# Andhra Pradesh State Council of Higher Education

**Notations:**

1. Options shown in green color and with ✔ icon are correct.
2. Options shown in red color and with ✗ icon are incorrect.

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Mathematics

Question Number : 1 Question Id : 8135611121 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

\[ \int \frac{\sin(2x)}{\sin^2(x) + 2 \cos^2(x)} \, dx = \]

Options :

1. \[ \log |1 + \cos^2(x)| + c \]

2. \[ -\log |1 + \sin^2(x)| + c \]

3. \[ \log |1 + \tan^2(x)| + c \]

4. \[ -\log |1 + \cos^2(x)| + c \]
Choose the correct option regarding the following definite integrals:

\[ \int_0^{\frac{\pi}{2}} \sin^m(x) \cos(x) \, dx = \frac{1}{m+1} \]
\[ \int_0^{\frac{\pi}{2}} \sin(x) \cos^n(x) \, dx = \frac{1}{n+1} \]

Options:

1. A is true, B is false

2. A is false, B is true

3. Both A and B are false

4. Both A and B are true
A determinant is chosen at random from the set of all determinants of order 2 with elements 0 or 1 only. The probability that the determinant chosen is non-zero is ______

Options:

1. \(\frac{4}{8}\)
2. \(\frac{3}{8}\)
3. \(\frac{2}{8}\)
4. \(\frac{5}{8}\)

If the circle \(x^2 + y^2 + 6x - 2y + k = 0\) bisects the circumference of the circle \(x^2 + y^2 + 2x - 6y - 15 = 0\), then ‘\(k\)’ is equal to

\[x^2 + y^2 + 6x - 2y + k = 0\] \(\text{and}\) \(x^2 + y^2 + 2x - 6y - 15 = 0\)

Options:

1. \(21\)
2. \(-21\)
Question Number : 5 Question Id : 8135611125 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A bag contains books numbered 1 to 20. Three books are drawn from the bag with replacement. The probability that largest number on the book is 7.

మెమ్ము ఒకటైన 1 లేదా 20 మంది కాలగొండా మేము ఒకటైన 20 ఎంచుకునే ఎక్కడ మేము. బెట్టడి మేము 3 సమూహాల్లో నిలిచాయి (సమూహ 1 లేదా 2 మంది కాలగొండా మేము) బెట్టడి మేము నిలిచాయి గురించి తొలగి 7 ఎంచుకునే ఎంచుకునే ఎంచుకునే ______

Options :

1. \( \frac{2}{17} \)

2. \( \frac{7}{20} \)

3. \( 1 - \left(\frac{7}{20}\right)^3 \)

4. \( \left(\frac{7}{20}\right)^3 - \left(\frac{6}{20}\right)^3 \)
The length of the tangent from $(6, 8)$ to the circle $x^2 + y^2 = 4$ is

$$x^2 + y^2 = 4$$

Options:

1. $$\sqrt{6}$$

2. $$2\sqrt{6}$$

3. $$4\sqrt{6}$$

4. $$5\sqrt{6}$$

If $\sin(2x) = \frac{\sqrt{5} - 1}{4}$ then $x = \frac{n}{2}\pi + (-1)^n (m)$, $n \in \mathbb{Z}$, find $m$.

$\sin(2x) = \frac{\sqrt{5} - 1}{4}$, $x = \frac{n}{2}\pi + (-1)^n (m)$, $n \in \mathbb{Z}$, $m =$

Options:

1. $$\frac{\pi}{10}$$

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

3. $$\sqrt{5}$$
Question Number : 8 Question Id : 8135611128 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The equation of the hyperbola with focus (1, 2), \( e = \sqrt{3} \) and directrix \( 2x + y = 1 \) is given by

\[(1, 2) \quad \text{and} \quad e = \sqrt{3} \quad \text{and} \quad 2x + y = 1 \quad \text{is equal to} \quad \text{the} \quad \text{equation} \quad \text{of} \quad \text{the} \quad \text{hyperbola} \]

Options :

1. ✅ \[2y^2 - 12xy - 7x^2 + 2x - 14y + 22 = 0\]

2. ✗ \[2y^2 + 12xy + 7x^2 - 2x + 14y - 22 = 0\]

3. ✗ \[2y^2 - 12xy - 7x^2 - 2x - 14y - 22 = 0\]

4. ✗ \[2y^2 + 12xy + 7x^2 + 2x + 14y + 22 = 0\]

Question Number : 9 Question Id : 8135611129 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
If displacement \( s = 5 \sin(2t) \), then the velocity at the end of \( \frac{\pi}{3} \) seconds is

\[ \text{Options:} \]

1. \( 5 \)
2. \( -5\sqrt{3} \)
3. \( 5\sqrt{3} \)
4. \( -5 \)

The derivative of \( y = \sin^{-1}\left(\frac{\sqrt{1+x} - \sqrt{1-x}}{2}\right) \) is

\[ y = \sin^{-1}\left(\frac{\sqrt{1+x} - \sqrt{1-x}}{2}\right) \]

\[ \text{Options:} \]

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

**Question Number : 11 Question Id : 8135611131 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

What is the constant term in the binomial expansion of \((1 + 3x)^n \left(1 + \frac{1}{3x}\right)^n\)?

\[(1 + 3x)^n \left(1 + \frac{1}{3x}\right)^n\]  

Options:

1. \( \binom{2n}{n} \)

2. \( \binom{2n}{n-1} \)

3. \( \binom{2n}{n+1} \)

4. No such term exists

**Question Number : 12 Question Id : 8135611132 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**
If the length of the tangent from \((f, g)\) to the circle \(x^2 + y^2 = 6\) be twice the length of the tangent from the same point to the circle \(x^2 + y^2 + 3x + 3y = 0\), then \(f^2 + g^2 + 4f + 4g + 2\) is equal to

\[(f, g) \text{ నిముంత నాలుగు ఆకు నుంచి 6 ను వచ్చే విధంగా, అంటే నిముంత నాలుగు ఆకు నుంచి } x^2 + y^2 + 3x + 3y = 0 \text{ ను వచ్చే విధంగా జా వాడింది. అంటే, } f^2 + g^2 + 4f + 4g + 2 =

**Options:**
1. ✖️ -1
2. ✖️ 1
3. ✔️ 0
4. ✖️ -2

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If \(y = \log (\cosh x)\) then \(\frac{d^2 y}{dx^2} =

\[y = \log (\cosh x) \text{ తెలుసు. } \frac{d^2 y}{dx^2} =

**Options:**
1. ✔️ \sech^2 x
2. ✖️ -\sech^2 x
3. ✖️ \sinh x
4. \(-\sinh x\)

**Question Number :** 14  
**Question Id :** 8135611134  
**Question Type :** MCQ  
**Display Question Number :** Yes  
**Is Question Mandatory :** No  
**Single Line Question Option :** No  
**Orientation :** Vertical

Let \(f: \mathbb{R} \rightarrow \mathbb{R}\) be a continuous function such that for any two real numbers \(x\) and \(y\),
\[|f(x) - f(y)| \leq 10 \cdot |x - y|^{201}\]  
then

\[f: \mathbb{R} \rightarrow \mathbb{R}\] is a function such that \(|f(x) - f(y)| \leq 10 \cdot |x - y|^{201}\) for all \(x, y \in \mathbb{R}\),

**Options :**

1. \(f(2019) = f(2020) + 1\)

2. \(f(2019) + f(2022) = 2f(2021)\)

3. \(f(2019) = f(2020) + 8\)

4. \(f(2019) = f(2020) + 2\)

**Question Number :** 15  
**Question Id :** 8135611135  
**Question Type :** MCQ  
**Display Question Number :** Yes  
**Is Question Mandatory :** No  
**Single Line Question Option :** No  
**Orientation :** Vertical

The largest value of \(k\) for which the circle \(x^2 + y^2 = k^2\) lies completely in the interior of the parabola \(y^2 = 4x + 16\) is

\[y^2 = 4x + 16\] is the condition for the circle, \(x^2 + y^2 = k^2\) lies completely in the interior of the parabola, \(y^2 = 4x + 16\).

Given \(k\) value condition.
Question Number : 16 Question Id : 8135611136 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

For the value of \( \frac{2 \tan(x)}{1-\tan^2(x)} \) to be positive, find values of \( x \), such that \( x \in \left(0, \frac{\pi}{2}\right) \)

\[ x \in \left(0, \frac{\pi}{2}\right) \] and \( x \) satisfies \( \frac{2 \tan(x)}{1-\tan^2(x)} \) is positive. What is this expression?

Options :

1. \( \left(0, \frac{\pi}{3}\right) \)  
2. \( \left(0, \frac{\pi}{6}\right) \)  
3. \( \left(0, \frac{\pi}{4}\right) \)  
4. \( \left(0, \frac{\pi}{8}\right) \)
Question Number : 17 Question Id : 8135611137 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

When six coins are tossed simultaneously, the probability of getting at least 4 heads is ____

షెన్స్‌లో 6 సంకలనాలు తెలిపబడాం. ప్రతి సంఖ్యలు 4 సరిపోతున్న 4 సరిపోయిన 4 సరిపోయిన

Options :

1. 11
   64

2. 15
   64

3. ✔ 11
   32

4. ✗ 15
   32

Question Number : 18 Question Id : 8135611138 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The ten’s digit in 1! + 4! + 7! + 10! + 12! + 13! + 15! + 16! + 17! is divisible by ____

1! + 4! + 7! + 10! + 12! + 13! + 15! + 16! + 17! సంఖ్యాలు కలుగు పదార్థాల పదార్థాల పదార్థాల పదార్థాల పదార్థాల

మరింత సంఖ్యల మరింత సంఖ్యల మరింత సంఖ్యల మరింత సంఖ్యల

Options :

1. ✗ 4!
Question Number : 19 Question Id : 8135611139 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Express \( \frac{dt}{dx} = \frac{t}{(x + te^{-2x/t})} \) in the form of \( \frac{dx}{dt} = \varnothing \left( \frac{x}{t} \right) \)

\[ \frac{dt}{dx} = \frac{t}{(x + te^{-2x/t})} \] \( \Rightarrow \) \( \frac{dx}{dt} = \varnothing \left( \frac{x}{t} \right) \) ఆధారం సంహిత.

Options :

1. \( \frac{x}{t} + e^{-2\left(\frac{x}{t}\right)} \)

2. \( \frac{x}{t} - e^{-2\left(\frac{x}{t}\right)} \)

3. \( \frac{x}{t} + e^{2\left(\frac{x}{t}\right)} \)

4. \( \frac{x}{t} - e^{2\left(\frac{x}{t}\right)} \)

Question Number : 20 Question Id : 8135611140 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Cube roots of unity are the vertices of a/an ______, which is inscribed in a circle of unit radius, with its center at origin.

మూడు ప్రోత్సాహ తోడించడం మాత్రమే "1" యొక్క రెంట్రియా ను రెంట్రియా 2 రెంట్రియాలు ని ప్రోత్సాహం ని ప్రోత్సాహం ని ప్రోత్సాహం ని ప్రోత్సాహం?

Options:
1. Right angled triangle
2. Equilateral triangle
3. Scalene triangle
4. Isosceles triangle

Question Number : 21 Question Id : 8135611141 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation : Vertical
If M is a point on the line \( y = x \) and points \( P(0, 1), Q(2, 0) \) are such that \( PM + QM \) is minimum, the coordinates of \( M \) are

\[ y = x \] మూడు ప్రోత్సాహ తోడించడం మాత్రమే "1" యొక్క రెంట్రియా ను రెంట్రియా 2 రెంట్రియాలు ని ప్రోత్సాహం ని ప్రోత్సాహం ని ప్రోత్సాహం ని ప్రోత్సాహం?

Options:
1. \( (0,0) \)
2. \( \begin{pmatrix} 13 & 13 \\ 17 & 17 \end{pmatrix} \)

3. \( \begin{pmatrix} 1 & 1 \\ 7 & 7 \end{pmatrix} \)

4. \( \begin{pmatrix} 31 & 31 \\ 7 & 7 \end{pmatrix} \)

Question Number : 22 Question Id : 8135611142 Question Type : MCQ Display Question
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation : Vertical

If \( O \) is any point \( \overrightarrow{OA} + \overrightarrow{OB} + \overrightarrow{OC} + \overrightarrow{OD} = x \overrightarrow{OE} \), then find \( x \), given that \( ABCD \) is a quadrilateral, \( E \) is the point of intersection of the line joining the mid-points of opposite sides.

\[ \text{Options:} \]

1. 4

2. 3

3. 5

4. 9

Question Number : 23 Question Id : 8135611143 Question Type : MCQ Display Question
If \( f(x) = \begin{vmatrix} \cos(x + a + b) & \sin(x + a + b) \\ \cos(x + b + c) & \sin(x + b + c) \\ \cos(x + c + a) & \sin(x + c + a) \end{vmatrix} \), then \( (f(2019))^{f(2020)} - f(2020)^{f(2019)} = \) 

\( f(x) = \begin{vmatrix} \cos(x + a + b) & \sin(x + a + b) \\ \cos(x + b + c) & \sin(x + b + c) \\ \cos(x + c + a) & \sin(x + c + a) \end{vmatrix} \) అంటే, \( (f(2019))^{f(2020)} - f(2020)^{f(2019)} = \)

Options:
1. \( \times \) 1
2. \( \times \) -1
3. \( \checkmark \) 0
4. \( \times \) 2

The angles \( A, B, C \) of a triangle \( ABC \) are in AP. If \( AB = 6, BC = 7 \) then \( AC = \)

\( A, B, C \) అంటే \( ABC \) త్రిభుజాంశాలు సారిగిన పొలుగుల ఉన్నాయి. \( AB = 6, BC = 7 \) అంటే, \( AC = \)

Options:
1. \( \times \) \( \sqrt{40} \)
2. \( \times \) \( \sqrt{41} \)
3. $\sqrt{43}$

4. 6

Question Number : 25 Question Id : 8135611145 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If $^{12}C_{2k-1} = ^{12}C_{k+1}$, then find $k$

$^{12}C_{2k-1} = ^{12}C_{k+1}$ \(\implies k = \)____

Options :
1. 3
2. 6
3. 9
4. 4

Question Number : 26 Question Id : 8135611146 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If $\lim_{x \to 3} \left(\frac{x^n-3^n}{x-3}\right) = 108$ and $n \in N$ then the value of ‘$n$’ is

$\lim_{x \to 3} \left(\frac{x^n-3^n}{x-3}\right) = 108$ \(\implies n \in N\) \(\text{then}, n = \)____

Options :
Question Number : 27 Question Id : 8135611147 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The radius of any circle touching the lines $3x - 4y + 5 = 0$, $6x - 8y - 9 = 0$ is

$3x - 4y + 5 = 0$, $6x - 8y - 9 = 0$ మొదలె పరిధి వైపు చేసే వేర్ వేర్ వేర్ పరిధి వైపు చేసే వేర్ వేర్ పరిధి వైపు చేసే వేర్ వేర్ 

Options :

1. 1
2. $\frac{23}{15}$
3. $\frac{20}{19}$
4. 20

Question Number : 28 Question Id : 8135611148 Question Type : MCQ Display Question
If \( \log \sqrt{x^2 + y^2} = \tan^{-1} \left( \frac{x}{y} \right) \), then \( \frac{dy}{dx} \) is equal to

\[
\log \sqrt{x^2 + y^2} = \tan^{-1} \left( \frac{x}{y} \right) \Rightarrow \frac{dy}{dx} = \text{[Expression]} \]

Options:
1. \( \frac{y-x}{y+x} \)
2. \( \frac{x+y}{x-y} \)
3. \( \frac{1}{y+x} \)
4. \( \frac{1}{x-y} \)

Let \( A = \begin{bmatrix} 2 & -1 & 3 \\ 1 & 1 & -1 \\ 0 & 0 & 1 \end{bmatrix} \) and \( D = \begin{bmatrix} 0 \\ 1 \\ 0 \end{bmatrix} \). The system \( AX = D \) has ________

\[
A = \begin{bmatrix} 2 & -1 & 3 \\ 1 & 1 & -1 \\ 0 & 0 & 1 \end{bmatrix}, \quad D = \begin{bmatrix} 0 \\ 1 \\ 0 \end{bmatrix}, \quad AX = D \text{ has } \text{[Solution]} \]

Options:
1. \( \text{[Solution]} \)
No solution
అసాధారణ

A unique solution
2. ✔ అక్కడ జాతం

More than one but finite solutions
3. ✗ ఏకాకి లభించే సమస్యలు లభించింది

Infinitely many solutions
4. ✗ అనేకాకి జాతం

Question Number : 30 Question Id : 8135611150 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

What is the value of $\sqrt[3]{26}$ corrected up to three decimal places?

$\sqrt[3]{26}$ నింటి అత్యధిక శాస్త్రీయ గుర్తించాలంటే, మరియు పరిమితి పొందాలంటే?

Options :

1. ✗ 2.998

2. ✗ 2.844

3. ✔ 2.962

4. ✗ 2.823
Question Number : 31  Question Id : 8135611151  Question Type : MCQ  Display Question Number : Yes  Question Mandatory : No  Single Line Question Option : No Option  Orientation : Vertical

\[(102)^4 = ?\]

Options :
1. 108242316
2. 108423216
3. 102843216
4. 108243216

Question Number : 32  Question Id : 8135611152  Question Type : MCQ  Display Question Number : Yes  Question Mandatory : No  Single Line Question Option : No Option  Orientation : Vertical

\[
\int_{\pi/6}^{\pi/3} \frac{1}{1 + \sqrt{\cot x}} \, dx =
\]

Options :
1. \(\frac{\pi}{12}\)
2. \(\frac{\pi}{6}\)
3. \(\frac{\pi}{4}\)
4. \(\frac{\pi}{3}\)
4. \[ \frac{\pi}{13} \]

Question Number : 33 Question Id : 8135611153 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

\( AB \) is a line segment moving between the axes such that ‘A’ lies on x-axis and ‘B’ lies on y-axis. If \( P \) is a point on \( AB \) such that \( PA = b \) and \( PB = a \), then the equation of locus of \( P \) is

\( x - \text{radicand} \) ‘A’ lies on x- axis and ‘B’ lies on y- axis. If \( P \) is a point on \( AB \) such that \( PA = b \) and \( PB = a \), then the equation of the locus of \( P \) is

\[ \frac{x^2}{a^2} + \frac{y^2}{b^2} = 1 \]

Options :

1. \( \times \)\[ \frac{x^2}{b^2} + \frac{y^2}{a^2} = 1 \]

2. \( \checkmark \)\[ \frac{x^2}{a^2} + \frac{y^2}{b^2} = 1 \]

3. \( \times \)\[ \frac{x^2}{2a^2} + \frac{y^2}{2b^2} = 1 \]

4. \( \times \)\[ \frac{x^2}{2b^2} + \frac{y^2}{a^2} = 1 \]

Question Number : 34 Question Id : 8135611154 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
\[
\lim_{x \to 0} \left( \frac{1 + \frac{x}{2}}{x} \right)^{5/7} - 1 =
\]

Options:

1. \(\frac{5}{7}\)
2. \(\frac{10}{7}\)
3. \(\frac{5}{14}\)
4. \(\frac{5}{17}\)

Question Number : 35 Question Id : 8135611155 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If \(\alpha, \beta, \gamma\) are the roots of the equation \(3x^3 - 9x^2 + 5x - 7\), then what is the value of \(\alpha + \beta + \gamma\)?

\(3x^3 - 9x^2 + 5x - 7 = 0\) \(\alpha, \beta, \gamma\) ఎంచిన నాలుగు వ్యాసాలు. \(\alpha + \beta + \gamma = \)

Options:

1. \(3\)
2. \(-3\)
3. \(9\)
Question Number : 36 Question Id : 8135611156 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Let \( \vec{u} \) and \( \vec{v} \) be two vectors in \( R^2 \). If \( |\vec{u} + \vec{v}|^2 = 2(|\vec{u}|^2 + |\vec{v}|^2) \), then __________

\( R^2 \) \( \theta \) \( \vec{u}, \vec{v} \) యొక్క వెక్టర్లు మొదటి రెండు వెక్టర్లు లేదా వెక్టర్లు ఒక్కొక్కు వెక్టర్లు లేదా |\( \vec{u} + \vec{v} |^2 = 2(|\vec{u}|^2 + |\vec{v}|^2) \) తో లేదా, __________

Options :
1. \( \checkmark \) \( \vec{u} = \vec{v} \)

\( \vec{u} \) మరియు \( \vec{v} \) యొక్క వెక్టర్లు ఒక్కొక్కు వెక్టర్లు లేదా ఒక్కొక్కు వెక్టర్లు లేదా ఒక్కొక్కు వెక్టర్లు లేదా

2. \( \times \) \( \vec{u}, \vec{v} \) యొక్క వెక్టర్లు ఒక్కొక్కు వెక్టర్లు లేదా ఒక్కొక్కు వెక్టర్లు లేదా ఒక్కొక్కు వెక్టర్లు లేదా

\( \vec{u}, \vec{v} \) యొక్క వెక్టర్లు ఒక్కొక్కు వెక్టర్లు లేదా ఒక్కొక్కు వెక్టర్లు లేదా ఒక్కొక్కు వెక్టర్లు లేదా

3. \( \times \) \( \vec{u}, \vec{v} \) యొక్క వెక్టర్లు ఒక్కొక్కు వెక్టర్లు లేదా ఒక్కొక్కు వెక్టర్లు లేదా ఒక్కొక్కు వెక్టర్లు లేదా

\( \vec{u}, \vec{v} \) యొక్క వెక్టర్లు ఒక్కొక్కు వెక్టర్లు లేదా ఒక్కొక్కు వెక్టర్లు లేదా

4. \( \times \) \( \vec{u} = 2\vec{v} \)

Question Number : 37 Question Id : 8135611157 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The quadrilateral formed by the pairs of line \( xy + x + y + 1 = 0 \), \( xy + 3x + 3y + 9 = 0 \) is

\( xy + x + y + 1 = 0 \) మరియు \( xy + 3x + 3y + 9 = 0 \) వేయించే చతికాను అవధానం __________

Options :
1. \( \times \)

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Parallelogram

Rhombus

Rectangle

Square

---

Question Number : 38 Question Id : 8135611158 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The equation \( \sqrt{(x - 2)^2 + y^2} + \sqrt{(x + 2)^2 + y^2} = 4 \), where \(-2 < x < 2\), represents a

\(-2 < x < 2\) లోని యొక్క మాత్రమే \( \sqrt{(x - 2)^2 + y^2} + \sqrt{(x + 2)^2 + y^2} = 4 \) అనే సమీకరణాన్ని ప్రతిఫలించే ప్రాంభం మినుపోయే ఇది

Options :

Circle

1. వ్యాసం

Pair of lines

2. సహాయం

Parabola

3. హద్దులు
Line segment

4. ✓ లినీం కార్యం

Question Number : 39 Question Id : 8135611159 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The equation of pair of straight lines parallel to x-axis and touching the circle 
\[ x^2 + y^2 - 6x - 4y - 12 = 0 \] is _______

సమీఖ్యాకు చేసిన x^2 + y^2 - 6x - 4y - 12 = 0 x- అక్షాలు నిలువుతున్నాయి ఉండం లాతోచే కానికి లింగాడేమం అందు అంచనాయికై లింగాడేమం _______

Options :

1. ✓ \[ y^2 - 4y - 21 = 0 \]

2. ✗ \[ y^2 + 4y - 21 = 0 \]

3. ✗ \[ y^2 - 4y + 21 = 0 \]

4. ✗ \[ y^2 + 4y + 21 = 0 \]

---

Question Number : 40 Question Id : 8135611160 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
If \( \int \frac{5 \tan x}{(\tan x) - 2} \, dx = \alpha x + \beta \log|\sin x - 2 \cos x| + \gamma \), then \( \alpha - \beta = \)

\( \int \frac{5 \tan x}{(\tan x) - 2} \, dx = \alpha x + \beta \log|\sin x - 2 \cos x| + \gamma \)  \( \text{nP} \), \( \alpha - \beta = \)

**Options:**

1. ✔️ -1

2. ✗ 2

3. ✗ 0

4. ✗ 1

**Question Number : 41 Question Id : 8135611161 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

If \( \vec{a}, \vec{b} \) and \( \vec{c} \) are position vectors of the vertices of \( \triangle ABC \), then \( \frac{(\vec{a} - \vec{c}) \times (\vec{b} - \vec{a})}{(\vec{b} - \vec{a}) \cdot (\vec{c} - \vec{a})} = \)

\( \vec{a}, \vec{b}, \vec{c} \) एक \( \triangle ABC \) के किनारे के वेक्टर \( A, B, C \) दोनों के \( \text{समीकरण} \) समान, \( \frac{(\vec{a} - \vec{c}) \times (\vec{b} - \vec{a})}{(\vec{b} - \vec{a}) \cdot (\vec{c} - \vec{a})} = \)

**Options:**

1. ✗ \( \cot C \)

2. ✔️ \( \tan A \)

3. ✗ \( \tan C \)

4. ✗ -\( \tan A \)
Question Number : 42 Question Id : 8135611162 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If \( \frac{x+1}{(2x-1)(3x+1)} = \frac{A}{2x-1} + \frac{B}{3x+1} \) then \( 16A + 9B \) is equal to

\[ \frac{x+1}{(2x-1)(3x+1)} = \frac{A}{2x-1} + \frac{B}{3x+1} \]

Options :

1. \( \bullet \) 4

2. \( \bullet \) 5

3. \( \checkmark \) 6

4. \( \bullet \) 8

Question Number : 43 Question Id : 8135611163 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If the roots of \( x^3 - px^2 + qx - r = 0 \) are in A.P. then _______

\[ x^3 - px^2 + qx - r = 0 \]

Options :

1. \( \checkmark \) \( 2p^3 - 9pq + 27r = 0 \)

2. \( \bullet \) \( 2p^3 + 9pq - 27r = 0 \)
3. \[2p^3 - 8pq + 27r = 0\]

4. \[2p^3 - 9pq + 28r = 0\]

Question Number : 44 Question Id : 8135611164 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
The function \(f(x) = \sin x - \cos x\) is \underline{______________}

\[f(x) = \sin x - \cos x\]  

Options :

1. Odd function
2. Even function
3. Neither even nor odd function
4. \(f(x)\) is not a function

Question Number : 45 Question Id : 8135611165 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
The eccentricity of the ellipse $4x^2 + 25y^2 = 100$ is

$4x^2 + 25y^2 = 100$ రేఖ ఆసంయుక్తి రెండు తుంపుల కాదు మిలతా కనిపించండి?

Options:

1. $\frac{\sqrt{21}}{5}$

2. $\frac{\sqrt{21}}{2}$

3. $\frac{\sqrt{21}}{4}$

4. $\frac{\sqrt{21}}{25}$

The minimum and maximum values of $\cos\left(x + \frac{\pi}{3}\right) + 2\sqrt{2}\sin\left(x + \frac{\pi}{3}\right)$ are respectively

$\cos\left(x + \frac{\pi}{3}\right) + 2\sqrt{2}\sin\left(x + \frac{\pi}{3}\right)$ రేఖ మినమం మధ్యమం మొత్తం యుక్తి భాషలని దాని మినమం మధ్యమం మొత్తం _______

Options:

1. $-(2\sqrt{3} - 1)$ & $2\sqrt{3} - 1$

2. $-(1 + 2\sqrt{2})$ & $1 + 2\sqrt{2}$

3. $-3$ & $3$
4. \(-2 \quad \& \quad 2\)

Question Number : 47 Question Id : 8135611167 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If \( f(x) = \begin{cases} 4x - 5, & x \leq 2 \\ x - k, & x > 2 \end{cases} \) then the value of \('k'\) if \( \lim_{x \to 2} f(x) \) may exist is equal to

\( f, R \supseteq f(x) = \begin{cases} 4x - 5, & x \leq 2 \\ x - k, & x > 2 \end{cases} \)  
\( \lim_{x \to 2} f(x) \)  

Therefore, \( k = ? \)

Options :
1. \(\checkmark -1\)
2. \(-2\)
3. \(1\)
4. \(2\)

Question Number : 48 Question Id : 8135611168 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A regular polygon has 170 diagonals. Then the measure of interior angle of the polygon is

\( \text{A regular polygon has 170 diagonals. Then the measure of interior angle of the polygon is} \) ______

Options :
Question Number : 49 Question Id : 8135611169 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

For a parallelogram \(ABCD\), if \(L\) and \(M\) are midpoints of \(BC\) and \(CD\) then \(\overrightarrow{AL} + \overrightarrow{AM} = \)

\(ABCD\) పాయిస్లం చతురస్రమ. \(BC\) మధురుగా మధ్యస్థంగా ఉంది. \(CD\) మధురుగా మధ్యస్థంగా ఉంది. \(L\) మధురుగా \(\overrightarrow{AL}\) మధురుగా \(\overrightarrow{AM}\) మధురుగా

\(M\) మధురుగా, \(\overrightarrow{AL} + \overrightarrow{AM} = \)

Options :

1. \(\frac{2}{3} \overrightarrow{AC}\)

2. \(\frac{3}{2} \overrightarrow{AC}\)

3. \(\frac{5}{2} \overrightarrow{AC}\)

4. \(3 \overrightarrow{AC}\)
Question Number : 50 Question Id : 8135611170 Question Type : MCQ Display Question
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation : Vertical

The probability of a non-leap year having 53 Mondays is ________

 gvn-ggkgRol k-gvglBggV 53 gvglBggVk gdvdVzr gk kmRmgk ________

Options :

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

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

3. $\frac{5}{7}$

4. $\frac{6}{7}$

---

Question Number : 51 Question Id : 8135611171 Question Type : MCQ Display Question
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation : Vertical

$$\frac{d}{dx} \left\{ (1 + x^2) \tan^{-1}(x) \right\} =$$

Options :

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

3. \( 2x \tan^{-1}(x) + 1 \)

4. \( x \tan^{-1}(x) + 1 \)

Question Number : 52 Question Id : 8135611172 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The equation of the curve passing through \((1, 2)\) and whose tangent at any point \((x, y)\) makes an angle \(\tan^{-1}(2x + 3y)\) with the \(x\)-axis is ________

\((1, 2)\) యొక్క గోప్ప పూర్ణమైన చిహ్నము కలిగి యొక్క \((x, y)\) పై గిర్ధ నుండి \(x\)-అక్షాన్తిసంఖ్య నిషేధ చేస్తుంది ________

Options :

1. \(6x + 9y + 2 = 26e^{3x-3}\)

2. \(6x + 9y - 2 = 26e^{3x-3}\)

3. \(6x + 9y + 2 = 26e^{3x+3}\)

4. \(6x + 9y - 2 = 26e^{3x+3}\)

Question Number : 53 Question Id : 8135611173 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
If \( \vec{p} \times \vec{q} = \vec{p} \times \vec{r} \) and \( \vec{p} \cdot \vec{q} = \vec{p} \cdot \vec{r} \), then \( \ldots \)

\( \vec{p} \times \vec{q} = \vec{p} \times \vec{r} \) \( \therefore \vec{p} \cdot \vec{q} = \vec{p} \cdot \vec{r} \) \( \therefore \ldots \)

Options:

1. \( \vec{p} = \vec{r} \)

2. \( \vec{q} = \vec{r} \)

3. \( \vec{p} = \vec{q} \)

4. \( \vec{p} + \vec{q} = 0 \)

Question Number : 54 Question Id : 8135611174 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

\[
\left( \cos \frac{\pi}{2} + i \sin \frac{\pi}{2} \right) \times \left( \cos \frac{\pi}{4} + i \sin \frac{\pi}{4} \right) \times \left( \cos \frac{\pi}{8} + i \sin \frac{\pi}{8} \right) \times \ldots \ldots \infty =
\]

Options:

1. \( 1 \)

2. \( 0 \)

3. \( -1 \)

4. \( 2 \)

Question Number : 55 Question Id : 8135611175 Question Type : MCQ Display Question
Question Number : 56 Question Id : 8135611176 Question Type : MCQ Display Question
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation : Vertical

If the lines \( y = 3x + 1 \) and \( 2y = x + 3 \) are equally inclined to the line \( y = mx + 4 \), then the value of \( m \) is equal to

\[
y = mx + 4 \quad \text{and} \quad y = 3x + 1 \quad \text{and} \quad 2y = x + 3\]

\( m \) value = 

Options:

1. \( \frac{1 \pm 3\sqrt{2}}{7} \)

2. \( \frac{-1 \pm 5\sqrt{2}}{7} \)

3. 0

4. \( \frac{1 \pm 5\sqrt{2}}{7} \)

---

Question Number : 56 Question Id : 8135611176 Question Type : MCQ Display Question
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation : Vertical

Find the coordinates of \( M \) in the original system if the point \( M \) changes to \((4, -3)\) when the axes are rotated through an angle of \(135^\circ\).

\( \text{మేడిన మీదుగా} \) \( M \) యొక్క స్థితి పొలికి పోయి, త్రికోణ తెగుళు \((4, -3)\) మరియు కాని.

\( \text{సాధనం యొక్క} \) స్థితి \( M \) తెగుళు సమాధానం ___________

Options:

1. ✗
\[ \left( \frac{-1}{2}, \frac{7}{2} \right) \]

2. ✗

\[ \left( \frac{1}{2}, \frac{7}{2} \right) \]

3. ✓

\[ \left( \frac{-1}{\sqrt{2}}, \frac{7}{\sqrt{2}} \right) \]

4. ✗

Question Number : 57 Question Id : 8135611177 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Find the conjugate of \( \frac{5i}{7+i} \)

\[ \frac{5i}{7+i} \] మిత్రా రేంటే మే ఑ట్టు ఎ________

Options :

1. ✓ \( \frac{1}{10} (1 - 7i) \)

2. ✗ \( \frac{1}{10} (7i - 1) \)

3. ✗ \( \frac{1}{10} (1 + 7i) \)
4. \[ \frac{1}{\sqrt{50}} (1 - 7i) \]

Question Number : 58 Question Id : 8135611178 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If \[ \left| \frac{z - 25}{z - 1} \right| = 5 \text{ then } |z| = \]

\[ \left| \frac{z - 25}{z - 1} \right| = 5 \text{ എന്നാല്‍ } |z| = \]

Options :
1. ✔ 5
2. ✗ 3
3. ✗ 4
4. ✗ 10

Question Number : 59 Question Id : 8135611179 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Find the equation of normal to the curve \( y = x^3 - 3x \), which is parallel to the line \( 2x + 18y = 9 \)?

\( 2x + 18y = 9 \) സുരക്ഷിത വിധാനം കൊടുത്താണ് \( y = x^3 - 3x \) വാക്യത്തിന്റെ ഘടകാണ്ഡം \( a \) എന്നാണ്‌?

Options :
1. ✗
\[ x + 9y = 20 \text{ only} \\
\begin{align*}
\text{or} & \\
x + 9y & = 40 \text{ only} \\
x + 9y & = 20 \text{ only} \text{ or } 40 \text{ only} \\
\end{align*}

2. ✗

3. ✓

4. ✗

---

**Question Number : 60**  
**Question Id : 8135611180**  
**Question Type : MCQ**  
**Display Question Number : Yes**  
**Is Question Mandatory : No**  
**Single Line Question Option : No**  
**Orientation : Vertical**

Find the angle between the diagonals of parallelogram \( PQRS \) if \( \overrightarrow{PQ} = 3\mathbf{i} - 2\mathbf{j} + 2\mathbf{k} \) and \( \overrightarrow{PS} = \mathbf{i} - 2\mathbf{k} \).

\[
\overrightarrow{PQ} = 3\mathbf{i} - 2\mathbf{j} + 2\mathbf{k}, \quad \overrightarrow{PS} = \mathbf{i} - 2\mathbf{k} \quad \text{hence} \quad PQRS \text{ is a parallelogram, so the} \theta \text{ between diagonals is} \]

\[
\begin{align*}
\text{Options :} & \\
\text{Only} \cos \theta & = -\frac{3}{\sqrt{10}} \\
\cos \theta & = -\frac{3}{\sqrt{10}} \text{ only} \\
\end{align*}

1. ✓

\[
\begin{align*}
\text{Both} \cos \theta & = \pm \frac{3}{\sqrt{10}} \\
\cos \theta & = \pm \frac{3}{\sqrt{10}} \text{ possible} \\
\end{align*}

2. ✗
\[
\tan \theta = -\frac{3}{\sqrt{10}}
\]

3. ✗

\[
\tan \theta = -\frac{11}{\sqrt{10}}
\]

4. ✗

Question Number : 61 Question Id : 8135611181 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The foot of perpendicular from \((5, 7, 3)\) to the join of \((9, 13, 15)\) and \((12, 21, 10)\) is _______.

\((9, 13, 15)\) నుండి \((12, 21, 10)\) నుండి పడిన మిస్తం నుండి \((5, 7, 3)\) నుండి పడిన మిస్తం

Options:

1. ✗ \((-2, -19, 7)\)

2. ✗ \((2, 19, 7)\)

3. ✗ \((2, 2, 3)\)

4. ✔ \((9, 13, 15)\)

Question Number : 62 Question Id : 8135611182 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If \(\sec \theta + \tan \theta = \frac{2}{3}\), then in which quadrant does \(\theta\) lie in?

\(\sec \theta + \tan \theta = \frac{2}{3}\) అయితే, \(\theta\) కాలు కోణం యొక్క నుండి వెలుతుంది _______.

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If the sum of the distances of a point from two perpendicular lines in a plane is 1, then its locus is

Two intersecting lines

1. ☒

Square

2. ☐

A Straight Line

3. ☒

Circle

4. ☒
Question Number : 64 Question Id : 8135611184 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation : Vertical
\[ \int e^{x \csc x} \cdot \csc x \cdot (1 - x \cot x) \, dx = \]

Options :
1. \( e^{x \cot x} + c \)
2. \( e^{x \csc x} + c \)
3. \( e^{-x \csc x} + c \)
4. \( e^{-x \cot x} + c \)

---

Question Number : 65 Question Id : 8135611185 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation : Vertical
Let \( A \) be a square matrix of order 3. Choose the correct option regarding the following statements:

1) There exists a matrix \( B \) of order 3 such that \( AB = I_3 \)
2) There exists a matrix \( C \) of order 3 such that \( CA = I_3 \)
3) \( A \) is invertible

\( A \) is a 3 \( \times \) 3 matrix.

Options :

Only 3 implies 1 and 2
1. \( 3 \Rightarrow 1, 2, \text{both implies 3 does not hold} \)
1, 2, and 3 are equivalent statements

2. ✓

In 1 and 2, B can be different from C

3. ✗

None of the options are correct

4. ✗

The value of \( f(1) \), given the equation \( \int_0^{x^3} xf(t) \, dt = x^5 - x^3 \) is

\[ \int_0^{x^2} xf(t) \, dt = x^5 - x^3 \]  

Options:

1. ✗

2. ✗

3. ✗

4. ✓
If \( f: N \times N \rightarrow N \) is defined by \( f((m,n)) = 2^{m-1}(2n-1) \), \( \forall (m,n) \in N \times N \), then \( f \) is \( f: N \times N \rightarrow N \), \( f((m,n)) = 2^{m-1}(2n-1) \), \( \forall (m,n) \in N \times N \).  

Options:

1. One-one but not onto
   - ఒన్నూలు, కాపుడు నికితము లేదు
2. Onto but not one-one
   - నికితము, కాపుడు ఒన్నూలు
3. Neither one-one nor onto
   - ఒన్నూలు లేదు నికితము లేదు
4. Both one-one and onto
   - ఒన్నూలు నికితము

If the increase in the side of square is 6 %, then the approximate percentage increase in its area _______

భుజాంశం 6 % ఉంది, వివిధ విధానానే మాత్రం వివిధం ఉంది______

Options:
Question Number : 69 Question Id : 8135611189 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The incentre of triangle formed by the lines $x + y = 1, \ x = 1, \ y = 1$ is

$x + y = 1, \ x = 1, \ y = 1$ ఇంచే మూడు రేఖల మధ్య కేంద్రం ఉండదు.

Options :

1. $\left(1 - \frac{1}{\sqrt{2}}, \ 1 - \frac{1}{\sqrt{2}}\right)$

2. $\left(1 - \frac{1}{\sqrt{2}}, \ \frac{1}{\sqrt{2}}\right)$

3. $\left(\frac{1}{\sqrt{2}}, \ \frac{1}{\sqrt{2}}\right)$

4. $\left(\frac{1}{\sqrt{2}} + 1, \ \frac{1}{\sqrt{2}} + 1\right)$

Question Number : 70 Question Id : 8135611190 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
The Cartesian equation of the line passing through the point \((-1, 3, -2)\) and perpendicular to the lines \(\frac{x}{1} = \frac{y}{2} = \frac{z}{3}\) and \(\frac{x+2}{-3} = \frac{y-1}{2} = \frac{z+1}{5}\) is ________

\[
\frac{x}{1} = \frac{y}{2} = \frac{z}{3} \quad \text{and} \quad \frac{x+2}{-3} = \frac{y-1}{2} = \frac{z+1}{5}
\]

Options:

1. \(\frac{x-1}{2} = \frac{y+3}{7} = \frac{z-2}{4}\)

2. \(\frac{x-1}{-2} = \frac{y+3}{-7} = \frac{z-2}{-4}\)

3. \(\frac{x+1}{2} = \frac{y+3}{7} = \frac{z+2}{4}\)

4. \(\frac{x+1}{2} = \frac{y-3}{-7} = \frac{z+2}{4}\)

What is the relation between mean and median of a discrete data?

Options:

1. They are always equal

2. ________
They are always not equal
అయితే లేదు సాధారణం లభిస్తాం

Sometimes they are equal
అయితే ప్రయోగం కావాలి కంటే

No relation exists between them
వీటి మధ్య సంబంధం లేదు కానూ

Question Number : 72 Question Id : 8135611192 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The direction cosines of two lines are \( \left( \frac{\sqrt{3}}{2}, \frac{1}{4}, \frac{\sqrt{3}}{4} \right) \) and \( \left( -\frac{\sqrt{3}}{2}, \frac{1}{4}, \frac{\sqrt{3}}{4} \right) \). Then the angle between the lines is equal to ________

వీటి నిరూపణ సూచించిన రేఖల నిరూపనాలు \( \left( \frac{\sqrt{3}}{2}, \frac{1}{4}, \frac{\sqrt{3}}{4} \right) \) మరియు \( \left( -\frac{\sqrt{3}}{2}, \frac{1}{4}, \frac{\sqrt{3}}{4} \right) \) అని, ఈ నిరూపనాల మధ్య ప్రామయం ________

Options :
1. ✗ 30°
2. ✔ 60°
3. ✗ 45°
4. ✗ 90°
Question Number : 73 Question Id : 8135611193 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
For which value of ‘k’, the roots of equation \(2x^2 + 5x + k = 0\) are rational?

‘k’ విలువితే డిస్క్రేమియాలు కనుగొనేందుకు ఒక రాశిని ఎలా నిర్ణయించవచ్చు?

Options:

1. \(\frac{5}{8}\)
2. \(\frac{25}{8}\)
3. \(\frac{25}{4}\)
4. \(\frac{5}{4}\)

Question Number : 74 Question Id : 8135611194 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Find the area of the circle \((x + 1)(x + 2) + (y - 1)(y + 3) = 0\)

\((x + 1)(x + 2) + (y - 1)(y + 3) = 0\) సమీఖ్యా స్ఫూర్తి

Options:

1. \(\frac{17\pi}{4}\)
2. \(\times\)
3. \( \frac{\pi}{3} \)

4. \( \frac{2\pi}{17} \)

Question Number : 75 Question Id : 8135611195 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If the roots of the equation \( x^3 - ax^2 + bx - c = 0 \) are in G.P. then \( \frac{b^3}{a^3} = \)

\( x^3 - ax^2 + bx - c = 0 \) రాసంత్షిని G.P. కృతింద 

\( \frac{b^3}{a^3} = \)

Options :

1. \( 1 \)

2. \( -1 \)

3. \( c \)

4. \( -c \)

Question Number : 76 Question Id : 8135611196 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Tangent at any point \( \theta \) on the curve \( x = 35 \sec \theta, y = 35 \tan \theta \) is ________

అంతుంది \( \theta \) నిండి మేఖల లేదు \( x = 35 \sec \theta, y = 35 \tan \theta \) నడుచుకో ఆక్రమణ మేఖలు సంఖ్యలు ________

Options :

1. ☒ \( y \sin \theta = x + 35 \cos \theta \)

2. ✗ \( y \sin \theta = x - 35 \cos \theta \)

3. ✗ \( y \cos \theta = x - 35 \sin \theta \)

4. ✗ \( y \cos \theta = x + 35 \sin \theta \)

Question Number : 77 Question Id : 8135611197 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A bag contains 10 identical pens, of which 4 are red and 6 are blue. 3 pens are taken out at random one after another. Find probability that all 3 are blue.

ఏకాన్ని బ్యాగులో ఉన్ని 10 సమానం పించులు, ఇందుకు 4 అడుగు, 6 కొండి పించులు. 3 పించులు తేడా రెంటే యంత్రం విసర్జించినపుడు సాధారణం పించుల సంఖ్య 3 వైపు బలను అదేవిడి కంటే నిర్ధిష్టం ________

Options :

1. ✗ \( \frac{6}{10} \)

2. ✗ \( \frac{3}{10} \)

3. ✔ \( \frac{1}{6} \)
4. \[ \frac{3}{6} \]

Question Number : 78
Question Id : 8135611198
Question Type : MCQ
Display Question Number : Yes
Is Question Mandatory : No
Single Line Question Option : No
Orientation : Vertical

If \( I_1 = \int_0^{\pi/2} \frac{x}{\sin x} \, dx \), and \( I_2 = \int_0^1 \frac{\tan^{-1} x}{x} \, dx \), then \( I_1 : I_2 \) is

\[ I_1 = \int_0^{\pi/2} \frac{x}{\sin x} \, dx \], \text{ and } \[ I_2 = \int_0^1 \frac{\tan^{-1} x}{x} \, dx \], \text{ therefore } \[ I_1 : I_2 = \]

Options :
1. 1 : 1
2. 2 : 1
3. 3 : 1
4. 4 : 1

Question Number : 79
Question Id : 8135611199
Question Type : MCQ
Display Question Number : Yes
Is Question Mandatory : No
Single Line Question Option : No
Orientation : Vertical
The harmonic conjugate of $(2, 3, 4)$ with respect to the points $(3, -2, 2)$ and $(6, -17, -4)$ is

$$\left(3, -2, 2\right) \text{ harmonic conjugate of } (2, 3, 4) \text{ with respect to } (6, -17, -4)$$

Options:
1. $(11, -16, 2)$
2. $\left(\frac{1}{2}, \frac{1}{3}, \frac{1}{4}\right)$
3. $(0, 0, 0)$
4. $\left(\frac{18}{5}, \frac{-5}{1}, \frac{4}{5}\right)$

Question Number: 80 Question Id: 8135611200 Question Type: MCQ Display Question Number: Yes Is Question Mandatory: No Single Line Question Option: No Option Orientation: Vertical

$$\int \frac{(1 + x)e^{x}}{\cot(xe^{x})} \, dx =$$

Options:
1. $\log(\cos(xe^{x})) + c$
2. $\log(\cot(xe^{x})) + c$
3. $\log(\sec(xe^{x})) + c$
4. $\log(\cosec(xe^{x})) + c$
An infinitely long straight conductor is bent in to shape as shown in figure. It carries a current $I_A$ and the radius of circular loop is $r$ m. The magnetic induction at the centre of the circular loop is

Options:
1. ✓
\[ \frac{\mu_0 I (\pi - 1)}{2\pi r} \]

\[ \frac{\mu_0 I (\pi + 1)}{2\pi r} \]

\[ \frac{\mu_0 I (2\pi - 1)}{2\pi r} \]

\[ \frac{\mu_0 I (2\pi + 1)}{2\pi r} \]

**Question Number : 82  Question Id : 8135611202  Question Type : MCQ  Display Question Number : Yes  Is Question Mandatory : No  Single Line Question Option : No Option Orientation : Vertical**

An A speech signal of 3 kHz is used to modulate a carrier signal of frequency 1 MHz, using amplitude modulation. The frequencies of the side bands will be __________

3 kHz చిహ్నపు లేదా వేలి ముఖ్తందంతే 1 MHz చిహ్నపు సంపాదన పరిచెత్తి

మరుభూమి చిహ్నపు పసిపు మార్పు చేస్తాడు. అయితే, పాతాళదూరి చిహ్నపు ఎదురు ఉంది.

**Options :**

1. **✓** 1.003 MHz \& 0.997 MHz

2. ✗ 3001 kHz \& 2997 kHz

3. ✗ 1003 kHz \& 1000 kHz

4. ✗ 1.0 MHz \& 0.997 MHz
Question Number : 83 Question Id : 8135611203 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A pressure of 1 mm of mercury is equivalent to __________

Options :
1. ✗ 1 mPa
2. ✗ 13.33 Pa
3. ✔ 133.3 Pa
4. ✗ 1.08 Pa

Question Number : 84 Question Id : 8135611204 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A bar magnet of length 10 cm and having the pole strength equal to $10^{-3}$ W is kept in a magnetic field having magnetic induction ($B$) equal to $4\pi \times 10^{-3} T$. It makes an angle of 30° with the direction of magnetic induction. The value of the torque acting on the magnet is

$4\pi \times 10^{-3} T$ ఉత్తరాన్ని సంఖ్యాయితం చేసేటి 10 cm తీసుకుంటుంది, $10^{-3}$ W యొక్క వపాడు నుండి $4\pi \times 10^{-3} T$ మెగ్నరేషన్ ఫ్లయెం నుండి 30° ఉత్తరాన్ని వంబ నుంచి అందుకుంటుంది. అంటే, అ

Options :
1. ✔ $2\pi \times 10^{-7}$ N.m
2. \(2\pi \times 10^{-5} \text{ N.m}\)

3. \(0.5 \text{ N.m}\)

4. \(0.5 \times 10^2 \text{ N.m}\)

A body of mass \(m\) is placed on the earth’s surface. It is taken from the earth’s surface to a height \(h = 3R\) (\(R\) is radius of earth). The change in gravitational potential energy of the body is \(\text{_______} \) [Earth’s radius, \(R\)]

Options:

1. \(\left(\frac{2}{3}\right) mgR\)

2. \(\left(\frac{3}{4}\right) mgR\) \(\checkmark\)

3. \(\left(\frac{1}{2}\right) mgR\)

4. \(\left(\frac{1}{4}\right) mgR\)
Question Number : 86 Question Id : 8135611206 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Find the apparent weight of a metallic block of density 5 g. cm\(^{-3}\) and dimensions 5 cm \(\times\) 5 cm \(\times\) 5 cm, in water.

\[ 5 \text{ cm} \times 5 \text{ cm} \times 5 \text{ cm} \text{ mass } 5 \text{ g. cm}^{-3} \text{ density} \text{ in } \text{ water} \text{ mass} = \text{______} \]

Options :

1. \(5 \times 5 \times 5 \times 5 \text{ g}\)

2. \(4 \times 4 \times 4 \times 4 \text{ g}\)

3. \(5 \times 4 \times 4 \times 4 \text{ g}\)

4. \(4 \times 5 \times 5 \times 5 \text{ g}\)

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Question Number : 87 Question Id : 8135611207 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A particle is projected with velocity \(2\sqrt{gh}\), so that it just flies over two walls of equal height \(h\) and ‘2h’ distance apart from each other. Find the time for which the particle flies between the walls.

\[2\sqrt{gh} \text{ initial velocity, } h \text{ height, } 2h \text{ distance} \text{ between } 2 \text{ walls} \text{ time to fly} \]

Options :
The molecular motion ceases at

Questions:

1. $\sqrt{\frac{4h}{g}}$

2. $\sqrt{\frac{h}{g}}$

3. $\sqrt{\frac{4g}{h}}$

4. $\sqrt{\frac{g}{h}}$

Options:

1. $273 \, K$

2. $273 \, ^{\circ}C$

3. $-273 \, K$

4. $-273 \, ^{\circ}C$
Question Number : 89 Question Id : 8135611209 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The maximum velocity of a particle performing simple harmonic motion is 6.28 cm. s\(^{-1}\). If the length of its path is 8 cm, what is its period?

Options :
1. ✗ 2 s
2. ✓ 4 s
3. ✗ 3 s
4. ✗ 1 s

Question Number : 90 Question Id : 8135611210 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A piano wire with a diameter of 0.90 mm is replaced by another wire of diameter 0.93 mm of the same material. If tension of wire is kept the same, then the percentage change in frequency of fundamental tone is ________

Options :
1. ✗ + 3 %
2. ✓ − 3 %
3. + 3.2 %

4. − 3.2 %

Question Number : 91 Question Id : 8135611211 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The capacity of parallel plate condenser is 5 μF. When a glass plate is placed between the plates of the condenser, its potential difference reduces to 1/8 of the original value. The magnitude of relative dielectric constant of glass is ________

3 ప్రశ్న నంపుకునే ప్రశ్నగా ఉంది. మధ్య ప్లేటుల పై మధ్య ప్లేటుల మధ్య 5 μF. మధ్య ప్లేటుల మధ్య మధ్య మధ్య మధ్య ప్లేటుల మధ్య ప్లేటుల మధ్య ప్లేటుల పై వద్ద ప్లేటుల మధ్య ప్లేటుల పై వద్ద ప్లేటుల పై వద్ద 1/8 ప్లేటుల పై వద్ద ప్లేటుల పై వద్ద ప్లేటుల పై వద్ద ప్లేటుల పై వద్ద ప్లేటుల పై వద్ద ప్లేటుల పై వద్ద ప్లేటుల పై వద్ద ప్లేటుల పై వద్ద ప్లేటుల పై వద్ద program 10?

Options :
1. ✗ 4
2. ✗ 6
3. ✗ 7
4. ✔ 8

Question Number : 92 Question Id : 8135611212 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Lenz's law is consequence of the law of conservation of ________

లెన్స్‌ అనుమానం తేగడం వాతావరణం అంతర్భాగం

Options:
1. Charge
2. Momentum
3. Mass
4. Energy

Question Number : 93 Question Id : 8135611213 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

When the area of cross section of a stretched wire is halved and tension is doubled, the speed of propagation of transverse waves along it becomes $k$ times the initial speed. Then $k =$

సాహిత్యానికి రెండు వంతు మాత్రమే ఉండేందుకం, తదుప్రాంబం, ఎలా జూడు

Options:
1. 1
2. 4
Question Number : 94 Question Id : 8135611214 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
During phase change, entropy _________

Options :
1. ✗ remains constant
2. ✗ పెయినిపోయినపోయినపోయినపోయి
3. ✗ Always decreases
4. ✗ May increase or decrease

Question Number : 95 Question Id : 8135611215 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
An infinite line charge produces a field of $9 \times 10^4 \, N.C^{-1}$ at a distance of 2 cm. its linear charge density is ______

ద్రవ శిఖర సిద్ధం దూరం 2 cm ఉమ్మడి $9 \times 10^4 \, N.C^{-1}$ ఆంధ్రా రంగ ప్రదేశ్యులు. రంగాంధ్రాసిద్ధం శికరం ఎండాయం?

Options:
1. ✓ 0.1 $\mu C.m^{-1}$
2. ✗ 0.2 $\mu C.m^{-1}$
3. ✗ 10 $\mu C.m^{-1}$
4. ✗ 20 $\mu C.m^{-1}$

A rod of length 1.0 m is rotated in a plane perpendicular to a uniform magnetic field of induction 0.25 T with a frequency of 12 rev/s. The induced emf across the ends of the rod is

1.0 m లో అనేక కండప్పరు ఉన్న 0.25 T యితే అతి చెందిత రోడు రాణి వింతరు?

Options:
1. ✗ 18.89 V
2. ✓ 3 V
3. ✗ 15 V
Question Number : 97 Question Id : 8135611217 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If 75% of a radioactive sample disintegrates in 16 days, the half-life of the radioactive sample is _______ days

16 నాలుగుళ్ళ సారి 75% విస్తృతి హోదా. అ నాలుగు సారి ఏమీ రేట్‌కు నిలిచావు వాటి?

Options :

1. 6
2. 4
3. 8
4. 12

Question Number : 98 Question Id : 8135611218 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

When the torque acting upon a system is zero, the parameter that remains constant is _______

ఎందుకంటం తరువాత నాలుగు సముదాయం కూడా సారి తయారు చేసినా, ఎందుకంటం తరువాత ఈ సముదాయం వీటి నిలిచావాలంటి?

Options :
Question Number : 99 Question Id : 8135611219 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

An electric motor exerts a force of 50 N on a cable and pulls it through 60 m in 1 minute. The power supplied by the motor is _______

విద్యుత్ మాణిక్యం విడుదల దయా చాలాపాటులో నడిపాడు వాటా సాధనం వేయాలంటే ప్రతి మినుట్లో 60 మీటర్లు విరించాడు. అది ఉపయోగంలో ఉండవచ్చు కొన్ని పాలక ఎంత?

Options :
1. **50 W**
2. **3000 W**
3. **1 W**
4. **100 W**
Question Number : 100 Question Id : 8135611220 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Light is an electromagnetic wave. Its speed in vacuum is given by the expression _____

స్వచ్ఛ ప్రసాదంలో ప్రకాశం స్వచ్ఛ సంస్థానంలో వ్యవసాయం ప్రదానం = _____

Options:

1. \( \sqrt{\frac{\mu_0 \varepsilon_0}{\mu_0}} \)

2. \( \sqrt{\frac{\varepsilon_0}{\mu_0}} \)

3. \( \sqrt{\frac{\mu_0}{\varepsilon_0}} \)

4. \( \frac{1}{\sqrt{\mu_0 \varepsilon_0}} \)

Question Number : 101 Question Id : 8135611221 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
The two combinations of ‘NAND’ gates shown in the figure are equivalent to ____

Options:
1. (1) OR gate, (2) AND gate
   (1) OR నాండ్, (2) AND నాండ్

2. (1) AND gate, (2) NOT gate
   (1) AND నాండ్, (2) NOT నాండ్

3. (1) NOT gate, (2) AND gate
   (1) NOT నాండ్, (2) AND నాండ్

4. (1) AND gate, (2) OR gate
   (1) AND నాండ్, (2) OR నాండ్
Cylindrical rod of copper of length 2 m and cross–sectional area 2 cm$^2$ is insulated at its curved surface. The one end of rod is maintained in steam chamber and other is maintained in ice at 0 °C. The thermal conductivity of copper is 386 J.s$^{-1}$.m$^{-1}$.°C$^{-1}$). Find the temperature at a point which is at a distance of 120 cm from the colder end.

Options :
1. ✓ 80 °C  
2. × 50 °C  
3. ✓ 60 °C  
4. × 70 °C

Question Number : 103 Question Id : 8135611223 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
A body whose momentum is constant must have constant ________

Options :
1. ✓ Acceleration
2. ✗
Force

Velocity

mass

Question Number : 104 Question Id : 8135611224 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Young’s modulus for perfectly rigid body material is ______

Options :

Zero

1. ✗

Infinite

2. ✔

3. ✗ $1 \times 10^{10} \text{ N. m}^{-2}$

4. ✗ $10 \times 10^{10} \text{ N. m}^{-2}$
A Carnot’s engine has an efficiency of 25% when its sink is at 27°C. If it has to be increased to 40%, what should be the temperature of the sink keeping the temperature of the source constant?

Options:

1. 320 K
2. 375 K
3. 340 K
4. 300 K

A boy travelling in an open car moving at constant velocity throws a ball vertically up into air. The ball falls ________

Options:

Outside the car

1. 320 K
2. 375 K
3. 340 K
4. 300 K
In the car ahead of the boy

3.

In the car beside the boy

4.

Exactly in his hand

4. ✓

Question Number : 107 Question Id : 8135611227 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

In an LCR circuit, the capacitance is changed from $C$ to $4C$. For the same resonant frequency, the inductance should be changed from $L$ to ______

$\text{LCR మాత్రమే కేమియలు సరస్త్రం పోయిని. అంటే చాలా పెంచేసిన తరఫు ఉద్యోగం}

$
L \text{ మాత్రమే కేమియలు}

\text{Options :}

1. ✗ $2L$

2. ✗ $\frac{L}{2}$

3. ✓ $\frac{L}{4}$

4. ✗ $4L$
Question Number : 108 Question Id : 8135611228 Question Type : MCQ Display Question
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation : Vertical
A ray of light is incident normally on a plane mirror. The angle of reflection will be _____

అంశం కోట్తాడుతుంది అంశం తెగడి లింగానికి వంచబడింది. తెగడి అంశం కోట్తాడు ఎంతో గమనించండి?

Options :
1. ✔ 0°
2. ✗ 90°
3. ✗ అయ్యాడు చిన్నది
4. ✗ 60°

Question Number : 109 Question Id : 8135611229 Question Type : MCQ Display Question
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation : Vertical
The wavelength of maximum emitted energy \( \lambda_m \) of a body at 700 K is 4.08 \( \mu m \). If the temperature of the body is raised to 1400 K, \( \lambda_m = \)

700 K నాటికి వంట ఆ ఆయుర్వేద మొదలు, తెగడి గమనించడం కోసం వాయనాయం(\( \lambda_m \)) = 4.08 \( \mu m \).

మొదలు చెందిన 1400 K లో వాయనాయం అగా ఆ ఆయుర్వేద మొదలు ఆ ఆయుర్వేద మొదలు ఆ ఆయుర్వేద మొదలు

Options :
1. ✗ 1.02 \( \mu m \)
2. ✔ 16.32 \( \mu m \)
3. $8.16 \mu m$

4. $2.04 \mu m$

Question Number : 110 Question Id : 8135611230 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A mass $M$ is supported by a massless string wound around a uniform cylinder of mass $M$ and radius $R$. On releasing the mass from rest, it will fall with acceleration ______

$M$ లో పడి, $R$ లో చూపకువ నే, $M$ చేవ గాని ద్వారా చేవ గాని
ఉద్యోగం కాగా చేవాలేదు. ఉద్యోగం కాగా చేవాలేదు ఛాడించండి?

Options :

1. $g$

2. $\frac{g}{2}$

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

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

Question Number : 111 Question Id : 8135611231 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Bottom of a cylindrical vessel has a hole of area ‘A’. If water is filled up to a height ‘h’, it flows out in ‘t’ seconds. If water is filled to a height ‘4h’, it will flow out in time ______

Options:

1. **t**

2. **4t**

3. ✔️ **2t**

4. ✗ **\( \frac{t}{4} \)**

Question Number: 112  Question Id: 8135611232  Question Type: MCQ  Display Question Number: Yes  Is Question Mandatory: No  Single Line Question Option: No
Figure shows the cross-sectional view of the hollow cylindrical conductor with inner radius ‘R’ and outer radius ‘2R’, carrying uniformly distributed current i along its axis. The magnetic induction at point ‘P’ at a distance 3R/2 from the axis of the cylinder will be

\[ B = \frac{5\mu_0 i}{72\pi R} \]

\[ B = \frac{7\mu_0 i}{18\pi R} \]

\[ B = \frac{5\mu_0 i}{36\pi R} \]

Options:
1. \[ \frac{5\mu_0 i}{72\pi R} \]
2. \[ \frac{7\mu_0 i}{18\pi R} \]
3. \[ \frac{5\mu_0 i}{36\pi R} \]
4. \[ \frac{5\mu_0 i}{36\pi R} \]
According to the Hooke’s law the force required to change the length of a wire by ‘l’ is proportional to ______

హూక్స్ సాధారణం నిర్ధిష్ట ఉపయోగానికి ఉండి ‘l’ విస్తరణ యొక్క ప్రత్యేకత అంశం ______ లో పారిశుధి పొడవు యొక్క అంశం లో పారిశుధి పొడవు లో పారిశుధి పొడవు లో పారిశుధి పొడవు 

Options :
1. $l^{-2}$
2. $l^{-1}$
3. $l$
4. $l^2$

Question Number : 114 Question Id : 8135611234 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A 20 kg flywheel in the form of a uniform circular disc, 1 m in diameter, is making 120 rpm. What is its angular momentum?

120 rpm బ్రు వాల్లు కు వ్యవహారం ఉంచే పత రెండవ రేశు విడిక పెట్టడం యొక్క అరెండ్స్ మీటర్ 20 kg కుముద్మ కు పెట్టడం కొరకు మీటర్ మీటర్ మీటర్ మీటర్ మీటర్ 

Options :
1. $3.14 \text{ kg.m}^2\text{s}^{-1}$
2. $31.4 \text{ kg.m}^2\text{s}^{-1}$
3. $314 \text{ kg.m}^2\text{s}^{-1}$
4. 0.314 kg. m\(^2\). s\(^{-1}\)

**Question Number : 115 Question Id : 8135611235 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Energy levels A, B, C of a certain atom correspond to increasing values of energy that is, \(E_A < E_B < E_C\). If \(\lambda_1, \lambda_2, \lambda_3\) are the wavelengths of radiations corresponding to the transitions C to B, B to A and C to A respectively, as shown in figure. Which of the following statements is correct?

\[
\begin{array}{c}
\text{C} \\
\downarrow \lambda_1 \\
\text{B} \\
\downarrow \lambda_2 \quad \downarrow \lambda_3 \\
\text{A}
\end{array}
\]

**Options :**

1. \(\lambda_3 = \lambda_1 + \lambda_2\)

2. \(\lambda_3 = \frac{\lambda_1 \lambda_2}{\lambda_1 + \lambda_2}\)

3. \(\lambda_1 + \lambda_2 + \lambda_3 = 0\)

4. \(\lambda_3^2 = \lambda_1^2 + \lambda_2^2\)
Question Number : 116 Question Id : 8135611236 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Conditions of diffraction is ________

్యుగ్ధ ఉదాహరణ జాబితా

Options:

1. \( \frac{a}{\lambda} \neq 1 \)

2. \( \frac{a}{\lambda} >> 1 \)

3. \( \frac{a}{\lambda} << 1 \)

4. \( \frac{a}{\lambda} \leq 1 \)

Question Number : 117 Question Id : 8135611237 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

When a charge of 20 C is taken from one point to another separated by a distance of 0.2 m, work of 2 J is required to be done. What is the potential difference between the two points?

20 C చివరి ప్రాంతం చేసేతే 0.2 మీటర్ల దూరం ఉండడంతో 2 జె.ఐ కొరకు కాదు చేయబడింది. మినియా తప్ప వాటి మణ్మాడినపుడు మినియా ఎంత భాగస్వామి చేయబడింది?

Options:
1. \(2 \times 10^{-2} \, V\)

2. \(4 \times 10^{-4} \, V\)

3. \(8 \, V\)

4. \(0.1 \, V\)

**Question Number : 118 Question Id : 8135611238 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The electric potential at a point on the axis of an electric dipole depends on the distance ‘r’ of the point from the dipole as ______

\[ \text{వస్తు దిశగా భూమి మాత్రం సాధించే సంప్రదాయం కానీ అదే దూరం తో వస్తు విశేషాలు నిలువు ఉంటాయం} \]

**Options :**

1. \(\propto r^{-1}\)

2. \(\propto r^{-2}\)

3. \(\propto r\)

4. \(\propto r^{-3}\)

**Question Number : 119 Question Id : 8135611239 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**
The period of revolution of planet A around the sun is 8 times that of B. The distance of A from the sun is how many times greater than that of B from the sun?

The period of revolution of planet A around the sun is 8 times that of B. The distance of A from the sun is how many times greater than that of B from the sun?

Options:

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

The efficiency of an ideal Carnot engine working between temperatures $T_1$ and $T_2$ is $1/3$. If the temperature of the sink is reduced by 40%, then its efficiency will be

The efficiency of an ideal Carnot engine working between temperatures $T_1$ and $T_2$ is $1/3$. If the temperature of the sink is reduced by 40%, then its efficiency will be

Options:

1. 50%
2. 25%
A mixture of three compounds A, B, C is passed through a column of $\text{Al}_2\text{O}_3$ by using alcohol as eluant. The order in which they are eluted out of the column is C, B, A.

Which of the following statement is true?

A, B, C ని ఎంపికి ఉన్నపోయిన $\text{Al}_2\text{O}_3$ లో వాయిస్తున్న పద్ధతి నిర్ణయించడానికి విషయం వాడపడంతో చెపుతుంది

గీయించినది C, B, A ఎంపికల్పన. ఎంపికల్పన హేతుతో పద్ధతి నిర్ణయించండి?

Options:

1. ‘C’ is strongly adsorbed on the adsorbent
2. పద్ధతి నిర్ణయించాలంటే ‘C’ కాపాడు పద్ధతి నిర్ణయించండి
‘C’ is weakly adsorbed on the adsorbent

‘A’ is weakly adsorbed on the solvent

The order of elution does not depend on the extent of adsorption

The tendency of catenation in group-14 elements follows the order:

\[ C \gg Si > Ge > Sn \]

Options:

1. \[ C \gg Si > Ge > Sn \]

2. \[ C \gg Si > Ge \approx Sn \]

3. \[ Si > C > Sn > Ge \]

4. \[ Ge \approx Sn > Si > C \]
Which of the following statements is incorrect?

1) NaCl being an ionic compound is a good conductor of electricity in the solid state
2) In canonical structures there is no difference in the arrangement of atoms
3) Hybrid orbitals form stronger bonds than pure orbitals.
4) VSEPR Theory can explain the square planar geometry of XeF₄.

1) నాచల లేదు ఇన్సంగా అధికం ఉద్యోగము ఉంది నాచల ఇన్సంగా నిషేదానంతరం
2) సిద్ధం అనంతరం సంపన్నతా సంపన్నతా ఇద్దరు అధికం
3) విభాగాం నేర్సాగించిన విభాగాం నేర్సాగించిన విభాగాం నేర్సాగించిన
4) VSEPR ఇద్దరు XeF₄ లో నేర్సాగించిన విభాగాం నేర్సాగించిన

Options:
1. ✔
2. ❌
3. ❌
4. ❌
Choose the correct statement from the following:

1) Beryllium is not readily attacked by acids because of the presence of an oxide film on the surface of the metal

2) \(BeO\) is an amphoteric oxide

3) Beryllium exhibits coordination number more than four

4) Beryllium oxide is purely acidic in nature

1) బరిలియం ముద్ర కలిగిన ప్రాంతంలో ప్రత్యేకంగా సూక్ష్మిత ఉండేది

2) బరిలియం ముద్ర మీనపిండి(అధిక వ్యాపారం) ఉండేది

3) బరిలియం అయింది కాలం పరిశ్రమ చేత నివారణ చేసింది

4) బరిలియం ముద్ర ఉష్ణముద్ర అయితే నివారణ సాధనం ఉంది

**Options:**

1. ✔

2. ✗

3. ✗

4. ✔
Which of the following statements is NOT correct?

1) froth floatation is used for removing gangue from sulphide ore
2) cresols are used to stabilize the froth
3) sodium cyanide can be used as depressant for preferential separation
4) aniline can be used as froth enhancer

Which of the following is not an essential amino acid?

Options:
1. ❌
2. ❌
3. ❌
4. ✔️
Lysine
1. ✗

Histidine
2. ✗

Valine
3. ✗

Tyrosine
4. ✓

Question Number : 127 Question Id : 8135611247 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which halogen can be oxidized by concentrated nitric acid?

Which halogen can be oxidized by concentrated nitric acid?

Options :

Fluorine
1. ✗

Chlorine
2. ✗

Bromine
3. ✗

4. ✓
Question Number : 128 Question Id : 8135611248 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The oxidation state and covalency of Al in \([AlCl(H_2O)_5]^{2+}\) respectively are

\([AlCl(H_2O)_5]^{2+}\) के Al का उत्तराधिकारी और वास्तविकता क्या है?

Options :

1. ✔️ +3 & 6

2. ✗ +6 & 3

3. ✗ +1 & 2

4. ✗ −2 & 1

Question Number : 129 Question Id : 8135611249 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

For the reaction \(N_2O_4(g) \rightleftharpoons 2NO_2(g)\) if dinitrogen tetroxide is 50% dissociated at 60 °C, the standard free energy change at this temperature and 1 atm pressure is

\(N_2O_4(g) \rightleftharpoons 2NO_2(g)\) के जरिए दिनित्रेंजियन टीरोक्साइड जब इसका 50% विस्तार होता है, तब किस स्तर पर

मिलता है?

Options :
The Freundlich adsorption isotherm varies with temperature according to the figure given below. Choose the correct option accordingly.

Options:

1. $T_1 = 303 \, K$, $T_2 = 298 \, K$, $T_3 = 244 \, K$, $T_4 = 195 \, K$

2. $T_1 = 303 \, K$, $T_2 = 195 \, K$, $T_3 = 244 \, K$, $T_4 = 298 \, K$

3. $T_1 = 195 \, K$, $T_2 = 244 \, K$, $T_3 = 298 \, K$, $T_4 = 303 \, K$

4. $T_1 = 195 \, K$, $T_2 = 303 \, K$, $T_3 = 244 \, K$, $T_4 = 298 \, K$
The iso structural molecules among \(CO_2\), \(SiO_2\), \(SO_2\), \(TeO_2\), \([NO_2]^+\) are

\(CO_2\), \(SiO_2\), \(SO_2\), \(TeO_2\), \([NO_2]^+\) యొక్క సరిహద్దుగా ఉంటుంది అని చెబుతాయి?

Options:

1. \(\times\) \(CO_2\), \(SO_2\), \(TeO_2\)

2. \(\times\) \(CO_2\), \(SiO_2\), \([NO_2]^+\)

3. \(\checkmark\) \(CO_2\), \([NO_2]^+\)

4. \(\times\) \(SO_2\), \(TeO_2\)

Which of the following are isoelectronic species?

ఇవి ఎంత కొన్ని అంకమితి సంఖ్య ఉంటాయి?

Options:

1. \(\times\) \(O^{2-}\), \(F\), \(Na^+\), \(Mg^+\)

2. \(\times\) \(O\), \(F^-\), \(Na\), \(Mg\)

3. \(\checkmark\) \(O^{2-}\), \(F^-\), \(Na^+\), \(Mg^{2+}\)
4. \(O^{2-}, Cl^-, Na^+, Mg^{2+}\)

**Question Number : 133** Question Id : 8135611253 Question Type : MCQ Display Question
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation : Vertical

Which of the following solutions has the lowest freezing point?

Which of the following solutions has the lowest freezing point?

**Options :**

1. ✓ \(1\ M\ \text{Urea}\)

2. ✗ \(1\ M\ \text{Na}_2\text{SO}_4\)

3. ✗ \(1\ M\ \text{NaCl}\)

4. ✗ \(1\ M\ \text{Al}_2(\text{SO}_4)_3\)

**Question Number : 134** Question Id : 8135611254 Question Type : MCQ Display Question
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation : Vertical

Find the equivalent weight of \(\text{MnO}_4^-\) for acid medium reactions.

(atomic weight of \(\text{Mn} = 55\), atomic weight of \(\text{O} = 16\))

\(\text{MnO}_4^-\) యొక్క సదృష్టి విచిత్రం ? (ఆమేరలు \(\text{Mn} = 55\), \(\text{O} = 16\))

**Options :**

1. ✗ 118.93
For the reaction given below, which of the following is not a possible product?

\[ H_2C = CH_2 + aq. Br_2 \xrightarrow{NaCl} \text{Products} \]

Which of the following is not a possible product?

\[ H_2C = CH_2 + aq. Br_2 \xrightarrow{NaCl} \text{Products} \]

Options:

1. \( CH_2 - Br \)
2. \( CH_2 - Cl \)
3. \( CH_2 - OH \)
Question Number : 136 Question Id : 8135611256 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The highest temperature among the following is

_options:
1. \( \times \) 200 °F
2. \( \times \) 278 K
3. \( \checkmark \) 105 °C
4. \( \times \) 105 K

Question Number : 137 Question Id : 8135611257 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

DDT is ________

DDT ఉంచి ________

Options:

_DDT is_ an antibiotic

1. \( \times \) యుగ్మితనుత్సవం
Biodegradable pollutant

Non-Biodegradable pollutant

Nitrogen containing insecticide

---

Question Number : 138 Question Id : 8135611258 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Find the product in the reaction given below

\[ \text{CH}_2 - \text{OH} + \text{CH}_2 - \text{OH} \xrightarrow{\text{Polymerization}} ? \]

Options :

- Rayon
- Buna-S

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AP EAMCET 2020
Question Number : 139 Question Id : 8135611259 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Which of the following laws gives the relation between volume and temperature?

Options :

1. Boyle’s law

2. Charles’s law

3. Gay Lussac’s law

4. Avogadro’s law
The dipole-dipole interaction energy between polar molecules in the solid state will be proportional to \[ \frac{1}{r^6} \].

Options:

1. \( \frac{1}{r^6} \)

2. \( \frac{1}{r^3} \)

3. \( \frac{1}{r^2} \)

4. \( \frac{1}{r} \)

Question Number : 141 Question Id : 8135611261 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

What is the molecular geometry of \( H_3O^+ \)?

\( H_3O^+ \) లో వస్తువ ప్రధానం?

Options:

- Trigonal pyramid

1. ✔ త్రిమురి పారిపాలం

2. ✗
Square planar

Trigonal bipyramidal

3.

Trigonal planar

4.

Question Number : 142 Question Id : 8135611262 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The number of electrons that can be present in subshells having \( m_s \) value of \( \frac{-1}{2} \), for \( n \) up to 3

\[ n = 3 \text{ యంత్రం, } m_s = \frac{-1}{2} \text{ లో ఎంతో ప్రత్యేకం ఉంది?} \]

Options :

1. 18

2. 9

3. 14

4. 12

Question Number : 143 Question Id : 8135611263 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
According to the figure given, which of the following statements is incorrect?

Options:

1. The 2 bridged hydrogen atoms and 2 boron atoms lie in one plane.

2. Out of 6 B-H bonds two bonds can be described in terms of 3 center 2-electron bonds.

3. Out of 6 B-H bonds four bonds can be described in terms of 3 center 2-electron bonds.

4. The four terminal B-H bonds are 2 center 2 electron regular bonds.

Question Number : 144 Question Id : 813561264 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
The formula for calculating ‘spin only’ magnetic moment is.

\[ n(n + 2) \]

Options:
1. \( n(n + 2) \)
2. \( \sqrt{n(n-2)} \)
3. \( \sqrt{n(n+2)} \)
4. \( n(n - 2) \)

Question Number : 145 Question Id : 8135611265 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Choose the correct option regarding the following

**Assertion**: Actinides exhibit a larger number of oxidation states than lanthanides

**Reason**: There is a large energy gap between 5f, 6d and 7s subshells.

Options:
1. Assert and reason are correct, and reason is the correct explanation for the assertion
Assertion and reason are correct, and reason is not the correct explanation for the assertion

Assertion is correct, reason is wrong

 Assertion is wrong, reason is correct

Question Number : 146 Question Id : 8135611266 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

For the reaction $A \rightarrow \text{products}$, if the graph of $[A]$ v/s time gives a straight line, predict the order of the reaction.

$A \rightarrow \text{products}$ : दही दही [A] इम्यून रसायन ती कितना अधिक नहीं दे गुआ कीमत.

हां, ये दही दही, दही दही दही दही दही?

Options :

1. Pseudo first order

2. First order

3. Second order

4. ✓
Zero order
శోభా ఎంచుక వచ్చు

Question Number : 147 Question Id : 8135611267 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
In order to increase the volume of a gas by 10% at constant temperature the pressure of the gas should be ________
ఎంచుక వచ్చు నూతన రాశిపనం మేరకు 10% ప్రధానం నీటి ప్రభావం ________

Options:
1. ✗ Increased by 10%
2. ✗ 10 % వధారి
3. ✗ Increased by 1%
4. ✗ 1 % వధారి
5. ✗ Decreased by 1 %
6. ✗ 1 % కుదరి
7. ✗ Decreased by 10%
8. ✗ 10 % కుదరి

Question Number : 148 Question Id : 8135611268 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Which of the following species has tetrahedral geometry?

1. $BH_4^-$
2. $NH_2^-$
3. $CO_3^{2-}$
4. $H_3O^+$

In the preparation of a 1°-amine from an alkyl halide, with simultaneous addition of one $CH_2$ group to the carbon chain, the reagent used as source of nitrogen is

1. $NaNH_2$
2. $NaN_3$

Options:

Sodium amide, $NaNH_2$

Sodium azide, $NaN_3$
4. Potassium cyanide, $KCN$

Potassium phthalimide, $C_6H_4(CO)_2N^– K^+$

Question Number : 150 Question Id : 8135611270 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Weak acids are partially ionized in aqueous solutions. The ionization constants of some acids are given below. Arrange these acids in increasing order of their acid strength

<table>
<thead>
<tr>
<th>Index</th>
<th>Acid</th>
<th>Ionisation constant ($K_a$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Formic acid ($HCOOH$)</td>
<td>$1.8 \times 10^{-4}$</td>
</tr>
<tr>
<td>2</td>
<td>Hypochlorous acid ($HClO$)</td>
<td>$3.0 \times 10^{-8}$</td>
</tr>
<tr>
<td>3</td>
<td>Nitrous acid ($HNO_2$)</td>
<td>$4.5 \times 10^{-4}$</td>
</tr>
<tr>
<td>4</td>
<td>Hydrocyanic acid ($HCN$)</td>
<td>$4.9 \times 10^{-10}$</td>
</tr>
</tbody>
</table>

Options:
1. ✔   4 < 2 < 1 < 3

2. ✗   1 < 2 < 3 < 4

3. ✗   2 < 3 < 1 < 4

4. ✗   4 < 3 < 2 < 1

Question Number : 151 Question Id : 8135611271 Question Type : MCQ Display Question
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation : Vertical
Which among the following is a unitless physical quantity?

ఒకచాలా నిశాచరం వైపు ఎలాంటి తెలుసు?

Options :
1. ✗ మాలాలిటీ

2. ✗ మాలరిటీ

3. ✔ మొలరు సంఖ్య

4. ✗ నారాలీ
The correct order of acidic character of group-16 hydrides is

Options :
1. $H_2O < H_2S < H_2Se < H_2Te$

2. $H_2O > H_2S > H_2Se > H_2Te$

3. $H_2O < H_2S > H_2Se > H_2Te$

4. $H_2O < H_2S < H_2Se > H_2Te$
Which of the following statements is true?

1) The two axial $P – Cl$ bonds in $PCl_5$ are longer than the three equatorial bonds
2) The axial bonds in $PCl_5$ are stronger than equatorial bonds
3) The axial bonds in $PCl_5$ are more stable than equatorial bonds
4) All five bonds in $PCl_5$ molecule are equivalent

Which of the following statements is true?

1) The two axial $P – Cl$ bonds in $PCl_5$ are longer than the three equatorial bonds
2) $PCl_5$ has two axial bonds, and $Cl$ is the axial bond
3) $PCl_5$ has two equatorial bonds, and $Cl$ is the axial bond
4) $PCl_5$ has two axial bonds, and $Cl$ is the equatorial bond

Options:

1. ✓
2. ×
3. ×
4. ×

Steam distillation process cannot be used for purifying which of the following?

Options:
Aniline
1. ✗

p-nitrophenol
2. ✔ p-నిటోఫెనొల్

Toluene
3. ✗

Nitrobenzene
4. ✗

Question Number : 155 Question Id : 8135611275 Question Type : MCQ Display Question
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation : Vertical

The correct order comparing the acid strengths of HF, HCl, HBr and HI ?

HF, HCl, HBr, HI యొక్క అస్సరి పరిమాణాల వైపు ఎవరు మారవుతుంది ?

Options :
1. ✗ HF >> HCl >> HBr >> HI

2. ✔ HF << HCl << HBr << HI

3. ✗ HF > HCl >> HBr >> HI

4. ✗ HF << HCl >> HBr >> HI
The largest element among O, Se, S, Te is

O, Se, S, Te ఎందుకు ఎదురువ ఉండగానే రావాలి?

Options:
1. ✗ S
2. ✗ Se
3. ✗ O
4. ✓ Te

Question Number : 157 Question Id : 8135611277 Question Type : MCQ Display Question

Calculate the amount of NO₂ required for producing 4 g moles of HNO₃ as per the chemical reaction 3NO₂ + H₂O → 2HNO₃ + NO. Given, The gram molecular weights of di-nitrogen and di-oxygen gases are 28 g and 32 g respectively.

3NO₂ + H₂O → 2HNO₃ + NO ఎందరుకు ఎందుకు ఎదురువ ఉండగానే? 4 గ్రామాల పక్కి HNO₃

షెట్టలో ఎండుకు NO₂ ఎండుకు? ఎండుకు: ఎండుకు ఎండుకు ఎండుకు ఎండుకు ఎండుకు ఎండుకు ఎండుకు ఎండుకు ఎండుకు

Options:
1. ✓ 276 g
2. ✗ 274 g
Question Number : 158 Question Id : 8135611278 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Both ethanal and propanone will react with which of the following?

Options:

1. Tollens reagent
2. Schiff reagent
3. Fehling reagent
4. Grignard reagent

Question Number : 159 Question Id : 8135611279 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Lemon and orange juices contain ______ and ______ acids respectively.

విశ్రాంతం నేటి ప్రతి పంటాలు ______ నేటి ______ అల్కోలిక రోమాంచం చేస్తాయి.

Options:

1. Tartaric, Oxalic  
   హర్సరిక, హోసారిక

2. Citric, Citric  
   సితరిక, సితరిక

3. Oxalic, Ascorbic  
   హోసారిక, మోరిక

4. Ascorbic, Oxalic  
   మోరిక, హోసారిక

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Calculate the energy associated with the second orbit of Li⁺ and find its radius?

\[ \text{Li}^+ \text{ ఒక రంగు సంపాదం పై ఉండి ఏ రంగు రిండు సాధనం?} \]

Options:

1. \( 4.905 \times 10^{-19} \text{ J} \), \( 0.0705 \text{ nm} \)

2. \( 4.905 \times 10^{-20} \text{ J} \), \( 0.0705 \text{ Å} \)

3. \( 4.905 \times 10^{-17} \text{ J} \), \( 0.0705 \text{ Å} \)
4. $4.905 \times 10^{-18} \text{ J. } 0.0705 \text{ nm}$