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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AP EAMCET 2020
Mathematics

Section Id : 81356119
Section Number : 1
Mandatory or Optional : Mandatory
Number of Questions : 80
Number of Questions to be attempted : 80
Section Marks : 80
Display Number Panel : Yes
Group All Questions : Yes
Mark As Answered Required? : Yes

Question Number : 1 Question Id : 813561961 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If \( \binom{n}{7} = \binom{n}{6} \), then \( \binom{n}{2} = \) \( \binom{n}{7} = \binom{n}{6} \) करू, \( \binom{n}{2} \) करू

Options :
1. ☒ 858
2. ☐ 13
3. ☐ 1
4. ☑ 78
Question Number : 2 Question Id : 813561962 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
If the line \( y = 2x + k \) is normal to the parabola \( y^2 = 4x \), then \( k = \)

\[
y = 2x + k \quad \text{and} \quad y^2 = 4x \quad \text{are tangents at} \quad (x_0, y_0), \quad k =
\]

Options :
1. \( \times -10 \)
2. \( \times 10 \)
3. \( \times 12 \)
4. \( \checkmark -12 \)

Question Number : 3 Question Id : 813561963 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Solve the differential equation given below

\[
\frac{x \, dy}{dx} = y + \sqrt{x^2 + y^2}
\]

Options :
1. \( \checkmark x^2 = c\left[y + \sqrt{y^2 + x^2}\right] \)
2. \( \times y^2 = c\left[x + \sqrt{y^2 - x^2}\right] \)
3. \( \times \)
\[ y^2 = c\left[ x + \tan^{-1}\left(\sqrt{1 + y^2}\right) \right] \]

4. \[ y^2 = c\left[ x - \sqrt{y^2 + x^2} \right] \]

Question Number: 4 Question Id: 813561964 Question Type: MCQ Display Question Number: Yes Is Question Mandatory: No Single Line Question Option: No Option Orientation: Vertical

\[ \frac{\pi}{2} \int_0^1 \frac{1}{1 + \tan^{2020}(x)} \, dx = \]

Options:
1. \[ \pi \]
2. \[ \frac{\pi}{2} \]
3. \[ \frac{\pi}{4} \]
4. \[ 0 \]

Question Number: 5 Question Id: 813561965 Question Type: MCQ Display Question Number: Yes Is Question Mandatory: No Single Line Question Option: No Option Orientation: Vertical
Equation of the plane passing through the intersection of the lines \( \frac{x-1}{1} = \frac{y-2}{2} = \frac{z-5}{-3} \) and \( \frac{x+5}{3} = \frac{y-4}{-1} = \frac{z+3}{4} \) and parallel to the xy-plane is

\[
\frac{x-1}{1} = \frac{y-2}{2} = \frac{z-5}{-3} = \frac{x+5}{3} = \frac{y-4}{-1} = \frac{z+3}{4}
\]

xy-စୁကୀ අ[$_x$] PG-Plane යුගල චබා තොරා තොරා යුගල

Options :

1. \( z = 4 \)
2. \( z = 2 \)
3. \( z = 5 \)
4. \( z = -5 \)

---

Given that a throw of three unbiased dice shows different faces, what is the probability that their total is eight?

6. \( 1 \) 
5. \( 10 \)
4. \( 23 \) 
3. \( 256 \)
Question Number : 7 Question Id : 813561967 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The vertices of the hyperbola $7x^2 - 49y^2 = 343$ having eccentricity $4/3$ is

$7x^2 - 49y^2 = 343 \Rightarrow \text{Vertices of the hyperbola having eccentricity } 4/3$ is

Options :
1. $\boxed{(0, 0)}$
2. $\boxed{(\pm 3, 0)}$
3. $\boxed{(0, \pm 5)}$
4. $\boxed{(\pm 7, 0)}$

Question Number : 8 Question Id : 813561968 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If $\omega$ is a complex cube root of unity, then $\sin\left((\omega^{10} + \omega^{23})\pi - \frac{\pi}{4}\right) =

$\omega$ యొక్క కంప్లెక్స్ స్వరూపానికి $\omega$ భాగం, $\sin\left((\omega^{10} + \omega^{23})\pi - \frac{\pi}{4}\right)$ మీద దిగుమతి లేదా?

Options :
1. $\frac{1}{\sqrt{2}}$

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

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

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

Question Number : 9 Question Id : 813561969 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If $\theta = \cot^{-1}(7) + \cot^{-1}(8) + \cot^{-1}(18)$, then $\cot \theta$ is equal to

$\theta = \cot^{-1}(7) + \cot^{-1}(8) + \cot^{-1}(18)$ \Rightarrow \cot \theta =

Options :
1. $2$

2. $3$

3. $4$

4. $1$

Question Number : 10 Question Id : 813561970 Question Type : MCQ Display Question
Five different books are to be distributed among four students randomly. The probability that each child get at least one book is

\[ \frac{1}{4} \] 

Options:

1. \( \frac{21}{64} \)
2. \( \frac{15}{64} \)
3. \( \frac{31}{64} \)
4. \( \frac{51}{64} \)

If the equation \( 4x^2 + hxy + y^2 = 0 \) represent coincident lines, then ‘\( h \)’ is equal to

\[ 4x^2 + hxy + y^2 = 0 \] 

Options:

1. \( 1 \)
2. \( 2 \)
Question Number : 12 Question Id : 813561972 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If \( y = \frac{e^x \log x}{x^2} \), then \( \frac{dy}{dx} = \)

\[ y = \frac{e^x \log x}{x^2} \]

Options:

1. \( \frac{e^x (1 + (x+2) \log x)}{x^3} \)

2. \( \frac{e^x (1 - (x-2) \log x)}{x^4} \)

3. \( \frac{e^x (1 - (x-2) \log x)}{x^3} \)

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

Question Number : 13 Question Id : 813561973 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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The standard deviation and mean of five observations are 0 and 9 respectively. If one of the observations is changed such that the mean of the new set of five observations becomes 10, then their standard deviation is ________

Options:
1. 
2. 
3. 
4. 

Which of the following is true about \( f(x) = 3 \sinh(x) - 2 \cosh(x) \), \( \forall x \in \mathbb{R} \)?

Options:
1. \( f \) is an odd function
2. \( f \) is a periodic function
3. 

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4. \( f \) is a strictly increasing function on \( R \)
\( \mathbb{R} \to f \) రేఖీయంగా విస్తరించబడింది

\[ f \text{ is a strictly decreasing function on } \mathbb{R} \]
\( \mathbb{R} \to f \) రేఖీయంగా వినిపోయి విస్తరించబడింది

**Question Number : 15** Question Id : 813561975 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If 2 is the length of a side of a triangle with its opposite angle \( \pi/3 \), then the circumradius of the triangle is ______

ఒడ్డని త్రిభూమి రెండు కోణాలకు ప్రతిపడిన ఒడ్డక 2 తో, అక్రమం నిషేధంగా ఉండడంతో మధ్యసేఖరం, ఆ త్రిభూమి మధ్యసేఖరం రెండు అంధకారము = ______

**Options :**

1. \[ \frac{2}{\sqrt{3}} \]

2. \[ \frac{4}{\sqrt{3}} \]

3. \[ 2 \]

4. \[ 4 \]

**Question Number : 16** Question Id : 813561976 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
If the equation $ax^2 + 2hxy + by^2 + 2gx + 2fy + c = 0$ represents two straight lines equidistant from the origin, then $f^4 - g^4 =$

$ax^2 + 2hxy + by^2 + 2gx + 2fy + c = 0$ నిమ్మాయి మరియు మూలం నిలువు చేయడానికి సాధనాలు చాలా, $f^4 - g^4 =$

Options :
1. $bf^2 - ag^2$
2. $ag^2 - bf^2$
3. $c(bf^2 - ag^2)$
4. $c(af^2 - bg^2)$

Question Number : 17 Question Id : 813561977 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If $P$ divides the line segment joining the points $A$ and $B$ in the ratio 2 : 1 and the position vectors of $A$ and $B$ are $\hat{i} - 2\hat{j}$ and $-3\hat{i} + 5\hat{j}$ respectively, then the position vector of $P$ is

$A, B$ నీటి నుండి పండుగ భాగం కోసం $\hat{i} - 2\hat{j}$ మరియు $-3\hat{i} + 5\hat{j}$ నిమ్మాయి $A, B$ పై భాగం నిలువు

మూలం $P$ నీటి 2 : 1 నిమ్మాయి వింతి నిలువు, $P$ నీటి పండుగ భాగం

Options :
1. $\frac{5\hat{i} - 8\hat{j}}{3}$
2. $\frac{-5\hat{i} + 8\hat{j}}{3}$
If \( \vec{a} \) and \( \vec{b} \) are two unit vectors and \( \theta \) is the angle between them, then the unit vector along the angular bisector of \( \vec{a} \) and \( \vec{b} \) is given by ______

\[ \frac{\vec{a} + \vec{b}}{2 \sin(\theta/2)} \]

1. 

\[ \frac{\vec{a} + \vec{b}}{2 \cos(\theta/2)} \]

2. ✓

\[ \frac{\vec{a} - \vec{b}}{2 \cos(\theta/2)} \]

3. ×

\[ \frac{\vec{a} + \vec{b}}{\cos(\theta/2)} \]

4. ×
Question Number : 19 Question Id : 813561979 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A point \( P(-3, -2) \) is such that the sum of squares of its distances from the co-ordinate axes is equal to the square of its distance from the line \( x - y = 1 \). Then the equation of the locus of \( P \) is

\[\begin{align*}
\text{Options :} \\
1. & \quad x^2 + y^2 - 2xy - 2x - 2y - 1 = 0 \\
2. & \quad x^2 + y^2 + 2xy + 2x + 2y + 1 = 0 \\
3. & \quad x^2 + y^2 + 2xy + 2x - 2y - 1 = 0 \\
4. & \quad x^2 + y^2 - 2xy + 2x - 2y + 1 = 0
\end{align*}\]

Question Number : 20 Question Id : 813561980 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The equation of the normal to the curve \( y = \sin x \) at the point \((0, 0)\) is

\[\begin{align*}
\text{Options :} \\
1. & \quad x = 0 \\
2. & \quad y = 0
\end{align*}\]
3. $x + y = 0$

4. $x - y = 0$

Question Number : 21 Question Id : 813561981 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Displacement ‘$s$’ of a particle, in meters, at any time ‘$t$’ seconds is expressed as $s = \frac{t^3}{3} - 6t$.

Find the acceleration at a time when the velocity vanishes.

Options :

1. $6 \text{ m.s}^{-2}$

2. $2\sqrt{6} \text{ m.s}^{-2}$

3. $12 \text{ m.s}^{-2}$

4. $6\sqrt{6} \text{ m.s}^{-2}$

Question Number : 22 Question Id : 813561982 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
The length of the tangent drawn from the mid-point of the line joining the origin and the point \((4, -4)\), to the circle \(2x^2 + 2y^2 - y = 0\) is _____ units.

Options:
1. \(3\sqrt{2}\)
2. \(\sqrt{2}\)
3. \(\sqrt{10}\)
4. \(3\)

Question Number: 23 Question Id: 813561983 Question Type: MCQ Display Question
Number: Yes Is Question Mandatory: No Single Line Question Option: No Option
Orientation: Vertical

The number of the values of ‘\(k\)’ for which the lines \(2x + y = 1, 3x + 2y = 2, kx + 3y = 3\) are concurrent is _____.

\(2x + y = 1, 3x + 2y = 2, kx + 3y = 3\) కుంభికాల కనూనులు కలిగి ఉంటాయి మరియు ‘\(k\)’

Options:
1. \(0\)
2. \(\text{Infinite}\)
3. \(1\)
Question Number : 24  
Question Id : 813561984  
Question Type : MCQ  
Display Question Number : Yes  
Is Question Mandatory : No  
Single Line Question Option : No Option  
Orientation : Vertical

For equality of functions $f$ and $g$ ______________

(i) domain of $f$ = domain of $g$
(ii) $f(x) = g(x)$
(iii) $x \in$ domain of $f$

$f$ మరొక గురించి సమాధానించండి ______________

(i) $f$ గుణానం = $g$ గుణానం
(ii) $f(x) = g(x)$
(iii) $x$ మరొక $f$ గుణానం

Options:

1. only (i) and (ii) are necessary

2. only (ii) and (iii) are necessary

3. only (i) and (iii) are necessary

4. All (i), (ii) and (iii) are necessary
Question Number: 25  Question Type: MCQ  Display Question Number: Yes  Is Question Mandatory: No  Single Line Question Option: No  Orientation: Vertical

\[ \int (1 + e^{-x})^{-1} \, dx = \]

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

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

How many multiples of 5 are there from 10 to 95 including both 10 and 95?

10 ನ್ನು 95 ನ್ನು ಇತ್ತೀಚಿನ ಕೆಲಸು, ಇದು ಎಷ್ಟು 5 ವಾಯುಗಳು ಉಂಟವೆ?  

Options:
1. 17
2. 18
3. 16
4. 19
Question Number : 27 Question Id : 813561987 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The radius of a circle is increasing at a rate of $0.1 \text{ cm. s}^{-1}$. Then the rate of change of area, when its radius is $5 \text{ cm}$, is ______

$0.1 \text{ cm. s}^{-1}$ చక్ర వ్యాసానికి విస్తారం ఉండే రేటు, వాసూలు కంటే వాసూలు రేటు, వాసూలు 5 cm వ్యాసానికి, తెలిసిన వైస్తారం ఎంతం?

Options :

1. $\pi^2 \text{ cm}^2\text{. s}^{-1}$
2. $\pi \text{ cm}^2\text{. s}^{-1}$
3. $2\pi \text{ cm}^2\text{. s}^{-1}$
4. $\frac{\pi}{2} \text{ cm}^2\text{. s}^{-1}$

Question Number : 28 Question Id : 813561988 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If $\tan(x/2) = \frac{m}{n}$, then the value of $m \sin(x) + n \cos(x)$ is equal to

$\tan(x/2) = \frac{m}{n}$ అని, $m \sin(x) + n \cos(x)$ కొలువు ఎంతం?

Options :

1. $m$
2. $-m$

3. $-n$

4. $n$

**Question Number : 29 Question Id : 813561989 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Find the angle between the planes $x + 2y + 2z - 5 = 0$ and $3x + 3y + 2z - 8 = 0$.

\[
x + 2y + 2z - 5 = 0 \quad \text{and} \quad 3x + 3y + 2z - 8 = 0
\]

**Options :**

1. $\cos^{-1}\left(\frac{3}{\sqrt{22}}\right)$

2. $\cos^{-1}\left(\frac{13}{3\sqrt{22}}\right)$

3. $\cos^{-1}\left(\frac{1}{3\sqrt{22}}\right)$

4. $\cos^{-1}\left(\frac{13}{31}\right)$
Let \( f: \mathbb{N} \times \mathbb{N} \rightarrow \mathbb{N} \) be a function such that \( f((1,1)) = 2 \) and \( f((m + 1, n)) = f((m, n)) + 2(m + n) \) and \( f((m, n + 1)) = f((m, n)) + 2(m + n - 1) \), \( \forall m, n \in \mathbb{N} \), then find \( f(2, 2) \).

\[ f: \mathbb{N} \times \mathbb{N} \rightarrow \mathbb{N} \text{ such that } f((1,1)) = 2. \]

\[ f((m + 1, n)) = f((m, n)) + 2(m + n) \]

\[ f((m, n + 1)) = f((m, n)) + 2(m + n - 1) \], \( \forall m, n \in \mathbb{N} \).

\( f(2, 2) \) is:

Options:
1. 8
2. 7
3. 9
4. 10

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**Question Number : 31 Question Id : 813561991 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

If “2i” is a root of \( f(z) = z^4 + z^3 + 2z^2 + 4z - 8 = 0 \), then which among the following cannot be a root of \( f(z) = 0 \) ?

\[ f(z) = z^4 + z^3 + 2z^2 + 4z - 8 \] is \( f(z) = 0 \) if “2i” is a root of \( f(z) = 0 \).

\( \text{Hence, } f(z) = 0 \) cannot be root.

Options:
1. \( -2i \)
2. \( 1 \)
3. \( -2 \)
Question Number : 32 Question Id : 813561992 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Find the number of ways of arranging 6 red balls and 6 black balls in a row such that no two black balls are together.

Options:
1. 6! × 6!
2. 7! × 6!
3. 2 × 6! × 6!
4. 7 × 6! × 6!

Question Number : 33 Question Id : 813561993 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
In $\Delta PQR$, find $\sum(q + r) \cos P$, if $p, q, r$ denote its sides and $s = \frac{(p+q+r)}{2}$

$\Delta PQR$ చతుర్భుజం పోందే పొడుగులు పునరుభావనగా సదృశమైనా $s = \frac{(p+q+r)}{2}$ అయితే,

$\sum(q + r) \cos P =$

Options:
1. $s$
2. $\frac{s}{2}$
3. $2s$
4. $4s$

Question Number : 34 Question Id : 813561994 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

If $\alpha, \beta$ are the roots of $x^2 + px + q = 0$, then the values of $\alpha^3 + \beta^3$ and $\alpha^4 + \alpha^2\beta^2 + \beta^4$ are respectively _______ & _______

$\alpha, \beta$ ఒకే సమాధానం హేతుకు ఒక నుండి ప్రవచించాం, కానీ $\alpha^3 + \beta^3$ నాటికి $\alpha^4 + \alpha^2\beta^2 + \beta^4$ నుండి _______ & _______

Options:
1. $(3pq - p^3)$ & $(p^4 - 3p^2q + 3q^2)$
2. $-p(3q - p^2)$ & $(p^2 - q)(p^2 + 3q)$
3. 

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(pq - 4) \& (p^4 - q^4)

4. \checkmark (3pq - p^3) \& (p^2 - q)(p^2 - 3q)

Question Number : 35 Question Id : 813561995 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If \( \frac{x}{\cos \alpha} = \frac{y}{\cos (\frac{2\pi}{3} - \alpha)} = \frac{z}{\cos (\frac{2\pi}{3} + \alpha)} \) then the value of \((x + y + z)\) is equal to

\( \frac{x}{\cos \alpha} = \frac{y}{\cos (\frac{2\pi}{3} - \alpha)} = \frac{z}{\cos (\frac{2\pi}{3} + \alpha)} \) యొక్క \((x + y + z)\) మీదుగా ఎంత?

Options :
1. \( \frac{1}{2} \)
2. \( 0 \)
3. \( 1 \)
4. \( 2 \)

Question Number : 36 Question Id : 813561996 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The number of solutions for the equation \( x^2 - 5|x| + 6 = 0 \) is ________

\( x^2 - 5|x| + 6 = 0 \) సంఖ్య ఎంత \(0\) కోసం ఎంత సాధనాలు ఉంటాయి ________

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Options:

1. ✓ 4

2. ✗ 3

3. ✗ 2

4. ✗ 1

Question Number: 37
Question Id: 813561997
Question Type: MCQ
Display Question Number: Yes
Is Question Mandatory: No
Single Line Question Option: No
Orientation: Vertical

\[ \int_{-\pi/2}^{\pi/2} (2 \sin|x| + \cos|x|) \, dx = \]

Options:

1. ✗ 3

2. ✓ 6

3. ✗ 8

4. ✗ 2

Question Number: 38
Question Id: 813561998
Question Type: MCQ
Display Question Number: Yes
Is Question Mandatory: No
Single Line Question Option: No
Orientation: Vertical
\[
\int_0^{2\pi} \frac{x \cos(x)}{1 + \cos(x)} \, dx =
\]

Options:

1. \[\frac{\pi}{6}\]

2. \[\pi^2\]

3. \[\frac{\pi}{4}\]

4. \[2\pi^2\]

Question Number : 39 Question Id : 813561999 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

If \(\cos^{-1}\left(\frac{x^2 - y^2}{x^2 + y^2}\right) = \sin^{-1}(a)\) then \(\frac{dy}{dx}\) is equal to

\[\cos^{-1}\left(\frac{x^2 - y^2}{x^2 + y^2}\right) = \sin^{-1}(a) \implies \frac{dy}{dx} = \]

Options:

1. \[y/x\]

2. \[-y/x\]

3. \[x/y\]

4. \[-x/y\]
Question Number : 40 Question Id : 8135611000 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If the circles \( x^2 + y^2 - 2x - 2y - 7 = 0 \) and \( x^2 + y^2 + 4x + 2y + k = 0 \) cut orthogonally, then the length of their common chord is ______ units

\[
x^2 + y^2 - 2x - 2y - 7 = 0 \quad \text{and} \quad x^2 + y^2 + 4x + 2y + k = 0
\]

Options :

1. \( \sqrt{2} \)

2. \( \sqrt{5} \)

3. \( \frac{6}{\sqrt{13}} \)

4. \( \frac{12}{\sqrt{13}} \)

Question Number : 41 Question Id : 8135611001 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The number of possible straight lines passing through the point (2, 3), while forming a triangle with coordinate axes enclosing an area 12 sq. units is

\((2, 3) \) తో పొడవు వంటి రేఖలు ప్రత్యేకించింది 12 వరుస యూనిట్ వైపు మాత్రము ఈ

Options :
Question Number : 42 Question Id : 8135611002 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 \( x^4 + 3x^3 - 6x^2 + 2x - 4 = 0 \), then find the equation

having roots \( \frac{1}{\alpha}, \frac{1}{\beta}, \frac{1}{\gamma} \)

\[ \alpha, \beta, \gamma \text{ of } x^4 + 3x^3 - 6x^2 + 2x - 4 = 0 \text{ give roots } \frac{1}{\alpha}, \frac{1}{\beta}, \frac{1}{\gamma} \]

Options :

1. \( 4x^4 - 2x^3 + 6x^2 - 3x - 1 = 0 \)

2. \( 4x^4 + 2x^3 - 6x^2 + 3x + 1 = 0 \)

3. \( 4x^4 - 2x^3 + 6x^2 - 3x + 1 = 0 \)

4. \( 4x^4 - 2x^3 + 6x^2 + 3x - 1 = 0 \)
If the letters of the word “ASSASSINATION” are arranged at random in a row, then the probability that no two A’s come together is equal to

\[ \frac{25}{26} \]

1. \( \times \)

\[ \frac{23}{26} \]

2. \( \times \)

\[ \frac{15}{26} \]

3. \( \checkmark \)

\[ \frac{17}{26} \]

4. \( \times \)

In \( \triangle ABC \), if \( a, b, c \) are its sides and \( \angle C = 60^\circ \), find the value of \( \frac{a}{b+c} + \frac{b}{c+a} \)

\[ \frac{a}{b+c} + \frac{b}{c+a} = \ coastal \]

Options:

1. \( \checkmark \)

1
Question Number : 45 Question Id : 8135611005 Question Type : MCQ Display Question
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation : Vertical

The equation of the plane mid-parallel to the planes \(2x - 3y + 6z + 21 = 0\) and \(2x - 3y + 6z - 14 = 0\) is given by \(\text{________}\).

\[
2x - 3y + 6z + 21 = 0 \text{ mid-parallel } 2x - 3y + 6z - 14 = 0 \text{ yields the equation } \text{________}.
\]

Options:

1. \(4x + 6y - 12z + 7 = 0\)
2. \(4x - 6y - 12z - 7 = 0\)
3. \(4x - 6y + 12z + 7 = 0\)
4. \(4x + 6y + 12z - 7 = 0\)

---

Question Number : 46 Question Id : 8135611006 Question Type : MCQ Display Question
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

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\[ \int_{0}^{1} (1 + x) \log(1 + x) \, dx = \]

**Options:**

1. \(-\frac{3}{4} + \log 2\)

2. \(\frac{3}{4} + 2 \log 2\)

3. \(2 \log 2\)

4. \(-\frac{3}{4} + 2 \log 2\)

---

**Question Number : 47 Question Id : 8135611007 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

Orientation : Vertical

The acute angle between the lines \(x - y = 0\), and \(y = 0\) is

\[ x - y = 0 \text{ and } y = 0 \]  

Options :

1. \(-\frac{\pi}{6}\)

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

---

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Question Number : 48 Question Id : 8135611008 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

For the circle \( x^2 + y^2 - 9 = 0 \), find the equation of the chord having \((1, 2)\) as its mid-point.

\( x^2 + y^2 - 9 = 0 \) \( \text{మసాధానం} \) \((1, 2)\) యొక్క పెట్టింద దిశలో ఎండ సందర్శించండి

Options :
1. \( x + 2y + 5 = 0 \)
2. \( x - 3y - 5 = 0 \)
3. \( x - 3y + 5 = 0 \)
4. \( x + 2y - 5 = 0 \)

Question Number : 49 Question Id : 8135611009 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The point of intersection of lines denoted by \( 3x^2 - 11xy + 10y^2 - 7x + 13y + 4 = 0 \) is

\( 3x^2 - 11xy + 10y^2 - 7x + 13y + 4 = 0 \) \( \text{మాధ్యమానం} \) లేదు నిర్ధారించండి

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

Question Number : 50 Question Id : 8135611010 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If \( \vec{a}, \vec{b}, \vec{c} \) are coterminous edges of a parallelepiped such that
\[
\begin{vmatrix}
\vec{a}.\vec{a} & \vec{a}.\vec{b} & \vec{a}.\vec{c} \\
\vec{b}.\vec{a} & \vec{b}.\vec{b} & \vec{b}.\vec{c} \\
\vec{c}.\vec{a} & \vec{c}.\vec{b} & \vec{c}.\vec{c}
\end{vmatrix} = 16
\]
then find the volume of the parallelepiped.

\[
\begin{vmatrix}
\vec{a}.\vec{a} & \vec{a}.\vec{b} & \vec{a}.\vec{c} \\
\vec{b}.\vec{a} & \vec{b}.\vec{b} & \vec{b}.\vec{c} \\
\vec{c}.\vec{a} & \vec{c}.\vec{b} & \vec{c}.\vec{c}
\end{vmatrix} = 16 \text{ means, } \vec{a}, \vec{b}, \vec{c} \text{ are coterminous edges of a parallelepiped.}
\]

Options :
1. \( \times \) 32
2. \( \times \) 16
3. \( \times \) 4
4. \( \checkmark \) 8
Question Number : 51 Question Id : 8135611011 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The number of values of ‘c’ for which the line $y = 4x + c$ touches the ellipse $\frac{x^2}{4} + \frac{y^2}{1} = 1$ is

$$\frac{x^2}{4} + \frac{y^2}{1} = 1 \quad \text{and} \quad y = 4x + c$$

Hence, the number of values of ‘c’ is ______

Options :
1. 0
2. 1
3. 2
4. Infinite

Question Number : 52 Question Id : 8135611012 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The area of the quadrilateral formed by the tangents from the point (4, 5) to the circle $x^2 + y^2 - 4x - 2y - 11 = 0$, with a pair of radii joining the points of contact of these tangents is

$$x^2 + y^2 - 4x - 2y - 11 = 0$$

Hence, the area of the quadrilateral is ______

Options :
1. 4
2. 6
3. 8
4. 10

Question Number : 53 Question Id : 8135611013 Question Type : MCQ Display Question
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation : Vertical
Calculate variance if $\sum x_i^2 = 18000$ and $\sum x_i = 960$, for 60 observations.

$60 \times \bar{x} = \frac{\sum x_i}{60} = \frac{960}{60} = 16$

Options :
1. 44
2. 22
3. 32
4. 6.63

Question Number : 54 Question Id : 8135611014 Question Type : MCQ Display Question
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation : Vertical
If \( A = \begin{bmatrix} 1 & 1 & 2 \\ 1 & 1 & 1 \\ -1 & 1 & 1 \end{bmatrix}, \ B = \begin{bmatrix} 1 & 1 & 3 \\ 0 & 1 & 3 \\ 3 & 0 & 4 \end{bmatrix}, \ C = \begin{bmatrix} 2 & 0 & 1 \\ 0 & 1 & 0 \\ 3 & 2 & 1 \end{bmatrix} \) then \( (((ABC)^{-1})^T)^{-1})^T = \)

\( A = \begin{bmatrix} 1 & 2 & 3 \\ 1 & 1 & 1 \\ -1 & -1 & 1 \end{bmatrix}, \ B = \begin{bmatrix} 1 & 0 & 0 \\ 1 & 1 & 3 \\ 0 & 1 & 0 \end{bmatrix}, \ C = \begin{bmatrix} 2 & 1 \\ 0 & 1 \\ 3 & 2 \end{bmatrix} \)  

Options:

1. \( \begin{bmatrix} 64 & 39 & 28 \\ 29 & 16 & 11 \\ 11 & 2 & 5 \end{bmatrix} \)

2. \( \begin{bmatrix} 63 & 39 & 20 \\ 29 & 16 & 11 \\ 10 & 2 & 5 \end{bmatrix} \)

3. \( \begin{bmatrix} 64 & 39 & 27 \\ 28 & 15 & 11 \\ 11 & 2 & 5 \end{bmatrix} \)

4. \( \begin{bmatrix} 61 & 39 & 28 \\ 29 & 16 & 11 \\ 11 & 0 & 5 \end{bmatrix} \)

The points \( (5, -4, 5), (-3, -3, 2) \) and \( (-1, -6, 8) \) form ______

\( (5, -4, 5), (-3, -3, 2) \) మరియు \( (-1, -6, 8) \) ప్రదత్తి పెట్టడం ప్రమాణం ఉండాలి ______
an isosceles triangle

1. ☑

an equilateral triangle
2. ❌

a right-angled isosceles triangle
3. ❌

a right-angled triangle
4. ❌

Question Number : 56

Question Id : 8135611016

Question Type : MCQ

Display Question Number : Yes

Is Question Mandatory : No

Single Line Question Option : No

Orientation : Vertical

Options :

1. ☑

\[
\frac{f}{a} + \frac{g}{b} + \frac{h}{c} = 0
\]

2. ❌

\[
\frac{f}{a} - \frac{g}{b} - \frac{h}{c} = 0
\]

3. ❌

\[
\frac{f}{a} + \frac{g}{b} - \frac{h}{c} = 0
\]
Question Number : 57 Question Id : 8135611017 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If $\alpha, \beta$ are the roots of the equation $x^2 - 2x + 4 = 0$, then $\alpha^n + \beta^n = _____ \times \cos \left( \frac{\pi n}{3} \right)$ for any $n \in N$

$a, \beta$ యొక్క $x^2 - 2x + 4 = 0$ చీతానే రాశి, $n \in N$ యొక్క $\alpha^n + \beta^n = _____ \times \cos \left( \frac{\pi n}{3} \right)$

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

Question Number : 58 Question Id : 8135611018 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Assuming $x$ to be so small that $x^2$ and higher powers of $x$ can be neglected, the coefficient of $x$ in $\frac{(1-x)^{1/2} + (1-5x)^2}{(16-x)^{1/4}}$ is equal to

$x^2 యొక్క x దృశ్యం ఇంద్రాముంది, \frac{(1-x)^{1/2} + (1-5x)^2}{(16-x)^{1/4}} సంఖ్య యొక్క$ 

$\text{coefficient of } x$ ఎంపికలు __________
For \( f(x) = \sin \left( \frac{1}{|x\sqrt{x^2-1}|} \right) \) the domain and range of \( f(x) \) in \( R \) are

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

Options:

1. \( R = \{0, \pm 1\} \) and \([-1,1]\), respectively

2. \( R = [-1,1] \) and \([-1,1]\), respectively

3. \( R = \{0, \pm 1\} \) and \([0,1]\), respectively
4. \[ R = [-1,1] \text{ and } [0,1], \text{ respectively} \]

Question Number : 60 Question Id : 8135611020 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If \[ f(x) = \begin{vmatrix} \cos x & x & 1 \\ 2 \sin x & x^2 & 2x \\ \tan x & x & 1 \end{vmatrix} \] then the value of \( f'(x) \) at \( x = 0 \) is equal to

\[ f(x) = \begin{vmatrix} \cos x & x & 1 \\ 2 \sin x & x^2 & 2x \\ \tan x & x & 1 \end{vmatrix} \]

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

Question Number : 61 Question Id : 8135611021 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The equation of the tangent to the ellipse \( x^2 + 16y^2 = 16 \) which makes an angle 60° with the x-axis is ______

\( x - 60^\circ \text{ కోషిస్తుంది} \text{ మైని } x^2 + 16y^2 = 16 \text{ ఐస్నుండి కాబో } x - 60^\circ \text{ తస్తుంది} \)

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1. $\sqrt{3}x - y + 7 = 0$

2. $\sqrt{3}x - y - 7 = 0$

3. $\sqrt{3}x + y - 7 = 0$

4. $\sqrt{3}x - y = 0$

Question Number : 62 Question Id : 8135611022 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

\[ \int \left( \sqrt{1 + \sin(2x)} \right) \, dx = \]

Options :

1. $\cos(x) + \sin(x) + c$

2. $\cos(x) - \sin(x) + c$

3. $\sin(x) - \cos(x) + c$

4. $\sin(x) - \csc(x) + c$

Question Number : 63 Question Id : 8135611023 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
If \( \vec{a}, \vec{b}, \vec{c} \) are three vectors such that \( \vec{a} \times \vec{b} = \vec{c}, \vec{b} \times \vec{c} = \vec{a} \) and \( \vec{a}, \vec{b}, \vec{c} \) are mutually perpendicular to each other, then \( |\vec{b}| \) is equal to

\[ \vec{a}, \vec{b}, \vec{c} \text{ సన్యాసం } \vec{a} \times \vec{b} = \vec{c}, \vec{b} \times \vec{c} = \vec{a} \text{ యొక్క సన్యాసాలు, మరియు } \vec{a}, \vec{b}, \vec{c} \text{ యొక్క సాంకేతిక సాంఘాల లఈ } \]

\[ \text{అనుసరించండి లెఖన కోసం}, |\vec{b}| = \]

Options :

1. **−1** only

2. **0** only

3. **1** only

4. ± 1

Question Number : 64 Question Id : 8135611024 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If it is mentioned that for a curve passing through (3, 4), the slope of the curve at any point is the reciprocal of twice the ordinate of that point, then that curve is a ________

\[(3, 4) \text{ ప్రాంతం స్థాయి సేట్ లో ప్రతి సైకిత్ర స్పటిక రంగాలు రెండు తరగతి స్పటిక రంగాలు యొక్క ఒంటాల సహాయంతో, ఇ సైకిత్ర మార్పు y-

వివరణ స్పటిక రంగాలు రెండు తరగతి స్పటిక రంగాలు యొక్క ఒంటాల సహాయంతో, ఇ సైకిత్ర మార్పు ఆ ________

Options :

1. **తేలుగుముఖము**
2. Parabola

3. Hyperbola

4. Circle

Question Number : 65  Question Id : 8135611025  Question Type : MCQ  Display Question Number : Yes  Is Question Mandatory : No  Single Line Question Option : No  Option Orientation : Vertical

If \( \sin A + \sin B = \frac{1}{2} \) and \( \cos A + \cos B = 1 \), then \( \sin \left( \frac{A-B}{2} \right) \) equals

\[ \sin A + \sin B = \frac{1}{2} \Rightarrow \cos A + \cos B = 1 \Rightarrow \sin \left( \frac{A-B}{2} \right) \]

Options :

1. \( \pm \frac{\sqrt{13}}{4} \)

2. \( \pm \frac{\sqrt{11}}{4} \)

3. \( \pm \frac{\sqrt{7}}{4} \)

4. \( \pm \frac{\sqrt{17}}{4} \)
Question Number : 66 Question Id : 8135611026 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The modulus of the complex number \((\frac{2+i\sqrt{5}}{2-i\sqrt{5}})^{10} + (\frac{2-i\sqrt{5}}{2+i\sqrt{5}})^{10}\) is

\[(\frac{2+i\sqrt{5}}{2-i\sqrt{5}})^{10} + (\frac{2-i\sqrt{5}}{2+i\sqrt{5}})^{10}\]

Options :

1. \(2 \cos \left(20 \cos^{-1} \left(\frac{2}{3}\right)\right)\)  

2. \(2 \sin \left(10 \cos^{-1} \left(\frac{2}{3}\right)\right)\)

3. \(2 \cos \left(10 \cos^{-1} \left(\frac{2}{3}\right)\right)\)

4. \(2 \sin \left(20 \cos^{-1} \left(\frac{2}{3}\right)\right)\)

Question Number : 67 Question Id : 8135611027 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If the lines joining the origin to the points of intersection of \(y = mx + 1\) and \(x^2 + y^2 = 1\) are perpendicular, then ________

\(y = mx + 1\) ఉపరితలు యొక్క బిందువుల వంటి వంటి వంటి ఉష్ణానుమానం మార్పు చేయుట అవలంబించ మారి ఉంటాయి

ప్రస్తుతి వేత వేత వేత ఉపరితల మారి ఉంటాయి ________

Options :

1. \(m = -1\) only

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\[ \int \frac{\cos x - \sin x}{5 + \sin(2x)} \, dx = \]

Options:
1. \( \frac{1}{2} \cot^{-1} \left[ \frac{1}{2} (\sin x + \cos x) \right] + c \)
2. \( \frac{1}{2} \tan^{-1} \left[ \frac{1}{2} (\sin x + \cos x) \right] + c \)
3. \( \frac{1}{2} \sin^{-1} \left[ \frac{1}{2} (\sin x + \cos x) \right] + c \)
4. \( \frac{1}{2} \cos^{-1} \left[ \frac{1}{2} (\sin x + \cos x) \right] + c \)
If the sum of all the coefficients of \((ax^2 - 2x + 1)^{2019}\) is equal to the sum of all the coefficients of \((x - ay)^{2019}\) then \(\alpha = \) 

\[(ax^2 - 2x + 1)^{2019}\] 
\[(x - ay)^{2019}\] 

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

Question Number : 70 Question Id : 8135611030 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

\[\int e^{3\log x} (x^4 + 1)^{-1} \, dx = \]

Options:
1. \(e^{3\log x} + c\)
2. \(\frac{1}{4} \log(x^4 + 1) + c\)
3. \(\frac{1}{3} \log(x^4 + 1) + c\)
4. \(\cdot\)
Question Number : 71 Question Id : 8135611031 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A Square is inscribed in the circle \( x^2 + y^2 - 2x + 4y - 93 = 0 \) with its sides parallel to the co-ordinate axes. Then which among the following can be one of the vertices of the square?

\[ x^2 + y^2 - 2x + 4y - 93 = 0 \]

Options :

1. \((5, 8)\)
2. \((8, 5)\)
3. \((8, -5)\)
4. \((-8, 5)\)

Question Number : 72 Question Id : 8135611032 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

What is an approximate value of \( \sqrt{199} \) corrected to 4 decimal places?

\[ \sqrt{199} \]

Options :

1. \(14.1608\)
2. 14.0168
3. 14.1086
4. 14.1068

**Question Number : 73**

**Question Id : 8135611033**

**Question Type : MCQ**

**Display Question Number : Yes**

**Is Question Mandatory : No**

**Single Line Question Option : No**

**Orientation : Vertical**

The cartesian equation of a line is $2x - 3 = 3y + 1 = 5 - 6x$. The vector equation of the line passing through the point $(7, -5, 0)$ and parallel to the given line is

\[ \begin{align*}
\mathbf{r} &= (5\mathbf{i} - 7\mathbf{j}) + \lambda (3\mathbf{i} + 2\mathbf{j} - \mathbf{k}) \\
\mathbf{r} &= (7\mathbf{i} + 5\mathbf{j}) + \lambda (3\mathbf{i} - 2\mathbf{j} + \mathbf{k}) \\
\mathbf{r} &= (7\mathbf{i} - 5\mathbf{j}) + \lambda (3\mathbf{i} + 2\mathbf{j} - \mathbf{k}) \\
\mathbf{r} &= (-5\mathbf{i} + 7\mathbf{j}) + \lambda (-3\mathbf{i} - 2\mathbf{j} - \mathbf{k})
\end{align*} \]

**Options :**

1. 14.0168
2. 14.1086
3. 14.1068

**Question Number : 74**

**Question Id : 8135611034**

**Question Type : MCQ**

**Display Question Number : Yes**

**Is Question Mandatory : No**

**Single Line Question Option : No**

**Orientation : Vertical**
The length of the latus rectum of a parabola whose focal chord \( PSQ \) is such that \( PS = 3 \) and \( QS = 2 \) is ________

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Options:
1. \( \frac{24}{5} \)
2. \( \frac{12}{5} \)
3. \( \frac{6}{5} \)
4. \( \frac{12}{10} \)

If the roots of the equation \( x^3 - 6x^2 + 11x - 6 = 0 \) are \( \alpha, \beta \) and \( \gamma \). Then the equation whose roots are \( \alpha^2, \beta^2, \gamma^2 \) among the following, is ________

\( \alpha, \beta, \gamma \) యొక్క మూలాలు \( x^3 - 6x^2 + 11x - 6 = 0 \) యొక్క మూలాలు, అంతా యొక్క మూలాలు \( \alpha^2, \beta^2, \gamma^2 \) యొక్క మూలాలు ________

Options:
1. \( x^3 + 14x^2 + 49x - 36 = 0 \)
2. \( \checkmark \)
$x^3 - 14x^2 + 49x - 36 = 0$

3. $x^3 - 14x^2 - 49x + 36 = 0$

4. $x^3 - 14x^2 - 49x - 36 = 0$

---

**Question Number : 76 Question Id : 8135611036 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Find the equation of a circle with radius 5 units and touching the circle $x^2 + y^2 - 2x - 4y - 20 = 0$ at the point $(5, 5)$.

$x^2 + y^2 - 2x - 4y - 20 = 0$ పరికవాయ తమమత్త అమ్లం, 5 మినిట్స్ వాటాడి అవుతుంది, 5 మమిముం ఆస్త్రం

గొప్ప సమీకరణ రేట్రే

**Options :**

1. $x^2 + y^2 - 18x - 16y + 120 = 0$

2. $x^2 + y^2 + 18x + 16y - 120 = 0$

3. $x^2 + y^2 - 18x + 16y - 120 = 0$

4. $x^2 + y^2 + 18x + 16y + 120 = 0$

---

**Question Number : 77 Question Id : 8135611037 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**
The range of the function \( f(x) = x^2 + \frac{1}{x^2+1} \) is

\[
f(x) = x^2 + \frac{1}{x^2+1}
\]

Options:
1. ✔ [1, \( \infty \)]
2. ✕ [2, \( \infty \)]
3. ✕ \left[ \frac{3}{2}, \infty \right)
4. ✕ (0, 1]

Question Number : 78 Question Id : 8135611038 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If the 6th term in \( \left( \frac{2p}{3} + \frac{3q}{2} \right)^9 \) is "\( a p^b q^c \)" , then \( a, b \) and \( c \) respectively are

\[
\left( \frac{2p}{3} + \frac{3q}{2} \right)^9
\]

Options:
1. ✕ 189, 5, 4
2. ✔ 189, 4, 5
3. ✕ 212, 4, 5
4. ✕ 212, 5, 4

AP EAMCET 2020
Question Number: 79 Question Id: 8135611039 Question Type: MCQ Display Question Number: Yes Is Question Mandatory: No Single Line Question Option: No Option Orientation: Vertical

A point on the curve \( x = 3 \cos \theta, \ y = 2 \sin \theta \) at which the tangent is perpendicular to \( x \)-axis is \( x = 3 \cos \theta, \ y = 2 \sin \theta \) వ్యాసంతో \( x \)-ఎక్సెస్ వద్ద \( x = 3 \cos \theta, \ y = 2 \sin \theta \) స్థానం ఆవుండి?

Options:
1. ✓ (3, 0)
2. ✗ (0, 3)
3. ✗ (0, -3)
4. ✗ (-3, 3)

Question Number: 80 Question Id: 8135611040 Question Type: MCQ Display Question Number: Yes Is Question Mandatory: No Single Line Question Option: No Option Orientation: Vertical

The equation of the line through the point \((-1, 3)\) in symmetrical form, when the angle made by the line with the positive direction of \(x\)-axis is 120°, is given by

\( x - \text{ఎక్సెస్} \) వ్యాసం 120° సమానంగా, \((-1, 3)\) బిందువు వద్ద నుండి \(x\)-ఎక్సెస్ వద్ద వ్యాసం అంటే వాటి సమానం ఆవుండి?

Options:

\[
\frac{x+1}{-1/2} = \frac{y-3}{\sqrt{3}/2} = r
\]

1. ✓ \[\frac{x+1}{-1/2} = \frac{y-3}{\sqrt{3}/2} = r\]
\[ \frac{(x+1)}{1/2} = \frac{(y+3)}{\sqrt{3}/2} = r \]

\[ \frac{(x+1)}{-1/2} = \frac{(y+3)}{\sqrt{3}/2} = r \]

\[ \frac{(x+1)}{1/2} = \frac{(y-3)}{\sqrt{3}/2} = r \]

**Physics**

Section Id : 81356120
Section Number : 2
Mandatory or Optional : Mandatory
Number of Questions : 40
Number of Questions to be attempted : 40
Section Marks : 40
Display Number Panel : Yes
Group All Questions : Yes
Mark As Answered Required? : Yes

Question Number : 81 Question Id : 8135611041 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
A string of a pendulum of length $l$ is displaced through $90^\circ$ from its vertical and released. Then the minimum strength of the string needed to withstand the tension as, the pendulum passes through its mean position is

$l$ విద్యుత్త నుండి $90^\circ$ వేరు వీధి చేసి ఎమ్మైనా సమయంలో కలిగిన $90^\circ$ పోల ప్రచేసందే చిహ్నించాడు. అంటే విమిడ్దందించిన చిహ్నించాడు, మద్యతమ స్థాయి వెళ్ళడం రెండంతో ఎందుకు మిగిలిసేదు?

Options:
1. $mg$
2. $3mg$
3. $5mg$
4. $6mg$

Pressure of a gas of constant volume at $20 \, ^\circ\text{C}$ is $90 \, \text{cm of Hg}$. At what temperature the pressure would change to $75 \, \text{cm of Hg}$.

ప్రశ్నితంగా, $20 \, ^\circ\text{C}$ ని స్థాయి మాత్రమే శక్తి $90 \, \text{cm of Hg}$ లో ఉండహోరి, ఎందుకు ప్రస్తుతంతో శక్తి $75 \, \text{cm of Hg}$ లో ఉండవచ్చు?

Options:
1. $233.2 \, ^\circ\text{C}$
2. $-28.8 \, ^\circ\text{C}$
3. –24.2 °C

4. 28.8 °C

**Question Number : 83**  
**Question Id : 8135611043**  
**Question Type : MCQ**  
**Display Question Number : Yes**  
**Is Question Mandatory : No**  
**Single Line Question Option : No**  
**Orientation : Vertical**

The binding energy of a nucleus is equivalent to

The mass of nucleus

1. ✗

The mass of proton

2. ✗

The mass of neutron

3. ✗

The mass defect of nucleus

4. ✓

**Question Number : 84**  
**Question Id : 8135611044**  
**Question Type : MCQ**  
**Display Question Number : Yes**  
**Is Question Mandatory : No**  
**Single Line Question Option : No**  
**Orientation : Vertical**
In a given figure, an ammeter reads 5 A and voltmeter reads 40 V. The actual value of resistance \( R \) is

**Options:**

1. 8 \( \Omega \)
   - Greater than 8 \( \Omega \)

2. 8 \( \Omega \) యొక్క సమానం
   - Less than 8 \( \Omega \)

3. 8 \( \Omega \) యొక్క తక్షణం

4. 200 \( \Omega \)

---

In a series LCR circuit ________

**Options:**

1. \( X_L < X_C \) ఎండు విసృగ్ధ సమానం కొని ఎంచుకోబడుతుంది.

---

**Question Number : 85 Question Id : 8135611045 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The voltage leads the current if \( X_L < X_C \)

1. \( X_L < X_C \) ఎండు విసృగ్ధ సమానం కొని ఎంచుకోబడుతుంది.
The voltage leads the current if $X_L > X_C$

3. $X_L > X_C$ అంటే విద్యుత్ వ్యాప్తి ప్రతిమాన సంపంధం కలిగి ఉంటుంది.

The voltage and current are in phase

3. విద్యుత్ వ్యాప్తి వ్యాప్తి మీద సంపంధం ఉంది.

The current leads the voltage if $X_L > X_C$

4. $X_L > X_C$ అంటే వ్యాప్తి విద్యుత్ ప్రతిమాన సంపంధం కలిగి ఉంటుంది.

Question Number : 86 Question Id : 8135611046 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A metal surface is illuminated by a light of given intensity and frequency to cause photoemission. If the intensity of illumination is reduced to one-fourth of its original value, then the maximum kinetic energy of the emitted photoelectrons would become _____

విద్యుత్ వ్యాప్తి వ్యాప్తి మీద సంపంధం ఉంది.

Options :

1. ✔ మారివే

Half of the original value

2. ✗ మారివే

Twice of the original value

3. ✗ మారివే

4. ✗
Four times of the original value

Question Number : 87  Question Id : 8135611047  Question Type : MCQ  Display Question Number : Yes  Is Question Mandatory : No  Single Line Question Option : No  Option Orientation : Vertical

The Lenz’s law gives

Options :

1. ✓ The direction of induced current

2. ✗ the quantity of charge flowing

3. ✗ the magnitude of the induced emf

4. ✗ motional emf in the circuit

Question Number : 88  Question Id : 8135611048  Question Type : MCQ  Display Question Number : Yes  Is Question Mandatory : No  Single Line Question Option : No  Option Orientation : Vertical
The external diameter of 5 m long hollow tube is 0.1 m and thickness of its wall is 0.005 m. If $\rho = 1.7 \times 10^{-8} \, \Omega \, m$, its resistance will be _____

$5 \, m$ యొక్క కనిష్ఠ వ్యాసం 0.1 మీటర్ ముందు మరియు దీని వ్యాసం యొక్క ప్రక్కతి 0.005 మీటర్ ముందు. $\rho = 1.7 \times 10^{-8} \, \Omega \, m$ కానీ నియంత్రణ ఉండి?

**Options:**

1. $\checkmark$ $5.7 \times 10^{-5} \, \Omega$

2. $\times$ $2.7 \times 10^{-5} \, \Omega$

3. $\otimes$ $2 \times 10^{-5} \, \Omega$

4. $\otimes$ $5 \times 10^{-5} \, \Omega$

---

Two cars $A$ and $B$ are going around concentric circular paths of radii $R_A$ and $R_B$. If the two cars complete the circular paths in the same time then the ratio of angular speeds of $A$ and $B$ is:

$A$ మరియు $B$ కలిగిన యొక్క వ్యాసాలు $R_A$ మరియు $R_B$ రేపు లక్షణాలు కంతి నియంత్రణ వ్యాసం యొక్క ప్రక్కతి. ఒక సమయంలో ఒక వ్యాసంలో తిరంగం వ్యాసం యొక్క ప్రక్కతి, $A$ మరియు $B$ యొక్క ప్రక్కతి లేదు?

**Options:**

1. $\checkmark$ $1 : 1$

2. $\times$ $\frac{R_A}{R_B}$

3. $\otimes$ $\frac{R_B}{R_A}$
4. 1 : 2

Question Number : 90 Question Id : 8135611050 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If the dipole moment of a short bar magnet is \(1.25 \, A \cdot m^2\), find the magnetic field on its axis at a distance of 0.5 m from the center of the magnet.

అడిపు చిహ్నము గమనం లేదు, ముఖ్య నిర్మాణ వంటి 1.25 \(A \cdot m^2\) అయితే, తెలియి మీటర్ల దూరం 0.5 m తో మాయిన వట్టం బడి ఉంది?

Options :
1. \(1.0 \times 10^{-4} \, N.\, A^{-1}.\, m^{-1}\)
2. \(4.0 \times 10^{-2} \, N.\, A^{-1}.\, m^{-1}\)
3. \(2.0 \times 10^{-6} \, N.\, A^{-1}.\, m^{-1}\)
4. \(6.64 \times 10^{-8} \, N.\, A^{-1}.\, m^{-1}\)

Question Number : 91 Question Id : 8135611051 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
A steel ball of radius 2 cm is at rest on a frictionless surface. Another steel ball of radius 4 cm moving with velocity of 81 cm. s\(^{-1}\) collides elastically with the ball which is at rest. After collision the ball with radius of 2 cm moves with speed of ________

2 cm మూరితుడు గే 3 స్థానం లో ఆమె మూరితుడు వున్నది. 4 cm మూరితుడు గే వీధక స్థానం లో ఆమె వేసిన వేగం 81 cm. s\(^{-1}\) అనేది మూరితుడు వేగం మూరితుడు వేగం మూరితుడు వేగం వేగం. మూరితుడు వేగం వేగం వేగం వేగం వేగం. మూరితుడు వేగం వేగం వేగం వేగం వేగం. 2 cm మూరితుడు గే వీధక స్థానం లో ఆమె వేగం వేగం వేగం వేగం.

Options:
1. 144 cm. s\(^{-1}\)
2. 72 cm. s\(^{-1}\)
3. 216 cm. s\(^{-1}\)
4. 36 cm. s\(^{-1}\)

An electrical refrigerator with \(\beta = 5\) extracts 5000 J from the contents of the refrigerator. During this process, find the electrical energy utilized by its motor.

\(\beta = 5\) శాంతి వద్ద గుడిప్పు వద్ద గుడిప్పు గుడిప్పు గుడిప్పు గుడిప్పు. వద్ద గుడిప్పు వద్ద గుడిప్పు వద్ద గుడిప్పు వద్ద గుడిప్పు వద్ద గుడిప్పు వద్ద గుడిప్పు వద్ద గుడిప్పు వద్ద గుడిప్పు

Options:
1. 1 kJ
2. 0.5 kJ
Question Number : 93 Question Id : 8135611053 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

When a body is heated, then maximum rise will be in its

Options:

1. Length
2. Surface area
3. Volume
4. Density

Question Number : 94 Question Id : 8135611054 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Potential difference between the points $P$ and $Q$ in the circuit shown is

Options:

1. ✗ 4.5 V
2. ✗ 1.2 V
3. ✗ 2.4 V
4. ✓ 2.88 V
A travelling microscope is focused on an ink dot marked on a piece of paper. When a glass slab (μ = 1.5) of thickness 0.12 m is placed on the ink dot. The travelling microscope has to be moved _______ in order to restore the focus.

Options:
1. 0.04 m downwards
2. 0.04 m upwards
3. 0.06 m downwards
4. 0.06 m upwards

Question Number : 96 Question Id : 8135611056 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Consider the situation shown in the figure. The wire AB is sliding on the fixed rails with a constant velocity. If the wire AB is replaced by semicircular wire, the magnitude of the induced current will ______

Options:

1. Increase
2. Remain the same
3. Decrease
4. Increase or decrease depending whether the semicircle bulges towards the resistance or away from it

Question Number : 97 Question Id : 8135611057 Question Type : MCQ Display Question
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation : Vertical
A Carnot engine takes $3 \times 10^6$ calories of heat from reservoir at 627 °C and gives it to a sink at 27 °C. The work done by the engine is

$\text{ನೂಡು} \text{ ನೂಡು} \text{ ಮಾಡಲು} \text{ ಸಹಿ} \text{ ಸಹಿ} \text{ 3} \times \text{10}^6 \text{ ವಿಧೇಯ} \text{ ಗುರುತಿ} \text{ 627 °C} \text{ ನೂಡು} \text{ ನೂಡು} \text{ 27 °C} \text{ ನೂಡು} \text{ ಕೆಲು} \text{ ಸಲ್ಲಿಸು} \text{ ಮಾಡಬೇಕಾದು. ಎರಡು} \text{ ನೂಡು} \text{ ಮಾಡಲು} \text{ ಎಳೆ} \text{ ಮತ್ತು} \text{ ಎಳೆ} \text{ ಮಾಡು} \text{?}

**Options:**

1. *Zero*

2. $8.4 \times 10^6$ J

3. $4.2 \times 10^6$ J

4. $16.8 \times 10^6$ J

---

The displacement $y$ (in cm) in case of a simple harmonic wave is given by $y = \frac{10}{\pi} \sin \left( 2000\pi t - \frac{\pi}{17} \right)$.

The period and maximum velocity of the particles in the medium will respectively be ______

$\text{ನೂಡು} \text{ ನೂಡು} \text{ ಮಾಡಲು} \text{ ಸಹಿ} \text{ ಸಹಿ} \text{ 8} \text{.} \text{4} \text{.} \text{10}^6 \text{ J} \text{.} \text{10}^6 \text{ J}$

**Options:**

1. $10^{-3}$ s, 330 m.s$^{-1}$

2. $10^{-4}$ s, 20 m.s$^{-1}$

---

**Question Number : 98**  **Question Id : 8135611058**  **Question Type : MCQ**  **Display Question Number : Yes**  **Is Question Mandatory : No**  **Single Line Question Option : No**  **Orientation : Vertical**
3. $10^{-3}$ s, 200 m.s$^{-1}$

4. $10^{-2}$ s, 2000 m.s$^{-1}$

**Question 99**

A bullet of mass $m$ and velocity $v$ when fired at a sand bag of mass $M$, suspended by a string, gets embedded into the bag. The loss of kinetic energy in this process is $m$ गुणज काल आंतर $ightarrow$ गमन $v$ वजन $M$ धुळ लटक कर $M'$ धुळ लटका आंतरके बिंबाद $M'$ और आंतरके बिंबाद $m$ कितने गुणज काल आंतर?

**Options:**

1. $\frac{mv^2}{2}$

2. $\frac{2mv^2}{2(M+m)}$

3. $\frac{Mv^2}{2}$

4. $\frac{mMv^2}{2(M+m)}$
A body of mass \(5 \text{ kg}\) starts from the origin with an initial velocity \(\vec{u} = 30 \hat{i} + 40 \hat{j} \text{ m.s}^{-1}\).
When a constant force \(\vec{F} = -(\hat{i} + 5\hat{j}) \text{ N}\) acts on the body, the time in which the \(y\)-component of the velocity becomes zero is ____

\[
\text{mass of body } 5 \text{ kg starts from origin with initial velocity } \vec{u} = 30 \hat{i} + 40 \hat{j} \text{ m.s}^{-1} \text{. When a constant force } \vec{F} = -(\hat{i} + 5\hat{j}) \text{ N acts on the body, the time in which the y-component of the velocity becomes zero is ______.}
\]

Options:
1. \(5 \text{ s}\)
2. \(20 \text{ s}\)
3. \(40 \text{ s}\)
4. \(80 \text{ s}\)

Question Number: 101 Question Id: 8135611061 Question Type: MCQ Display Question Number: Yes Is Question Mandatory: No Single Line Question Option: No Option Orientation: Vertical

In Bohr's theory the potential of an electron at a position is \(\frac{K r^2}{2}\), where \(K\) is a constant. Then the quantized energy of the electron in \(n^{th}\) orbit is

\[
\text{In Bohr's theory the potential of an electron at a position is } \frac{K r^2}{2} \text{, where } K \text{ is a constant. Then the quantized energy of the electron in } n^{th} \text{ orbit is } \frac{K r^2}{2} \text{. }
\]

Options:
1. \(\frac{nhK}{2\pi\hbar}\)
2. \(\frac{nhK}{\pi}\)

AP EAMCET 2020
A circular parallel plate capacitor of radius ‘R’ and spacing ‘d’ is being charged by a constant current ‘I_D’. Find the magnetic field between the plates at a distance ‘r’ from the axis, where r > R.

 Options:

1. \( \frac{\mu_0 I_D}{2\pi R^2} \)

2. \( \frac{\mu_0 I_D}{2\pi R} \)

3. \( \frac{\mu_0 I_D}{2\pi r} \)

4. Zero
Question Number : 103 Question Id : 8135611063 Question Type : MCQ Display Question
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation : Vertical

Two-point white dots are 2mm apart on a black paper. They are viewed by eye of pupil diameter 3 mm. What is the maximum distance at which these dots can be resolved by the eye? ($\lambda = 500 \text{ nm}$)

Options :
1. 5 m
2. 1 m
3. 6 m
4. 10 m

Question Number : 104 Question Id : 8135611064 Question Type : MCQ Display Question
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation : Vertical

When a 5 C charge is kept in a uniform electric field, a force of 5000 N acts on it. Find the potential difference between two points in that field, separated by a distance of 1 cm.

Options :
1. 10 V
Question Number : 105 Question Id : 8135611065 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A material has Poisson's ratio 0.50. If a uniform rod made of this material suffers a longitudinal strain of $2 \times 10^{-3}$, then the percentage change in volume is ______

Options :
1. 0.6
2. 0.4 (√)
3. 0.2
4. 0

Question Number : 106 Question Id : 8135611066 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
A light container having a diatomic gas enclosed with in is moving with velocity \( V \). Mass of the gas is \( M \) and number of moles is \( n \). The kinetic energy of gas w.r.t ground is

\( M' \) and \( n \) are new mass and new number of moles \( \alpha \) and \( \beta \) respectively.

**Options:**

1. \( \frac{1}{2} MV^2 + \frac{3}{2} nRT \)

2. \( \frac{1}{2} MV^2 \)

3. \( \frac{1}{2} MV^2 + \frac{5}{2} nRT \)

4. \( \frac{5}{2} nRT \)

**Question Number : 107 Question Id : 8135611067 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**
Which of the following statement is correct?

A. Becquerel, who discovered natural radioactivity, belongs to France
B. Marconi, who discovered wireless telegraphy, was an American
C. Newton was an American, who discovered the laws of motion
D. Einstein belongs to England, who simplifies the laws of photoelectric effects

Options:
1. ✔ A
2. ✗ B
3. ✔ C
4. ✗ D

Question Number : 108 Question Id : 8135611068 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The KE, K of a body performing simple harmonic motion varies with time ‘t’, is indicated in graph.
Two atoms of oxygen are located at $\vec{r}_1$ and $\vec{r}_2$. Their Centre of mass is at $\frac{\vec{r}_1 + \vec{r}_2}{2}$.

Options:

1. $\vec{r}_1 + \vec{r}_2$
The value of acceleration due to gravity ‘g’ is maximum at ________

Options:

1. [ ] Poles

2. [ ] Centre

3. [ ] Equator

4. [ ] Surface of earth
When a helium nucleus makes a full rotation of a circle of radius 0.8 m in 2.5 seconds, the value of magnetic field $B$ at the centre of the circle will be

Options:
1. $4\pi \times 10^{-25} T$
2. $2\pi \times 10^{-26} T$
3. $4\pi \times 10^{-26} T$
4. $2\pi \times 10^{-25} T$

A dipole is placed in a uniform electric field, its potential energy will be minimum when the angle between its axis and field is

Options:
1. Zero
2. \( \pi \)

\[
\frac{\pi}{2}
\]

3. \( 2\pi \)

--

**Question Number : 113 Question Id : 8135611073 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The acceleration of a particle executing S.H.M. is ______

పదార్థం చేసే వ్యవస్థ సంధులు కలిగి ఉంటుంది, కంటే ప్రతి సమయం ఉంటుంది ______

**Options :**

1. **Always zero**

2. **Always constant**

3. **Maximum at the extreme position**

4. **Maximum at the equilibrium position**

**Question Number : 114 Question Id : 8135611074 Question Type : MCQ Display Question**
The graph between two quantities $P$ and $Q$ is a straight line when

\[ P \text{ is directly proportional to } Q \text{ where } P = k \cdot Q \]

Options:

1. \( PQ = \text{Constant} \)
2. \( \frac{P}{Q} = \text{Constant} \)
3. \( PQ^2 = \text{Constant} \)
4. \( \frac{P}{Q^2} = \text{Constant} \)

Question Number: 115 Question Id: 8135611075 Question Type: MCQ Display Question

A body starts from rest and moves with uniform acceleration. If the distance travelled by it in the first 2 seconds is $x_1$ and in the next 2 seconds is $x_2$, then $x_1$ and $x_2$ are related as______

\[ \text{distance travelled in the next 2 seconds} \text{ is } x_2, \text{ then } x_1 \text{ and } x_2 \text{ are related as} \]

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Options:

1. \( x_1 = x_2 \)
2. \( x_1 = 2x_2 \)
3. \( 2x_1 = x_2 \)
4. \( 3x_1 = x_2 \)

Question Number : 116 Question Id : 8135611076 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A bullet of mass 0.01 kg travelling at a speed of 500 m. s\(^{-1}\) strikes a block of mass 2 kg which is suspended by a string of length 5 m. The centre of gravity of the block is found to rise a vertical distance of 0.1 m. What is the speed of the bullet after it emerges from the block?

Options:

1. \( 200 \text{ m. s}^{-1} \)
2. \( 220 \text{ m. s}^{-1} \)
3. \( 204 \text{ m. s}^{-1} \)
4. \( 284 \text{ m. s}^{-1} \)
Effect of a couple is ____________

Options:
1. Purely linear motion
   - పూర్తి నియోమెట్రిక్

2. Purely rotational motion
   - పుర్తి చిరాగ శాపం

3. Linear and rotational motion
   - లినేర్ అనడు చిరాగ శాపం

4. No motion
   - నామస్థానం చేయబడదు

The electric potential at the surface of an atomic nucleus (Z = 50) of radius $9 \times 10^{-15}$ m is $9 \times 10^{-15}$ m అనే నాల్గు వింటుసు (Z = 50) ఎనిమిది చైరాగము యెక్ విడిస్ఫెటి?

Options:
1. $4 \times 10^6$ V
2. $8 \times 10^6$ V
3. $4 \times 10^{-6}$ V
4. $8 \times 10^{-6}$ V

Question Number : 119 Question Id : 8135611079 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Two blocks of ice when pressed together join to form one block because __________

Options:
1. Of heat produced during pressing
   $\text{వెదురు ఉంభాలను సాధించే ప్రయత్నం ఉంటాయి}

2. Of cold produced during pressing
   $\text{వెదురు ఉంభాలను సాధించే ప్రయత్నం ఉంటాయి}

3. Melting point of ice decreases with increase of pressure
   $\text{ప్రయత్నంగా, ఉంభాల గోడ కుంచి ఉంటాయి}

4. Melting point of ice increases with increase in pressure
   $\text{ప్రయత్నంగా, ఉంభాల గోడ కుంచి ఉంటాయి}

Question Number : 120 Question Id : 8135611080 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation: Vertical

A block P of mass $M_P$ is in contact with another block Q of mass $M_Q$ as shown in the figure, and they are placed on a smooth floor. Force on block Q is ______

$M_P, M_Q \text{ వాస్తుచేతిలో ఉన్నాయి} \text{, అందునే} \text{, ధ్వని తట్టు చేయబడింది} \text{, అందునే, Q వశాంతము నిషేధించబడింది} \text{. ఎంటే, Q వశాంతము నిషేధించబడింది} \text{?}

Options:
1. \( \frac{M_P}{M_P+M_Q} \)

2. \( \frac{M_QF}{M_P+M_Q} \)

3. \( \frac{M_PF}{M_Q} \)

4. \( \frac{M_QF}{M_P} \)

Chemistry

Section Id: 81356121
Section Number: 3
Mandatory or Optional: Mandatory
Number of Questions: 40

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Which of the following polymer is bio-degradable? Options: 

1. 

2. 

3. 

4. 

find the value of x.

Options: 

1. 

2. 

3. 

4. 

AP EAMCET 2020
Number of Questions to be attempted: 40
Section Marks: 40
Display Number Panel: Yes
Group All Questions: Yes
Mark As Answered Required?: Yes
Orientation: Vertical
Options:

1. 

2. 

3. 

4. 

AP EAMCET 2020
Number of Questions to be attempted: 40
Section Marks: 40
Display Number Panel: Yes
Group All Questions: Yes
Mark As Answered Required?: Yes
Orientation: Vertical
Options:

1. 

2. 

3. 

4.
Which among the following compounds is a gem-dihalide?

Options:

1. Ethylidene chloride
2. Ethylene dichloride
3. Methyl chloride

Nylon-6,6

Melamine polymer

Nylon-2-nylon-6
**Question Number : 124** Question Id : 8135611084 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Arrange Li, Be, B and C in decreasing order of their first ionization enthalpies

Li, Be, B అనే రకమల ఏండ్యుడు వంటి పిన్సేతెల సహీతము అనునికి యొక్క అంశాలు సరాస్రాస్రా అంచనలు.

**Options :**

1. **Li > B > Be > C**

2. **C > Li > Be > B**

3. **C > Be > B > Li**

4. **C > B > Be > Li**

---

**Question Number : 125** Question Id : 8135611085 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The IUPAC name for the following compound is

చివరి సంయోగం మీరాలు IUPAC నంపాడు

\[ BrCH_2CH_2CH = CHCH_2COCH_3 \]

**Options :**

1. **
Which among $KI$, $FeSO_4$, $K_2MnO_4$, $KMnO_4$ can’t be oxidized by $O_3$?

$KI$, $FeSO_4$, $K_2MnO_4$, $KMnO_4$ వంటివి $O_3$ వల్ల ఎప్పటి సంస్థరాశులు రాకుండా ఉండవచ్చు?

Options:

1. $KI$
2. $FeSO_4$
3. $K_2MnO_4$
4. $KMnO_4$
The order of screening effect among $s$, $p$, $d$ and $f$ orbitals of a given shell of an atom, in its outer shell electrons is:

Options:
1. $s > p > d > f$
2. $f > d > p > s$
3. $p < d < s > f$
4. $d > f > p > s$

In which of the following options order of arrangement does not agree with the variation of property indicated against it?

Options:
$Al^{3+} < Mg^{2+} < Na^+ < F^-$ (increasing ionic size)
1. $Al^{3+} < Mg^{2+} < Na^+ < F^-$ (decreasing ionic size)
2. 

\[ B < C < O < N \] (increasing first ionization enthalpy)

\[ B < C < O < N \] (ఒకసాగర ఎంయను కష్టమత్తు అధికత)

3. 

\[ I < Br < Cl < F \] (increasing electron gain enthalpy)

\[ I < Br < Cl < F \] (ఒకసాగర లభ్య సాధనా వైపు నిర్ధిష్టం)

\[ Li < Na < K < Rb \] (increasing metallic radius)

\[ Li < Na < K < Rb \] (ఒకసాగర పండిత స్థాయి వైపు నిర్ధిష్టము)

**Question Number : 129 Question Id : 8135611089 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Arrange \( O_2, O_2[AsF_6], KO_2 \) in the increasing order of bond length of \( O - O \) bond.

\( O - O \) బంందు సిద్ధాంతం తెరవంతం \( O_2, O_2[AsF_6], KO_2 \) బాల సూక్ష్మాల నుండి రెండవ సూक్ష్మాలం

**Options :**

1. 

\[ O_2 < KO_2 < O_2[AsF_6] \]

2. 

\[ KO_2 < O_2 < O_2[AsF_6] \]

3. 

\[ O_2[AsF_6] < KO_2 < O_2 \]

4. 

\[ O_2[AsF_6] < O_2 < KO_2 \]

**Question Number : 130 Question Id : 8135611090 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

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What will be the molality of the solution containing 18.25g of HCl gas in 500g of water?

18.25g HCl మాత్రమే 500g యొక్క సమాధానాన్ని మాలం చేయడానికి లభించే మాటి మంచి వాటా కయలో?

Options:
1. ★ 0.5 m
2. ★ 0.1 m
3. ✔ 1 m
4. ★ 0.05 m

The rms velocity of Oxygen molecules at 27 °C is around 800 m/s. The rms velocity of methane molecule at 600 K temperature is around ______

27 °C చే ఎయిర్ మోలకలి మ్యూకి మాసిక రస్ము సాధనం 800 m/s, 600 K తేడా మ్యూనింట్ చే మ్యూనింట్ మాసిక రస్ము సాధనం __________

Options:
1. ★ 400 m/s
2. ✔ 1600 m/s
3. ★ 800 m/s
4. ★ 1200 m/s
Question Number : 132 Question Id : 8135611092 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 physical property of molecular solids?

Options :
1.  ✓  వాసుదేవం

   Quite hard
   పిండి చిన్నం

2.  ❌

   Brittle
   బ్రిటిస్

3.  ❌

   Good conductor of electricity
   ప్రమాద వాయుమత్తులు

4.  ❌

Question Number : 133 Question Id : 8135611093 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The formula of vapor state of white phosphorus is ________

పిండి పిండి పిండి పిండి పిండి పిండి ________

Options :

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1. $P_5$

2. $P_{16}$

3. $P_3$

4. $P_4$

Question Number : 134 Question Id : 8135611094 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

1g of a solute is added to 18 g of water. In this aqueous solution, what is the mass percent of the solute?

18 గ్రామల గుణాను 18 గ్రామ నేట మేఖల లో అలా అలా గుణాను మేఖల లో మేఖలు ఎంత?

Options :
1. $2 \%$

2. $5 \%$

3. $1 \%$

4. $10 \%$

Question Number : 135 Question Id : 8135611095 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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For the species $HSO_4^-$ and $NH_3$ their conjugative acids respectively are

$HSO_4^-$ and $NH_3$ యొక్క కొనియంగా ప్రధాన నాటి

Options:
1. $SO_4^{2-}$ & $NH_4^+$
2. $SO_4^{2-}$ & $NH_2^-$
3. $H_2SO_4$ & $NH_4^+$
4. $H_2SO_4$ & $NH_2^-$

Which of among the following is an example for fibre?

ఒకటి ఎందుకంటే ఫిబర్ ఉంటుంది?

Options:
1. Polyester
2. Urea-formaldehyde resin
3. Polyvinyl chloride
Question Number : 137 Question Id : 8135611097 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Gaseous state is characterized by which of the following physical properties?

I. Gases mix evenly and completely on all proportions without any mechanical aid
II. Gases exert pressure on all directions evenly
III. Gases are highly compressible and have lower density than liquids and solids
IV. The volume and shape of the gas is fixed

వాష్ప రేఖి ఎందుకు ఎండి కలుపుతుంది?

I. వాష్పాలు మధ్యస్థంగా నిలచూ కలిగిన నిష్ట వాష్పాలు సాధ్యం చేసే వాష్పాలు వాష్పాలు ఉపయోగిస్తాం.
II. వాష్పాల సాధ్యం తాను వాష్ప రేఖి ఉంటాయి
III. వాష్పాల దృశ్యం ఒహించిన గాంధ్రం నిష్ట మాత్రము నిలచు మాత్రము మాత్రము ఉపయోగిస్తాం,
IV. వాష్పాల దృశ్యం దృశ్యం ఉపయోగిస్తాం, వాష్పాల దృశ్యం ఉపయోగిస్తాం

Options :
1. ✗ I, III, IV
2. ✗ II, III, IV
3. ✔ I, II, III
4. ✗ I, II, IV
Which among the following is a possible product during cross aldol condensation between propanal (as electrophile) and butanal (as nucleophile)?

ప్రాపానల్ (ఎలక్ట్రోఫ్ పెట్టు) మండి మాంగప్రాపానల్ (నుక్లీప్టిక పెట్టు) యొక్క మండి మాంగానికి మొట్టమొదలగా ఉండవచ్చును, సోదరుడి విషువులను సంసమోదించాయంది కాని ఎదురు కోసం?

Options:

1. 3-hydroxy-2-methyl hexanal
2. 2-ethyl-3-hydroxy pentanal
3. 3-hydroxy-2-methyl pentanal
4. 2-ethyl-3-hydroxy hexanal
The increasing order of densities of the following alkyl halides is

(i) \( n-C_3H_7Br \)
(ii) \( n-C_3H_7Cl \)
(iii) \( n-C_3H_7I \)

Options:
1. \((ii) < (i) < (iii)\)
2. \((iii) < (i) < (ii)\)
3. \((i) < (ii) < (iii)\)
4. \((iii) < (ii) < (i)\)

The mass of one mole of a substance in grams is called ________
Molar mass

Mass number

Question Number : 141 Question Id : 8135611101 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Compound which is added to soap to impart antiseptic properties is ______

Options :

1. Sodium lauryl sulphate

2. Sodium dodecylbenzene sulphonate

3. Rosin

4. Bithionol

Question Number : 142 Question Id : 8135611102 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation : Vertical

Calculate the mass of a photon if its wavelength is given as 0.35 nm.

0.35 nm అంటే విదేశి నిత్య వాయా నిష్పత్తి గా ఉంటే.

Options:

1. **2.20 \times 10^{-42} \text{ kg}**

2. **6.30 \times 10^{-33} \text{ g}**

3. \checkmark **6.30 \times 10^{-33} \text{ kg}**

4. **18.92 \times 10^{-25} \text{ kg}**

Question Number : 143 Question Id : 8135611103 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

Calculate the equilibrium constant of the reaction $\text{Cu}_2 + 2 \text{Ag}^{+} \rightarrow \text{Cu}^{2+} + 2 \text{Ag}_2$, given that for the reaction, $E_{\text{cell}} = 0.46V$.

$\text{Cu}_2^{2+} + 2 \text{Ag}_2^{+} \rightarrow \text{Cu}^{2+} + 2 \text{Ag}^{+} \text{ఎంపుడు \ E_{\text{cell}} = 0.46V}$ అంటేందుకు, $\text{Cu}_2^{2+} + 2 \text{Ag}_2^{+} \rightarrow \text{Cu}^{2+} + 2 \text{Ag}^{+}$ ఎంపుడు

Options:

1. **4.2 \times 10^8**

2. **6.23 \times 10^9**

3. \checkmark **3.92 \times 10^{15}**
4. \(4.54 \times 10^{20}\)

**Question Number : 144 Question Id : 8135611104 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

A chemical A is used for the preparation of washing soda to recover ammonia. When \(CO_2\) is bubbled through an aqueous solution of A, the solution turns milky. It is used in white washing due to disinfectant nature. What is the chemical formula of A?

**Options:**

1. \(Ca(HCO_3)_2\)
2. \(CaO\)
3. \(Ca(OH)_2\)
4. \(CaCO_3\)

**Question Number : 145 Question Id : 8135611105 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

To avoid bends sickness, the tanks used by scuba divers are filled with air and diluted with ____

**Options:**

1. \(O_2\)
2. \(CO_2\)
3. \(N_2\)
4. \(Ar\)
Helium gas
1.
Argon gas
2.
Krypton gas
3.
Xenon gas
4.

Question Number : 146 Question Id : 8135611106 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation : Vertical

\[ K_{sp} \text{ for } CaSO}_4 \text{ is } 9 \times 10^{-6}. \text{ The minimum volume of water needed to dissolve 1g of } CaSO}_4 \text{ at 298 K temperature is } ________ \]

\[ CaSO}_4 \text{ के } K_{sp} \text{ 9 } \times 10^{-6} \text{ के अंतर, 298 K के } \text{ तापमान में 1 g } CaSO}_4 \text{ का समाधान बनाने के लिए आवश्यक } \text{ पानी का मिश्रित मात्रा } ________ \]

Options :
1. 3.50 L
2. 4.25 L
3. 1.75 L
4. ✔️ 2.45 L

Question Number : 147 Question Id : 8135611107 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Glycosidic linkage in carbohydrates is called ________

స్థానానిక యొక్క నుండి ఆయాయం ________ మార్పిడు

Options :
1. ✔️ Ester linkage
2. ✔️ Ether linkage
3. Amide linkage
4. Not an option

Question Number : 148 Question Id : 8135611108 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The correct order of increasing ionic character among LiH, NaH, KH, RbH, CsH is

LiH, NaH, KH, RbH, CsH యొక్క ఇన్చియన్ విస్తృతి ఎక్కడ ఎక్కడ ఎక్కడ ఎక్కడ ఎక్కడ ఎక్కడ.

Options :
1. \( LiH < NaH < CsH < KH < RbH \)

2. \( LiH < NaH < KH < RbH < CsH \)

3. \( RbH < CsH < NaH < KH < LiH \)

4. \( NaH < CsH < RbH < LiH < KH \)

**Question Number : 149 Question Id : 8135611109 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

Analysis shows that nickel oxide has the formula \( Ni_{0.96}O_{1.00} \). The fractions of \( Ni^{2+} \) and \( Ni^{3+} \) ions in the crystal are ______

\[ \text{Analysis shows that nickel oxide has the formula } Ni_{0.96}O_{1.00}. \text{ The fractions of } Ni^{2+} \text{ and } Ni^{3+} \text{ ions in the crystal are } \_\_\_\_. \]

**Options :**

1. \( Ni^{2+} = 98 \% \quad \& \quad Ni^{3+} = 2 \% \)

2. \( Ni^{2+} = 2 \% \quad \& \quad Ni^{3+} = 98 \% \)

3. \( Ni^{2+} = 4 \% \quad \& \quad Ni^{3+} = 96 \% \)

4. \( Ni^{2+} = 6 \% \quad \& \quad Ni^{3+} = 4 \% \)

**Question Number : 150 Question Id : 8135611110 Question Type : MCQ Display Question**

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Which of the following models states that “In an atom, the positive charge is uniformly distributed and electrons are embedded into it”?

Options:

1. Bohr’s atomic model
2. Thomson’s atomic model
3. Rutherford’s atomic model
4. Sommerfeld’s atomic model
Decomposition of ethane \( \frac{d[C_2H_6]}{dt} = k[C_2H_6] \) proceeds through a complex mechanism, which includes 5 steps. The overall rate constant \( k \) can be expressed as \( k = \frac{k_1k_2k_3}{k_2k_5} \) where \( k_1, k_2, k_3, k_4, k_5 \) are the rate constants of the 5 steps.

If the activation energies of each of the steps respectively are \( E_1 = 1E \), \( E_2 = 2E \), \( E_3 = 3E \), \( E_4 = 4E \), \( E_5 = 5E \), where \( E = 20 \text{ kJ/mol} \). Then find the overall activation energy of the decomposition.

\[ k = \frac{k_1k_2k_3}{k_2k_5} \]

Find the overall activation energy of the decomposition.

**Options:**
1. \( 6.67 \text{ kJ/mol} \)
2. \( 3.33 \text{ kJ/mol} \)
3. \( 20 \text{ kJ/mol} \)
4. \( 10 \text{ kJ/mol} \)
$Me_3SiCl$ is used during polymerization of organo silicones because

**Options:**

1. ☑️ $Me_3SiCl$ improves the quality of the silicone polymer
2. ✗ $Me_3SiCl$ improves the yield of the silicone polymer
3. ✗ $Me_3SiCl$ acts as a catalyst during polymerization

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The molecular geometry of $PF_3$ is ____________

$PF_3$ యొక్క అంతర్భాగానికి విభాగము?

**Options:**

1. ✗ Tetrahedral
2. ✔ Pyramidal
Trigonal planar

Square planar

Question Number : 154 Question Id : 8135611114 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The correct representation of Nucleotide is:

Options:

1. ❌

2. ❌

3. ✓
Which of the following compounds will give butanone on oxidation with alkaline KMnO₄ solution?

Which KMnO₄ సమయంలో భాగమైన కీలకమైన అరుదు పయ్యాడు ఉండదు?

Options:

1. Butan-1-ol only

2. Butan-2-ol only

3. Butan-1-ol and Butan-2-ol
None of the options are correct

Which among the following doesn’t undergo hydrolysis?

Options:
1. $\text{CCl}_4$
2. $\text{SiCl}_4$
3. $\text{VCl}_4$
4. $\text{TiCl}_4$

Find the molarity of the 5 molal urea solution, whose density is 1.3 g/ml (given, molecular weight of urea is 60.06 g/mol)

Options:
1. $> 5 \text{M}$
2. $\checkmark = 5 \, M$

3. $\times < 5 \, M$

Can’t be predicted

4. $\times$ తాగితేయం

**Question Number : 158  Question Id : 8135611118  Question Type : MCQ  Display Question Number : Yes  Is Question Mandatory : No  Single Line Question Option : No Option  Orientation : Vertical**

Ozonolysis of an organic compound 'A' produces acetone and propanal in equimolar mixture. Identify 'A' from the following compound.

కోశానిస్థాన 'A' కంటే ఫాసిస్ట్రా పునారు పునరుద్ధరించి ఎక్కడ మరియు ముందు మిగిలిన మోతాడి యొక్క మార్గం మిగిలిన మిగిలి ప్రాంతాన్ని ప్రాంగణం. అందువలన, దీనితో వచ్చిన 'A' యొక్క శైలించిన.

**Options :**

1. pentene
2. methyl -1- pentene
3. methyl -2- pentene
4. pentene
Question Number : 159 Question Id : 8135611119 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A solution containing 4.5 mM of \( \text{MnO}_4^- \) and 15 mM of \( \text{Mn}^{2+} \) shows pH of 2. The potential of half-cell reaction is _____.

Given \( \log 15 = 1.76 \) & \( \log 45 = 1.653 \) & (standard potential of \( \text{MnO}_4^- \rightarrow \text{Mn}^{2+} \) is 1.51 V)

\[ \text{मर्यादा: } \log 15 = 1.76 \text{ & } \log 45 = 1.653 \]

\[ \text{\( \text{MnO}_4^- \rightarrow \text{Mn}^{2+} \) योग्यता सामान्यीकरणी = 1.51 V} \]

Options :
1. ✗ 1.51 V
2. ✔ 1.31 V
3. ✗ 1.71 V
4. ✗ 1.04 V

Question Number : 160 Question Id : 8135611120 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following can form intermolecular H-bond?

\[ \text{సంప్రదాయ తెగ్గ సాధన చక్ర విశేషాలు మలింగిన వితరణ విశేషాలు} \]

Options :
1. ✗
2. Ethyl acetate
   ಇಥೆಲ್ ಅಚೆಟೇಟೆ

3. Methyl formate
   ಮೆಥೆಲ್ ಫೊರ್ಮೇಟ್

4. Acetamide
   ಅಕೆಟ್ಯಾಮಿಡೆ

5. Acetic anhydride
   ಅಕೆಟೀಕೆ ಐನ್ಹೈಡ್ರಿಡೆ