faults

3. Lightening faults

4. Dielectric breakdown

**Question Number : 153  Question Id : 67809417776  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

A differential protection system responds to the _____ of the two electrical quantities.

**Options :**

1. Arithmetic difference

2. Arithmetic sum

3. Vectorial difference

4. Vector Sum

**Question Number : 154  Question Id : 67809417777  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The transfer of electrical energy from consumers localities to the consumers premises is called _____

**Options :**

1. Primary transmission

2. Primary distribution

3. secondary transmission

**Question Number : 155  Question Id : 67809417778  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The capacitive effect is negligible in _____

**Options :**

1. Short transmission lines

2. Medium transmission lines

3. Long transmission lines

4. Medium and Long transmission lines

**Question Number : 156  Question Id : 67809417779  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Surge impedance of a transmission line is given by _____

**Options :**

1. Square root of (L/C)

2. Square root of (C/L)

3. Square root of (LC)

4. Square root of (1/LC)

**Question Number : 157  Question Id : 67809417780  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

If the conductor diameter increases, inductance of the line _____

**Options :**

1. decreases

2. Increases

3. Remains same

4. Equal to zero

**Question Number : 158  Question Id : 67809417781  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The first HVDC scheme in India is _____

**Options :**

1. Vindhyachal back to back system

2. Chandrapur – Padghe Scheme

3. Delhi – Rihand 500kV system

4. Sileru –Barsoor system

**Question Number : 159  Question Id : 67809417782  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

ACSR conductor implies

**Options :**

1. All Conductors Surface treated and Realigned

2. Aluminium Conductor Steel Reinforced

3. Anode Current Sinusoidal Run

4. Anodised Core Smooth Run

**Question Number : 160  Question Id : 67809417783  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

**Question Number : 161  Question Id : 67809417784  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The most commonly used material for insulators of overhead lines is _____

Options :

1. Plastic

2. Rubber

3. Mica

4. Porcelain

**Question Number : 162  Question Id : 67809417785  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

As compared to a D.C 2-Wire distributor, a 3-Wire distributor with same maximum voltage to earth uses only _____ percent of copper.

Options :

1. 66.66

2. 50

3. 31.25

4. 75

**Question Number : 163  Question Id : 67809417786  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

For the voltages beyond 66kV, the cable used is _____

Options :

1. Belted Cables

2. Screened Cables

3. Pressure Cables

4. S.L. Type Cables

**Question Number : 164  Question Id : 67809417787  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The maximum speed attained by a train on the run is known as _____

Options :

1. Crest speed

2. Average speed

3. Scheduled speed

4. coasting

**Question Number : 165  Question Id : 67809417788  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

For train lighting the generator used is _____

Options :

1. Series generator

3. Koschberg generator

4. Synchronous generator

**Question Number : 166  Question Id : 67809417789  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

In speed-time curve for trains, the notching period is _____

**Options :**

1. Constant acceleration period

2. Free running period of train

3. Braking period of train

4. Coasting period of train

**Question Number : 167  Question Id : 67809417790  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Which of the following system is used for long distance railways ?

**Options :**

1. 250V D.C.

2. 25kV, Single Phase A.C.

3. 25kV, 2- Phase A.C.

4. 25kV, 3- Phase A.C.

**Question Number : 168  Question Id : 67809417791  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

_____ motor is preferred for printing machines

**Options :**

1. Universal

2. Series

3. Shunt

4. D.C. Compound

**Question Number : 169  Question Id : 67809417792  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

If the gain of the Open-loop system is doubled, the gain margin _____

**Options :**

1. Is not affected

2. Becomes half

3. Becomes doubled

4. Becomes one-fourth

**Question Number : 170  Question Id : 67809417793  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Which of the following element is not used in an automatic control system?

**Options :**

1. sensor

2. Error detector

3. oscillator

4. Final control element

In SCADA system, the RTU stands for

**Options :**

1. Remote Terminal Unit

2. Round Terminal Unit

3. Remote Thermal Unit

4. Round Thermal Unit

**Question Number : 172  Question Id : 67809417795  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Which of the following tool is used for holding, gripping and cutting of wires?

**Options :**

1. Screw driver

2. hammer

3. Cutting plier

4. hacksaw

**Question Number : 173  Question Id : 67809417796  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The wire running on the top of the overhead line, to protect from lightning is called as _____

**Options :**

1. Phase

2. Neutral

3. Stay Wire

4. Earth Wire

**Question Number : 174  Question Id : 67809417797  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

In irrigation pump-sets the accidental opening of one of the supply lines is known as _____

**Options :**

1. Three phasing

2. Two phasing

3. Single phasing

4. Neutral phasing

**Question Number : 175  Question Id : 67809417798  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The rating of the fuse wire is always expressed in _____

**Options :**

1. amperes

2. volts

3. watts

4. ohms

**Question Number : 176  Question Id : 67809417799  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The current in a Zener Diode is controlled by _____

**Options :**

3. Zener Diode resistance

4. External resistance

**Question Number : 177  Question Id : 67809417800  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Each diode of half wave rectifier conducts for _____

**Options :**

1. 90 degrees

2. 180 degrees

3. 270 degrees

4. 360 degrees

**Question Number : 178  Question Id : 67809417801  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The transistor used in amplifier circuit operates in _____ region

**Options :**

1. active

2. saturation

3. Cut-off

4. reverse

**Question Number : 179  Question Id : 67809417802  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The maximum efficiency of Class A amplifier is _____

**Options :**

1. 100%

2. 81.8%

3. 50%

4. 30%

**Question Number : 180  Question Id : 67809417803  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The purpose of coupling capacitor in an amplifier is to _____

**Options :**

1. Control the output

2. Match the impedance

3. Control the bandwidth

4. Prevent D.C. mixing with input

**Question Number : 181  Question Id : 67809417804  Display Question Number : Yes  Single Line Question Option : No  Option**

Options :

1. Four stages of RC circuit

2. Three stages of RC circuit

3. Two stages of RC circuit

4. One stage of RC circuit

**Question Number : 182  Question Id : 67809417805  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

_____oscillator is the most stable oscillator

Options :

1. Crystal controlled

2. Weinbridge

3. Colpitts

4. Hartley

**Question Number : 183  Question Id : 67809417806  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The base of the hexadecimal number system is _____

Options :

1. 2

2. 8

3. 10

4. 16

**Question Number : 184  Question Id : 67809417807  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The Gate whose output is high, if any of its inputs is high is _____

Options :

1. NAND

2. OR

3. NOR

4. EX-OR

**Question Number : 185  Question Id : 67809417808  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The memory used for main memory in a hand calculator is _____

Options :

1. RAM

2. ROM

3. PROM

4. EPROM

**Question Number : 186  Question Id : 67809417809  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Which of the following is the fastest A to D converter ?

Options :

1. Successive approximation converter

4. Dual slope converter

**Question Number : 187  Question Id : 67809417810  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

An SCR is a _____ Switch

**Options :**

1. Unidirectional

2. Two-directional

3. Three-directional

4. Four-directional

**Question Number : 188  Question Id : 67809417811  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Turn-on time of an SCR can be reduced by using a _____

**Options :**

1. Rectangular pulse of low amplitude and wide width

2. Rectangular pulse of high amplitude and narrow width

3. Triangular pulse

4. Trapezoidal pulse

**Question Number : 189  Question Id : 67809417812  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

In an UJT, maximum value of charging resistance is associated with _____

**Options :**

1. Peak Point

2. Valley Point

3. Any point between peak and valley point

4. After the valley point

**Question Number : 190  Question Id : 67809417813  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The Triac can be used only in _____

**Options :**

1. inverter

2. rectifier

3. Multiquadrant chopper

4. Cycloconverter

**Question Number : 191  Question Id : 67809417814  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

Freewheeling diode in a converter is placed _____

**Options :**

1. In series with each thyristor

2. In shunt with each thyristor

3. Across the D.C. load impedance

4. In series with the D.C. load impedance

A cycloconverter is a _____

**Options :**

1. Amplitude changer

2. Phase changer

3. Waveform changer

4. Frequency changer

**Question Number : 193  Question Id : 67809417816  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

In dc chopper, if T is the chopping period, then the output voltage may be controlled by PWM by _____

**Options :**

1. Varying T, keeping TON constant

2. Varying TON, keeping T constant

3. Varying TOFF, keeping T constant

4. Varying T, keeping TOFF constant

**Question Number : 194  Question Id : 67809417817  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

A single phase voltage source square wave inverter feeds pure inductive load. The waveform of the load current will be

_____

**Options :**

1. sinusoidal

2. rectangular

3. trapezoidal

4. triangular

**Question Number : 195  Question Id : 67809417818  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The PWM control of D.C. Motor varies _____ with speed

**Options :**

1. inversely

2. parabolically

3. exponentially

4. linearly

**Question Number : 196  Question Id : 67809417819  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

SMPS are based on the _____ principle

**Options :**

1. Phase control

2. Integral control

3. Chopper

4. MOSFET

**Question Number : 197  Question Id : 67809417820  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

The number of flags of 8051 is _____

3. 8

3. 2

4. 4

**Question Number : 198  Question Id : 67809417821  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

During PUSH instruction, the stack pointer is _____

**Options :**

1. Incremented by two

2. Incremented by one

3. Decremented by two

4. Decremented by one

**Question Number : 199  Question Id : 67809417822  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

In 8255, the length of a control word is _____

**Options :**

1. 2-bytes

2. 4-bits

3. 8-bits

4. 12-bits

**Question Number : 200  Question Id : 67809417823  Display Question Number : Yes  Single Line Question Option : No  Option Orientation : Vertical**

PIC 8259 is a _____ pin chip

**Options :**

1. 40

2. 28

3. 24

4. 32