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
Three squares of a chessboard are selected at random. The probability of selecting two squares of one colour and the other of a different color is equal to

Options:

1. \( \frac{10}{17} \)
2. \( \frac{15}{19} \)
3. \( \frac{17}{23} \)
Question Number : 2 Question Id : 813561482 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The value of \((\sin 210^\circ)(\sin 585^\circ)\) is

\[(\sin 210^\circ)(\sin 585^\circ) \text{ is } \]

Options :

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

2. \(\frac{-1}{2\sqrt{2}}\)

3. \(\frac{1}{\sqrt{3}}\)

4. \(\frac{-1}{\sqrt{3}}\)

Question Number : 3 Question Id : 813561483 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The curves \(y = 4x^2 + 2x - 8\) and \(y = x^3 - x + 13\) touch each other at the point

\(y = 4x^2 + 2x - 8\) \(\text{ and } y = x^3 - x + 13\) \(\text{ touch each other at the point } \)
Question Number: 4  Question Id: 813561484  Question Type: MCQ

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

Options:
1. \((34, 3)\)
2. \((3, 34)\)
3. \((-3, 34)\)
4. \((-34, 3)\)

If the magnitude of the vector product of the vector \(\hat{i} + \hat{j} + \hat{k}\) with a unit vector along the sum of the vectors \(2\hat{i} + 4\hat{j} - 5\hat{k}\) and \(\lambda\hat{i} + 2\hat{j} + 3\hat{k}\) is equal to \(\sqrt{2}\), then the value of \(\lambda\) is

\[\hat{i} + \hat{j} + \hat{k} \text{ and } 2\hat{i} + 4\hat{j} - 5\hat{k} \text{ and } \lambda\hat{i} + 2\hat{j} + 3\hat{k}\]

Options:
1. \(-1\)
2. \(1\)
3. \(0\)
4. \(2\)
Question Number : 5 Question Id : 813561485 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If \[ I_n = \int_0^{\pi/2} \sin^n(x) \, dx \] and \[ I_n = (k)I_{n-2} \] then what will be the value of \( k \)?

\[ I_n = \int_0^{\pi/2} \sin^n(x) \, dx \]

\[ I_n = (k)I_{n-2} \]

\( k = \frac{n}{n-1} \)

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

Question Number : 6 Question Id : 813561486 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Let \( M = \begin{bmatrix} 1 & 1 \\ 0 & 1 \end{bmatrix} \) and \( N = \begin{bmatrix} 1 & 0 \\ 0 & 2 \end{bmatrix} \). Then \( NM^{10}N^{-1} = \)

\[ M = \begin{bmatrix} 1 & 1 \\ 0 & 1 \end{bmatrix}, \quad N = \begin{bmatrix} 1 & 0 \\ 0 & 2 \end{bmatrix}. \] Then \( NM^{10}N^{-1} = \).
Question Number : 7 Question Id : 813561487 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Find \( \lambda \) if \( \overrightarrow{a}, \overrightarrow{b}, \overrightarrow{c} \) are three non-coplanar vectors such that

\[
\begin{bmatrix}
4\overrightarrow{a} + 3\overrightarrow{b} - \overrightarrow{c} & 4\overrightarrow{a} + 3\overrightarrow{b} + 2\overrightarrow{c} & \overrightarrow{a} - 4\overrightarrow{b} - \overrightarrow{c}
\end{bmatrix} = (\lambda^2 + \lambda + 1)[\overrightarrow{a} \hspace{1cm} \overrightarrow{b} \hspace{1cm} \overrightarrow{c}]
\]

\( \overrightarrow{a}, \overrightarrow{b}, \overrightarrow{c} \) are three non-coplanar vectors such that

\[
\begin{bmatrix}
4\overrightarrow{a} + 3\overrightarrow{b} - \overrightarrow{c} & 4\overrightarrow{a} + 3\overrightarrow{b} + 2\overrightarrow{c} & \overrightarrow{a} - 4\overrightarrow{b} - \overrightarrow{c}
\end{bmatrix} = (\lambda^2 + \lambda + 1)[\overrightarrow{a} \hspace{1cm} \overrightarrow{b} \hspace{1cm} \overrightarrow{c}]
\]

Options :
1. \( -7, 8 \)
2. \( -7, -6 \)
3. \( 7, -8 \)
4. \( -7, -8 \)

Question Number : 8 Question Id : 813561488 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The sine of the angle between the pair of lines represented by the equation \( x^2 - 7xy + 12y^2 = 0 \) is

\[
x^2 - 7xy + 12y^2 = 0 \Rightarrow x = \frac{7 \pm \sqrt{49 - 4 \cdot 12}}{12} \Rightarrow \sin \theta \text{ becal, } \sin \theta = \frac{1}{\sqrt{170}}.
\]

Options :

1. \( \frac{1}{12} \)
2. \( \frac{1}{13} \)
3. \( \frac{1}{\sqrt{170}} \) (Correct)
4. \( \frac{1}{11} \)

Question Number : 9 Question Id : 813561489 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Find the coefficient of \( x^5 \) in \((1 + x + x^2)^8\).

\[(1 + x + x^2)^8 \text{ ప్రస్తుతం } x^5 \text{ కొరకు కృషి కావుండా}.
\]
Question Number : 10 Question Id : 813561490 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The equation of the circle with Centre (2, 3) and touching the line $3x - 4y + 1 = 0$ is

$3x - 4y + 1 = 0$ వైపు సెంటర్ (2, 3) కు చేసే రేఖ గా చెందిన విశేషాదాయం __________

Options :

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

2. $x^2 + y^2 - 4x - 6y - 14 = 0$

3. $x^2 + y^2 - 4x - 6y + 14 = 0$

4. $x^2 + y^2 - 4x - 6y + 12 = 0$

Question Number : 11 Question Id : 813561491 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
The equation of any \( \text{_____} \) in the complex plane is of the form \( az^2 + bz + c = 0 \) where \( b \in \mathbb{C}, \ c \in \mathbb{R} \).

\[ (b \in \mathbb{C}, \ c \in \mathbb{R}) \text{ such that } az^2 + bz + c = 0 \] is a polynomial of degree 2.

Options:

1. Circle
2. Straight line
3. Parabola
4. Hyperbola

The fraction \( \frac{x^2}{(x-a)(x-b)} \) is

\[ \frac{x^2}{(x-a)(x-b)} \] is always a proper partial fraction.

Options:

1. always a proper partial fraction
always an improper partial fraction

a proper partial fraction for certain values of \(a, b\) only

an improper partial fraction for certain values of \(a, b\) only

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**Question Number : 13**
**Question Id : 813561493**
**Question Type : MCQ**
**Display Question Number : Yes**
**Is Question Mandatory : No**
**Single Line Question Option : No**
**Orientation : Vertical**

In a regular hexagon \(ABCDEF\), \(\overrightarrow{AD} + \overrightarrow{EB} + \overrightarrow{FC} = (3\lambda - 8)\overrightarrow{AB}\). Then \(\lambda = \)

\(ABCDEF\) రతిబాహిని అంటే \(\overrightarrow{AD} + \overrightarrow{EB} + \overrightarrow{FC} = (3\lambda - 8)\overrightarrow{AB}\) అయితే \(\lambda = \)

**Options :**

1. \(3\)
2. \(4\) ✔️
3. \(5\)
4. \(6\)

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**Question Number : 14**
**Question Id : 813561494**
**Question Type : MCQ**
**Display Question...
The equation of the ellipse with its focus at $(6, 2)$ centre at $(1, 2)$ and which passes through the point $(4, 6)$ is

\[
\frac{(x-1)^2}{25} + \frac{(y-2)^2}{16} = 1
\]

Options:

1. \[\frac{(x-1)^2}{25} + \frac{(y-2)^2}{20} = 1\]

2. \[\frac{(x-1)^2}{45} + \frac{(y-1)^2}{16} = 1\]

3. \[\frac{(x-1)^2}{45} + \frac{(y-2)^2}{20} = 16\]

Question Number : 15 Question Id : 813561495 Question Type : MCQ Display Question

If \( f: R \rightarrow R \) is defined as \( f(x) = \frac{x^6}{x^6+2020} \), \( \forall x \in R \), then the range of \( f \) is ________

\( f: R \rightarrow R, f(x) = \frac{x^6}{x^6+2020} \), \( \forall x \in R \), \( \text{విశేషాలు, కురుముముముము f మార్గ ప్రదానం ________} \)

Options:

1. \([0, 1]\)
Question Number : 16 Question Id : 813561496 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The value of ‘k’ for which the equation $x^2 - 4xy - y^2 + 6x + 2y + k = 0$ represents a pair of straight lines is equal to ______

$x^2 - 4xy - y^2 + 6x + 2y + k = 0$  
$k = \frac{4}{5}$

Options :

1. $\frac{-3}{5}$
2. $\frac{-4}{5}$
3. $\frac{3}{5}$

Question Number : 17 Question Id : 813561497 Question Type : MCQ Display Question

AP EAMCET 2020
The general solution of the differential equation \( \frac{dy}{dx} + y \cdot g'(x) = g(x) \cdot g'(x) \) is

\[ \frac{dy}{dx} + y \cdot g'(x) = g(x) \cdot g'(x) \]

Options:

1. \( g(x) + \log(1 + y + g(x)) = c \)

2. \( g(x) + \log(1 + y - g(x)) = c \)

3. \( g(x) - \log(1 + y + g(x)) = c \)

4. \( g(x) - \log(1 + y - g(x)) = c \)

Consider the family of circles \( x^2 + y^2 - 2x - 2\lambda y - 8 = 0 \) which passes through two fixed points \( A \) & \( B \) distance between them is

\[ \sqrt{(x-a)^2 + (y-b)^2} = \sqrt{(x-a)^2 + (y-b)^2} \]

Options:

1. \( 4 \)

2. \( 4\sqrt{2} \)
Question Number : 19 Question Id : 813561499 Question Type : MCQ Display Question
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation : Vertical

Geometric mean of \( \tan 1^\circ, \tan 2^\circ, \ldots, \tan 89^\circ \) is

\[ \tan 1^\circ, \tan 2^\circ, \ldots, \tan 89^\circ \text{ తేలికు సమితి} \]

Options :

1. \[ \frac{1}{89} \]

2. \[ 1 \]

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

4. \[ \sqrt{3} \]

Question Number : 20 Question Id : 813561500 Question Type : MCQ Display Question
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation : Vertical

When a coin is tossed 6 times, the probability of getting more heads than tails is _____

ఒక పిండిని నిచ్చిన వేరు సాధుడు తెలుగు సమితి సంఖ్యలు

AP EAMCET 2020
In the expansion of \( \left( a + 1 + \frac{1}{a} \right)^n \), where \( n \in \mathbb{N} \) there are 2029 terms. Then \( n = \)

\[ \left( a + 1 + \frac{1}{a} \right)^n \quad \text{2029 terms} \quad a \quad \text{what is} \quad n \quad \text{what is} \quad (n \in \mathbb{N}) \]

**Options:**

1. \( 1015 \)
2. \( 1013 \)
3. \( 1014 \)
4. \( 1012 \)
Question Number : 22
Question Id : 813561502
Question Type : MCQ
Display Question Number : Yes
Is Question Mandatory : No
Single Line Question Option : No
Orientation : Vertical
Options :

1. $x = 2n\pi \pm \frac{\pi}{3}, \ n \in \mathbb{Z}$

2. $x = n\pi + (-1)^n \frac{\pi}{3}, \ n \in \mathbb{Z}$

3. $x = n\pi + (-1)^n \frac{\pi}{6}, \ n \in \mathbb{Z}$

4. $x = n\pi + (-1)^n \frac{\pi}{4}, \ n \in \mathbb{Z}$

Question Number : 23
Question Id : 813561503
Question Type : MCQ
Display Question Number : Yes
Is Question Mandatory : No
Single Line Question Option : No
Orientation : Vertical
Options :

1. $i \text{Tanh}^{-1}(y)$
2. \( -i \tanh^{-1}(y) \)

3. \( i \tan^{-1}(y) \)

4. \( -i \tan^{-1}(y) \)

Question Number : 24 Question Id : 813561504 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Find the total number of rectangles on a normal chessboard.

Options :
1. \( ^8C_2 \times ^8C_2 \)

2. \( ^8C_2 + ^8C_2 \)

3. \( ^9C_2 \times ^9C_2 \)

4. \( ^9P_2 \times ^9P_2 \)

Question Number : 25 Question Id : 813561505 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
The eccentricity of an ellipse, with its centre as origin, is 1/2. If one of the directrices is \( x = 4 \), then the equation of the ellipse is given by 

The eccentricity of an ellipse, with its centre as origin, is 1/2. If one of the directrices is \( x = 4 \), then the equation of the ellipse is given by 

Options:
1. \( 4x^2 + y^2 = 12 \)
2. \( x^2 + 3y^2 = 12 \)
3. \( 4x^2 + 3y^2 = 12 \)
4. \( 3x^2 + 4y^2 = 12 \)

The length of the chord intercepted by the circle \( x^2 + y^2 - 6x + 8y - 5 = 0 \) on the line \( 2x - y = 5 \) is equal to 

The length of the chord intercepted by the circle \( x^2 + y^2 - 6x + 8y - 5 = 0 \) on the line \( 2x - y = 5 \) is equal to 

Options:
1. \( 10 \)
2. \( 12 \)
3. \( 7 \)
Question Number : 27 Question Id : 813561507 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Let \( f(x) \) be a polynomial and \( a, b \) be distinct real numbers. Then the remainder in the division of \( f(x) \) by \( (x-a)(x-b) \) is

\[
f(x) \equiv \frac{(x-a)f(a)-(x-b)f(b)}{a-b}
\]

Options :

1. \[
\frac{(x-a)f(a)-(x-b)f(b)}{a-b}
\]

2. \[
\frac{(x-a)f(b)-(x-b)f(a)}{a-b}
\]

3. \[
\frac{(x-a)f(b)-(x-b)f(a)}{b-a}
\]

4. \[
\frac{(x-a)f(a)-(x-b)f(b)}{b-a}
\]

Question Number : 28 Question Id : 813561508 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
If one of the two circles \( x^2 + y^2 + a_1(x - y) + c = 0 \) and \( x^2 + y^2 + a_2(x - y) + c = 0 \), lies within the other, then _______ (where \( a_1, a_2 \in \mathbb{R}, a_1 \neq a_2 \))

\[ x^2 + y^2 + a_1(x - y) + c = 0 \quad \text{and} \quad x^2 + y^2 + a_2(x - y) + c = 0 \]

Options:

1. \( c < 0 \)
2. \( c = 0 \)
3. \( c > 0 \)
4. \( c \geq 0 \)

---

The equation of the plane through the intersection of the planes \( x + 2y + 3z - 4 = 0 \) and \( 4x + 3y + 2z + 1 = 0 \) and passing through the origin is _______

\[ x + 2y + 3z - 4 = 0 \quad \text{and} \quad 4x + 3y + 2z + 1 = 0 \]

Options:

1. \( 17x + 14y + 11z = 0 \)
2. \( 7x + 4y + z = 0 \)
3. \( x + 14y + 11z = 0 \)
Question Number : 30 Question Id : 813561510 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Exactly how many functions \( f: Q \to Q \) exist such that \( f(x + y) = f(x) + f(y) \) and \( f(xy) = f(x)f(y) \) for all \( x, y \in Q \)?

\( f: Q \to Q \) మీదుగా \( f(x + y) = f(x) + f(y), \ f(xy) = f(x)f(y) \ \forall \ x, y \in Q \) అంచనా లేదా ఎంతో?

Options :
1. Two
2. Three
3. Infinitely many
4. One

Question Number : 31 Question Id : 813561511 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Let \( z = x + yi \), where \( x, y \) are integers and \( i = \sqrt{-1} \) the area of the rectangle whose vertices are the roots of the equation \( \bar{z} z^3 + z(\bar{z})^3 = 700 \) is ______.

Options:
1. 32
2. 40
3. 48
4. 80

If the subnormal at any point on the curve \( y^n = ax \) is constant then the value of \( n \) is ______.

Options:
1. 1
2. 2
3. 3
The derivative of \( f(x) = \cos^{-1}\left[ \sin\left(\frac{1+x}{2}\right) + x^x \right] \) with respect to \( x \) at \( x = 1 \) is equal to

\[
f'(x) = \cos^{-1}\left[ \sin\left(\frac{1+x}{2}\right) + x^x \right]_x=1 \quad \text{and} \quad \frac{d}{dx} f(x) \]

Options:

1. 

2. 

3. ✔️

4. ✗
The particular solution of the differential equation \( \frac{dy}{dx} = \sec y \), \( y(0) = 0 \) is

\[ \frac{dy}{dx} = \sec y \cdot y(0) = 0 \]

Options:
1. \( x = \cos y \)
2. \( x = \sin y + q \)
3. \( y = \sin x \)
4. \( x = \sin y \)

The ratio in which the point \( P \), whose abscissa is 3, divides the join of \( A(6, 5) \) and \( B(-1, 4) \) is equal to ________

\[ A(6, 5) \text{ and } B(-1, 4) \]

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

Question Number : 36 Question Id : 813561516 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If \( \sin \alpha = \sin \beta \) and \( \cos \alpha = \cos \beta \) then \( \alpha - \beta = \) _____ for some integer \( n \)

\[
\sin \alpha = \sin \beta \quad \cos \alpha = \cos \beta \quad \therefore \quad \alpha - \beta = \ldots (n \text{ సంఖ్య})
\]

Options :
1. \( \times \) \( mn \)

2. \( \times \) \( \frac{2n\pi}{2} \)

3. \( \times \) \( \frac{2n\pi}{2} \)

4. \( \checkmark \) \( 2n\pi \)

Question Number : 37 Question Id : 813561517 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If P and Q each toss three coins. The probability that both get same number of heads, is

\[ P, Q \text{ అంటే మెంటో కొమ్మ పోసిస్తాం ద్విదశిపాలను చేసే ద్విదశి సంఖ్య పొందడానికి నించే సాధ్యత} \]

Options :
1. \( \times \)
\[
\frac{3}{8}
\]

\[
\frac{1}{9}
\]

\[
\frac{3}{16}
\]

\[
\frac{5}{16}
\]

**Question Number : 38**  
**Question Id : 813561518**  
**Question Type : MCQ**  
**Display Question Number : Yes**  
**Is Question Mandatory : No**  
**Single Line Question Option : No option**  
**Orientation : Vertical**

\[
\frac{\sqrt{3} \sin(\theta) + \cos(\theta)}{\sin(\theta + \frac{\pi}{6})} = \]

**Options :**

1. \(\times\) \(-2\)

2. \(\times\) \(1\)

3. \(\checkmark\) \(2\)

4. \(\times\) \(-1\)

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**Question Number : 39**  
**Question Id : 813561519**  
**Question Type : MCQ**  
**Display Question**

AP EAMCET 2020
When the origin is shifted to (2, 3) the transformed equation \(x^2 + 3xy - 2y^2 + 17x - 7y - 11 = 0\) then the original equation of curve is ____________

Options:
1. \(x^2 - 2y^2 - 3xy + 4x - y + 20 = 0\)
2. \(x^2 - 2y^2 + 3xy + 4x - y - 20 = 0\)
3. \(x^2 - 2y^2 - 3xy - 4x - y + 20 = 0\)
4. \(x^2 - 2y^2 - 3xy + 4x - y - 20 = 0\)

The circle \(x^2 + y^2 - 6x - 10y + p = 0\) neither intersects nor touch the coordinate axes and the point (1, 4) lies inside the circle. Then the range of possible values of ‘p’ is

Options:
1. \(23 < p < 25\)
2. $25 < p < 29$

3. $21 < p < 23$

4. $12 < p < 21$

Question Number : 41 Question Id : 813561521 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If the radius of a sphere is mentioned as 7 m with an error of 0.02 m then the approximate error in calculating its volume is

మరింత రహిత పరిమాణం 7 మీటర్ల పైపు. మరింత రహిత పరిమాణం 0.02 మీటర్ల పైపు, కింద పరిమాణం నుంచి ఎంత భాగం?

Options :

1. $1.83\pi m^3$

2. $2.25\pi m^3$

3. $4.39\pi m^3$

4. $3.92\pi m^3$

Question Number : 42 Question Id : 813561522 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
The function of \( f(x) = |x| + \frac{|x|}{x} \) is

\[ f(x) = |x| + \frac{|x|}{x} \]

**Options:**

1. ✗

   discontinuous at the origin because \(|x|\) is discontinuous there

2. ✗

   discontinuous at the origin because \(\frac{|x|}{x}\) is discontinuous there

3. ✔

   discontinuous at the origin because both \(|x|\) and \(\frac{|x|}{x}\) are discontinuous are

\[ |x| \] and \[\frac{|x|}{x}\] are discontinuous at the origin.
If \( A \) is a Skew-symmetric matrix then (given \( n \in \mathbb{N} \)):

(i) \( A^{2n} \) is Skew-symmetric matrix

(ii) \( A^{2n+1} \) is Skew-symmetric matrix

\( A \) అంటే స్కీవ్ సిమ్మెట్రిక్ మాట్రిస్ ఎంపాడం, అనేక నుండి \( n \in \mathbb{N} \) చే

(i) \( A^{2n} \) స్కీవ్ సిమ్మెట్రిక్ మాట్రిస్

(ii) \( A^{2n+1} \) స్కీవ్ సిమ్మెట్రిక్ మాట్రిస్

Options:

(i) is True, (ii) is False

(i) సత్తుమా, (ii) నాందితమ

1. ✗

Both (i) & (ii) are True

(i) సత్తుమా (ii) లేదా నాందితమ

2. ✗

Both (i) & (ii) are False

(i) నాందితమ (ii) లేదా సత్తుమా

3. ✅

(i) is False, (ii) is True

(i) నాందితమ, (ii) సత్తుమా

4. ✗

Question Number: 44 Question Id: 813561524 Question Type: MCQ Display Question Number: Yes Is Question Mandatory: No Single Line Question Option: No Option Orientation: Vertical
The rank of the matrix 
\[
\begin{bmatrix}
2 & 1 & 1 \\
0 & 3 & -1 \\
1 & -1 & 1
\end{bmatrix}
\]
is _________.

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

If \( Q \) is the inverse of \( A \), when 
\[
A = \begin{bmatrix}
1 & -1 & 1 \\
2 & 1 & -3 \\
1 & 1 & 1
\end{bmatrix}
\]
and 
\[
10 \times Q = \begin{bmatrix}
4 & 2 & 2 \\
-5 & 0 & x \\
1 & -2 & 3
\end{bmatrix}
\]
find \( x = \)

Options:
1. 2
Question Number : 46 Question Id : 813561526 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If \(a, b, c\) are in Arithmetic Progression (A.P.), then the roots of the equation \(ax^2 - 2bx + c = 0\) are

\[a, b, c\] अरिथमेटिक प्रग्रेशन (A.P.) में हैं, \(ax^2 - 2bx + c = 0\] के मूल हैं ________

Options :
1. \(\frac{c}{a}\)
2. \(-\frac{1}{a}, -c\)
3. \(-1, \frac{-c}{a}\)
4. \(-2, \frac{-c}{2a}\)

Question Number : 47 Question Id : 813561527 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
The equation of the transverse axis of hyperbola \((x - 3)^2 + (y + 1)^2 = (4x + 3y)^2\) is

\[(x - 3)^2 + (y + 1)^2 = (4x + 3y)^2\]

**Options:**

1. \(3x + 4y = 13\)
2. \(3x - 4y = 13\)
3. \(4x - 3y = 13\)
4. \(3x - 4y = 9\)

---

**Question Number : 48 Question Id : 813561528 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

What is the value of \(x\) if the mean of 8,6,7,5,\(x\) and 4 is 7 ?

8,6,7,5,\(x\) ల గిర్జా 7 కు మిశ్రమం ఉంటే, \(x\) యునాని ఎలాంటి?

**Options:**

1. \(10\)
2. \(12\)
3. \(8\)
4. \(6\)
Two \( \mathbf{u} \) and \( \mathbf{v} \) are parallel if and only if

\[ \mathbf{u} \parallel \mathbf{v} \iff \mathbf{u} \text{ and } \mathbf{v} \text{ have the same direction} \]

1. \( \times \cdot \)

\[ \mathbf{u} \parallel \mathbf{v} \iff \mathbf{u} \text{ and } \mathbf{v} \text{ have the opposite direction} \]

2. \( \times \cdot \)

One of them is a scalar multiple of the other

3. \( \checkmark \)

The dot product of \( \mathbf{u} \) and \( \mathbf{v} \) are Zero

4. \( \times \cdot \)

---

\[ \int_{0}^{\pi/4} (\tan^2 x + \tan^4 x) \, dx = \]

Options :

1. \( \times \cdot \)

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Question Number : 51 Question Id : 813561531 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

For how many values \( a \in \mathbb{C} \), the equations \( x^2 - 8x + 7 = 0 \) and \( x^2 - 2ax + 49 = 0 \) have a common root?

\( x^2 - 8x + 7 = 0, x^2 - 2ax + 49 = 0 \) కలుగు \( x^2 - 8x + 7 = 0 \) సమస్య సమీకరణం లేకుండా. \( a \) ఎంపిక బహుమినం

Options :

1. ✗

2. ✗

3. ✔

4. ✗
The equation of the normal to the circle \( x^2 + y^2 = 16 \) at the point \( \left( \frac{1}{\sqrt{3}}, \frac{1}{\sqrt{3}} \right) \) is

\[
\left( \frac{1}{\sqrt{3}}, \frac{1}{\sqrt{3}} \right) \text{ యిందునే } x^2 + y^2 = 16 \text{ నిర్దేశాంక విభిన్న సంఖ్య నిర్ణయం }
\]

Options:
1. \( x + y = 0 \)
2. \( x - y = \frac{\sqrt{3}}{4} \)
3. \( x - y = 0 \)
4. \( x + y = \frac{\sqrt{3}}{4} \)

If \( m \) and \( n \) are the least and greatest values of \( |z| \) respectively and \( |z - 4 + 3i| \leq 1 \). Let \( k \) be the least value of \( \frac{x^4 + x^2 + 4}{x} \) on the interval \((0, \infty)\). Then \( k = \)

\[
m, n \text{ యిందునే } |z| \text{ నిర్దేశాంక విభిన్న సంఖ్య నిర్ణయం } |z - 4 + 3i| \leq 1 \text{ లో } z \text{ సంఖ్య నిర్ణయం. (0, } \infty) \]

Options:
1. \( n \)

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2. \( m \)

3. \( m + n \)

4. \( mn \)

Question Number : 54 Question Id : 813561534 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The co-ordinates of focus of the parabola \( 5x^2 = -12y \) are

\[ 5x^2 = -12y \] are

Options :

1. \( \left( \frac{3}{5}, 0 \right) \)

2. \( \left( -\frac{3}{5}, 0 \right) \)

3. \( \left( 0, \frac{3}{5} \right) \)

4. \( \left( 0, -\frac{3}{5} \right) \)

Question Number : 55 Question Id : 813561535 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 \( x^2 - 2x + 4 = 0 \), for \( n \in \mathbb{N} \), what is the value of \( \alpha^n + \beta^n = \) 
\[ x^2 - 2x + 4 = 0 \iff \alpha, \beta \text{ are roots. } n \in \mathbb{N} \text{ implies, } \alpha^n + \beta^n = \]

**Options:**
1. \( 2^{n+2} \cos \left( \frac{n\pi}{3} \right) \)

2. \( 2^{n+1} \cos \left( \frac{n\pi}{3} \right) \)

3. \( 2^{n+1} \cos \left( \frac{n\pi}{6} \right) \)

4. \( 2^{n+2} \cos \left( \frac{n\pi}{6} \right) \)

**Question Number:** 56  
**Question Id:** 813561536  
**Question Type:** MCQ  
**Display Question Number:** Yes  
**Is Question Mandatory:** No  
**Single Line Question Option:** No  
**Orientation:** Vertical

---

Find the general solution of \( \sin x + \sin 2x + \sin 3x = \cos x + \cos 2x + \cos 3x \)

\( \sin x + \sin 2x + \sin 3x = \cos x + \cos 2x + \cos 3x \) నిష్పాధికంగా విభజించండే సమస్య

**Options:**
1. \( 2n\pi + \frac{2\pi}{3}, \frac{n\pi}{2} + \frac{\pi}{8}, n \in \mathbb{Z} \)

2. \( 2n\pi - \frac{2\pi}{3}, \frac{n\pi}{2} - \frac{\pi}{8}, n \in \mathbb{Z} \)

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A straight line $L_1$ passing through $A(3,1)$ meets the coordinate axes at $P$ and $Q$ such that its distance from the origin $O$ is maximum. Then area of $\Delta OPQ$ is ____ sq. units.

$A(3,1)$ ద్వారా నిర్దిష్ట జింటి బ్రీకింది $L_1$, ఎందుకంటే $P$ మరియు $Q$ అబ్ది అందాలి. $L_1$ ని పంచి భూమి వాటా కావదంతో, $\Delta OPQ$ పరిమిత పొల్చిపోతుంది ____ విశిష్టం ఉంటుంది.

Options:
1. \[\frac{100}{3}\]
2. \[\frac{25}{3}\]
3. \[\frac{50}{3}\]
4. \[\frac{200}{3}\]
Question Number : 58 Question Id : 813561538 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A speaks truth in 20% of the cases and B in 80% of the cases. Find the probability that their statements about an incident do not match.

20% లో మాత్రం A తనవినం, 80%లో మాత్రం B తనవినం. అంటే తనవినం నింతుండి మరింతం మింతి అనుసరణలు లభించిన భాషలు ___

Options :

1. \( \frac{3}{25} \)
2. \( \frac{7}{25} \)
3. \( \frac{4}{25} \)
4. \( \frac{8}{25} \)

Question Number : 59 Question Id : 813561539 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If the roots of the given equation \((\cos p - 1)x^2 + (\cos p)x + \sin p = 0\) are real, then

\((\cos p - 1)x^2 + (\cos p)x + \sin p = 0\) అనే సమీకరణాన్ని సూచించే రేఖా రేఖలు వ్యాపకం, అంశాలు

Options :

1. \( p \in (-\pi, 0) \)
2. \( p \in \left( -\frac{\pi}{2}, \frac{\pi}{2} \right) \)

3. \( p \in (0, \pi) \)

4. \( p \in (0, 2\pi) \)

**Question Number : 60 Question Id : 813561540 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

If \( f \) is integrable on \([0, a]\), then the function \( h \) defined on \([0, a]\) as \( h(x) = \forall x \in [0, a] \) is integrable on \([0, a]\)

\([0, a] \) ఫంక్షను ఇంటర్మెషన్లే ఉంటాయి \( x \in [0, a] \) లేకుంటే \( h(x) \) ఇంటర్మెషన్లే ఉంటాయి.

**Options :**

1. \( f(a - x) \)

2. \( f(x - a) \)

3. \( f(x) \)

4. \( f(a) \)

---

**Question Number : 61 Question Id : 813561541 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**
The equations of lines passing through \((5, 3)\) and perpendicular to \(2x + y - 7 = 0\) is

\((5, 3)\) నుండి నుండి విస్తృతాలు, \(2x + y - 7 = 0\) లో నిషీద సరిహద్దు వ్యాఖ్యాతమ ముఖాలు.

**Options:**

1. \(2y - x - 2 = 0\)

2. \(2y - x + 2 = 0\)

3. \(x + y - 8 = 0\)

4. \(2y - x - 1 = 0\)
Find the minimum radius of the circle which is orthogonal to both the circles $x^2 + y^2 + 4x + 3 = 0$ and $x^2 + y^2 - 12x + 35 = 0$.

$$x^2 + y^2 + 4x + 3 = 0 \quad \text{and} \quad x^2 + y^2 - 12x + 35 = 0$$

Options:
1. $1$
2. $4$
3. $\sqrt{17}$
4. $\sqrt{15}$

Let $u$ and $v$ be two nonzero vectors. If $|u + v| = |u - v|$ then

$u, v$ are said to be orthogonal if $|u + v| = |u - v|$ holds.

Options:
\[ \mathbf{u} \text{ and } \mathbf{v} \text{ have the same direction} \]
\[ \mathbf{u} \text{ are perpendicular} \]
\[ \mathbf{u} \text{ and } \mathbf{v} \text{ have the opposite direction} \]
\[ \text{Data Insufficient} \]

**Question**: The unit vectors orthogonal to \(3\mathbf{i} + 2\mathbf{j} + 6\mathbf{k}\) and coplanar with \(2\mathbf{i} + \mathbf{j} + \mathbf{k}\) and \(\mathbf{i} - \mathbf{j} + \mathbf{k}\) are

\[2\mathbf{i} + \mathbf{j} + \mathbf{k}, \mathbf{i} - \mathbf{j} + \mathbf{k}\]

Options:

1. \[\pm \frac{1}{\sqrt{5}}(2\mathbf{i} - \mathbf{k})\]
2. \[\pm \frac{1}{\sqrt{10}}(3\mathbf{j} - \mathbf{k})\]
3. \[\pm \frac{1}{\sqrt{13}}(2\mathbf{i} - 3\mathbf{j})\]
4. \( \pm \frac{1}{\sqrt{17}}(2\hat{i} + 3\hat{j} - 2\hat{k}) \)

**Question Number : 66 Question Id : 813561546 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

If the sum of the slopes of the lines given by \(4x^2 + 2\lambda xy - 7y^2 = 0\) is equal to the product of the slopes, then \(\lambda\) is equal to

\[ 4x^2 + 2\lambda xy - 7y^2 = 0 \]

Options :

1. \(-4\)
2. \(4\)
3. \(-2\)
4. \(2\)

**Question Number : 67 Question Id : 813561547 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

\[ \frac{10001 \times 100!}{2 \times 1! + 5 \times 2! + 10 \times 3! + \cdots + 10001 \times 100!} \]

Options :

1. \(\frac{1001}{1100}\)
Question Number : 68 Question Id : 813561548 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation : Vertical

\[ \int e^{x/2} \left( \frac{2 + \sin x}{1 + \cos x} \right) \, dx = \]

Options :
1. \( 2e^{x/2} \csc(x/2) + c \)
2. \( 2e^{x/2} \tan(x/2) + c \)
3. \( 2e^{x/2} \cos(x/2) + c \)
4. \( 2e^{x/2} \sin(x/2) + c \)

Question Number : 69 Question Id : 813561549 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation : Vertical

\[ \int \left[ \frac{1}{\log x} - \frac{1}{(\log x)^2} \right] dx = \]

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

Question Number : 70 Question Id : 813561550 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

The crew of an 8-oar boat is to be chosen from 12 men, of whom 3 can row on the stroke side only. The number of ways in which the crew can be arranged is

8-టి కింద తిని కండి కలిగి మాత్రమే 12 మాములు నిలబడి స్ట్రోక్ సిడ్ కూడా. మితిగా పంపులు(3) ప్రథమ ప్రథమ మాములు నిలబడాలి. తేది మాములు మరియు రెండవ ప్రథమ మాములు కండి నిలబడాలి____

Options :
1. \( ^9C_4 \times ^8C_3 \times 3! \times 4! \)
2. \( ^9C_4 \times ^8C_4 \times 4! \times 4! \)
3. \[ \binom{8}{3} \times \binom{8}{3} \times 4! \times 3! \]

4. \[ \binom{9}{4} \times \binom{9}{4} \times 4! \times 4! \]

---

**Question Number : 71**
**Question Id : 813561551**
**Question Type : MCQ**
**Display Question Number : Yes**
**Is Question Mandatory : No**
**Single Line Question Option : No**
**Orientation : Vertical**

Let \( f(x) = \tan^{-1} \left( \frac{1 + \cos x}{\sin x} \right) \); \( g(x) = \tan^{-1} \left( \frac{\sin x}{1 - \cos x} \right) \), then \( \int (f(x) + g(x)) \, dx = \)

\[ f(x) = \tan^{-1} \left( \frac{1 + \cos x}{\sin x} \right) \]
\[ g(x) = \tan^{-1} \left( \frac{\sin x}{1 - \cos x} \right) \]
\( \int (f(x) + g(x)) \, dx = \)

**Options :**

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

2. \( \frac{\pi x}{2} - \frac{x^2}{2} \) **✓**

3. \( \frac{\pi x}{2} + \frac{x^2}{4} \)

4. \( \frac{\pi x}{2} + \frac{x^2}{2} \) **✓**

---

**Question Number : 72**
**Question Id : 813561552**
**Question Type : MCQ**
**Display Question Number : Yes**
**Is Question Mandatory : No**
**Single Line Question Option : No**
**Orientation : Vertical**

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The tangent at the point (1, 2) to the curve $y^2 = 4x$ makes an angle $\theta$ with the positive direction of $x$-axis. Then $\theta =$

\[ y^2 = 4x \]  

**Options:**

1. $60^\circ$
2. $30^\circ$
3. $90^\circ$
4. $45^\circ$

---

**Question Number:** 73  **Question Id:** 813561553  **Question Type:** MCQ  **Display Question Number:** Yes  **Is Question Mandatory:** No  **Single Line Question Option:** No  **Orientation:** Vertical

If $A(2, -3)$ and $B(-2, 1)$ are two vertices of a triangle $ABC$ and if the centroid of $\Delta ABC$ lies on the line $2x + 3y = 1$, then the locus of vertex $C$ of $\Delta ABC$ is equal to

\[ 2x + 3y = 1 \]  

**Options:**

1. $2x + 3y = 5$
2. $2x + 3y = 9$
3. $3x + 2y = 5$
4. \[3x + 2y = 9\]

**Question Number : 74 Question Id : 813561554 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The pair of straight lines represented by the equation \(3dx^2 + 5xy + (d^2 - 2)y^2 = 0\). If the lines are perpendicular to each other, for how many values of \(d\) this condition will be satisfied?

\[3dx^2 + 5xy + (d^2 - 2)y^2 = 0\]  

**Options :**

1. 0
2. \(\sqrt{2}\)
3. 1
4. 3

**Question Number : 75 Question Id : 813561555 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The solution of \(x \frac{dy}{dx} = y(\log y - \log x + 1)\) is

\(x \frac{dy}{dx} = y(\log y - \log x + 1)\)  

**Options :**
1. \( y = xe^{cx} \)

2. \( y^2 = cx^2 \)

3. \( y^2 = cx \log(x) \)

4. \( \log(y) = cx \)

Question Number : 76 Question Id : 813561556 Question Type : MCQ Display Question
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation : Vertical

The co-ordinates of the focus of the parabola \((x + 3)^2 = 2(y - 5)\) is

\( (x + 3)^2 = 2(y - 5) \) యంత్రం ఫాక్స్ నుండి విసరి

Options :

1. \( \left( \frac{-5}{2}, 5 \right) \)

2. \( \left( -3, \frac{11}{2} \right) \)

3. \( \left( 3, \frac{-11}{2} \right) \)

4. \( \left( 0, \frac{1}{2} \right) \)

Question Number : 77 Question Id : 813561557 Question Type : MCQ Display Question
AP EAMCET 2020
If the slope of the line \( ax + (3 - a)y + 7 = 0 \) is 7 then the value of integral part of ‘\( a \)’ is

\[
ax + (3 - a)y + 7 = 0 \quad \text{then} \quad \left\lfloor a \right\rfloor = 3.
\]

Options:
1. ✔ 3
2. ✗ 7
3. ✗ 0.5
4. ✗ 3.5

A and B are two candidates seeking admission in a college. The probability that A is selected is 0.7 and the probability that exactly one of them is selected is 0.6. Find the probability that B is selected.

A, B అనే విదిత ప్రత్యేకత వాటిని చేయటం. A అనే విదిత ప్రాంపక విద్యార్థి కారణం 0.7 అయితే, B విద్యార్థి కారణం 0.6ను చెప్పండి. A విద్యార్థి విద్యార్థి కారణం 0.7 మరియు B విద్యార్థి విద్యార్థి కారణం 0.7, తదుపార్థం ఫ్యాకటీ విద్యార్థి కారణం 0.6 ద్వారా, B విద్యార్థి విద్యార్థి కారణం ఎంత ఉండటానికి చెప్పండి?

Options:
1. ✗ 0.15
2. ✗ 0.20
3. ✔ 0.25
Question Number : 79 Question Id : 813561559 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A point in the domain that cannot be filled in so that the resulting function is continuous is called

అన్ని ఐదుళ్ళు ప్రాంభ అంకితెక్కడ అంతర్భాగం కాపడాలి విస్తరణా విస్తరణ నిమిషించాలి _____ అనేది

Options :

1. ☑️ Removable Discontinuity
   ఎంచువులుచా బిందుచిననే

2. ☐️ Non-Removable Discontinuity
   ఎంచువులుచా బిందుచిననే

3. ☐️ Impossible Discontinuity
   అసమాచార బిందుచిననే

4. ☐️ Irrelevant Discontinuity
   ఎంచువులుచా బిందుచిననే

Question Number : 80 Question Id : 813561560 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Let \( A, B \) and \( C \) be three angles of a triangle \( ABC \) such that \( \cos A + \cos B + \cos C = \frac{3}{2} \). then the triangle \( ABC \) is ________

\[ A, B, C \text{ లేదా } ABC \text{ త్రిభువనాం మూడు కోణాలు ఉన్నాం, ప్రత్యేకంగా } \cos A + \cos B + \cos C = \frac{3}{2} \text{ అవుంటే, దేశము } \text{ ఎంతం?} \]

**Options:**

1. Equilateral
2. Right angled
3. Isosceles but not equilateral
4. Scalene

**Physics**

**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

AP EAMCET 2020
Question Number : 81

A charge $q$ C moving in a circle of radius \( r \) m makes \( n \) revolutions per second. Magnetic field at the centre of the circle is \( \frac{2\pi q}{mr} \times 10^{-7} \text{ N.amp}^{-1}.\text{m}^{-1} \).

Options:

1. \( \frac{2\pi q}{r} \times 10^{-7} \text{ N.amp}^{-1}.\text{m}^{-1} \)
2. \( \frac{2\pi q}{r} \times 10^{-7} \text{ N.amp}^{-1}.\text{m}^{-1} \)
3. \( \frac{2\pi q}{r} \times 10^{-7} \text{ N.amp}^{-1}.\text{m}^{-1} \)
4. \( \frac{2\pi q}{r} \text{ N.amp}^{-1}.\text{m}^{-1} \)

Question Number : 82

Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
The electric potential on the surface of a charged spherical conductor of radius 5 cm is 200 V. Work done in moving a charge of +5 C from a point A to another point B situated at distances of 15 cm and 10 cm respectively from the centre of the sphere is ______

🌴 ₹ ఎలక్ట్రిక్ పొటెన్టియల్ ప్రకాశం 5 cm రాబ్బ్బు సమీకరణ లేక ఎత్తు రాబ్బు లేదు ఆంధిచెయ్యకు ప్రస్తుతించబడిన 200 V. A నాలుగు స్థితి B నాలుగు స్థితి చివరి ప్యాంట్టికట్టి ప్రస్తుతించబడిన 15 cm ముందు 10 cm భాగాన చివరి ప్రంభించబడిన 5 C ఎలక్ట్రిక్ పొటెన్టియల్ ప్రస్తుతించ ప్రణాళిక సమీకరణ లేదు

Options:
1. 16.7 J
2. 22.3 J
3. 88.8 J
4. 166.7 J

Question Number : 83 Question Id : 813561563 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Which of the following statements is correct regarding photoelectric effect?

1. The electrons are emitted if emitting surface is at high temperature.
2. Photoemission occurs if wavelength is less than a critical value.
3. The K.E. of photoelectrons is proportional to the square of the amplitude of incident radiation.
4. The photoelectric current is proportional to the frequency of incident radiation.

Which of the following statements is correct regarding photoelectric effect?

1. పాలోప్యమయంత వ్యాపారం ఉండనప్టాలను ఉంటుంది
2. పాలోప్యమయంత వ్యాపారం ఉండనప్టాలను ఉంటుంది
3. పాలోప్యమయంత వ్యాపారం ఉండనప్టాలను ఉంటుంది
4. పాలోప్యమయంత వ్యాపారం ఉండనప్టాలను ఉంటుంది

Options:

1. ×
2. ✔
3. ×
4. ×

Question Number : 84 Question Id : 813561564 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
A light meter rod has two-point masses each of 2 kg fixed at its ends. If the system rotates about its centre of mass with an angular speed of 0.5 \( \text{rad. s}^{-1} \), its rotational K.E. is

\[ \text{Options:} \]

1. \( 0.125 \text{ erg} \)

2. \( 1.25 \text{ erg} \)

3. \( 1.25 \text{ J} \)

4. \( 0.125 \text{ J} \)

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If \( B_1 \) is the magnetic field induction at a point on the axis of a circular coil of radius \( R \) situated at a distance \( R\sqrt{3} \) and \( B_2 \) is the magnetic field at the center of the coil, then the ratio of \( \frac{B_1}{B_2} \) is equal to

\[ \text{Options:} \]

1. \( \frac{1}{3} \)

2. \( \frac{1}{8} \)
Two opposite and equal charges each of magnitude $4 \times 10^{-8} \text{ C}$ form a dipole. Their separation is $2 \times 10^{-2} \text{ cm}$. When this dipole is placed in an external electric field $4 \times 10^8 \text{ N C}^{-1}$, the value of maximum torque and the work done in rotating it through $180^\circ$ respectively, will be

$4 \times 10^{-8} \text{ C}$ द्वारा दो समान तांत्रिक धेरें $2 \times 10^{-2} \text{ cm}$ की दूरी से साथ में हैं। इस द्वारा तैनात एक तांत्रिक धेरे $4 \times 10^8 \text{ N C}^{-1}$ में स्थित है, तो यह धेरे के लिए सर्वोच्च मात्रा का तौल्य और $180^\circ$ के माप पर उसे घोराये जाने के लिए कर्म वाला क्षण का मान होगा।

Options:

1. $64 \times 10^{-4} \text{ N.m} \quad \& \quad 64 \times 10^{-4} \text{ J}$

2. $32 \times 10^{-4} \text{ N.m} \quad \& \quad 32 \times 10^{-4} \text{ J}$

3. $64 \times 10^{-4} \text{ N.m} \quad \& \quad 32 \times 10^{-4} \text{ J}$

4. $32 \times 10^{-4} \text{ N.m} \quad \& \quad 64 \times 10^{-4} \text{ J}$
To estimate ‘g’ from \( g = \frac{4\pi^2 \frac{L}{T^2}}{\text{T}} \), error in measurement of \( L \) is ± 2 % and error in measurement of \( T \) is ± 3 %. The error in estimated ‘g’ will be

\[ L \text{ ఇరుస్పతి } \pm 2 \%, \ T \text{ ఇరుస్పతి } \pm 3 \% \] అంటే, \[ g = \frac{4\pi^2 \frac{L}{T^2}}{\text{T}} \] కి సంబంధం లేని ‘g’

అంతరం సమస్యకు సమాధానం ________

Options:
1. ± 8 %
2. ± 5 %
3. ± 3 %
4. ± 6 %

Question Number : 88 Question Id : 813561568 Question Type : MCQ Display Question

The coefficient of viscosity of an ideal fluid is ___________

పాత కెన్ధరం విస్కాత గణానం ___________

Options:
1. equal to 1
2. zero

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Question Number : 89 Question Id : 813561569 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Five point charges \( \frac{1}{\pi} \), \( \frac{2}{\pi} \), \( \frac{3}{\pi} \), \( \frac{4}{\pi} \) and \( -\frac{5}{\pi} \) nano-Coulomb are located inside a pyramid. The total electric flux through the surface of the pyramid is

\[ \text{Options:} \\
1. 180 \ N.m^2.C^{-1} \\
2. 90 \ N.m^2.C^{-1} \\
3. 55 \ N.m^2.C^{-1} \\
4. 5 \ N.m^2.C^{-1} \]

Question Number : 90 Question Id : 813561570 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Assuming that the junction diode is ideal, the current in the arrangement shown is

Options:
1. 2 mA
2. 20 mA
3. 30 mA
4. 10 mA

A force \( F \) is needed to break a copper wire having radius \( R \). The force needed to break a copper wire of radius \( 2R \) will be

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

$\frac{F}{4}$

4. $\times$

**Question Number : 92**  
**Question Id : 813561572**  
**Question Type : MCQ**  
**Display Question Number : Yes**  
**Is Question Mandatory : No**  
**Single Line Question Option : No**  
**Orientation : Vertical**  

300 g of water at 25 °C is added to 100 g of ice at 0 °C. The final temperature of mixture will be

25 °C का 300 g वाट का 25 °C और 0 °C का 100 g योग के समान सतह, ठंडते समय क्या होगा?

**Options :**

1. $\times$ 25 °C

2. $\checkmark$ 0 °C

3. $\times$ 12.5 °C

4. $\times$ 30 °C

**Question Number : 93**  
**Question Id : 813561573**  
**Question Type : MCQ**  
**Display Question Number : Yes**  
**Is Question Mandatory : No**  
**Single Line Question Option : No**  
**Orientation : Vertical**  

The kinetic energy of a body is increased by 4 times. Its momentum will ________

गांव की गति है 4 गुना होती है, तो गति मात्रा ________

**Options :**

1. $\checkmark$
increase twice
增加两倍

increase four times
增加四倍

decrease twice
减少两倍

remains constant
保持不变

Question Number : 94 Question Id : 813561574 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

When a player throws a ball, it reaches the other player in 4 seconds. If the height of each player is 1.8 m, the maximum height attained by the ball above the ground is

1.8m 高度の球を 投げると 他者に到達するまでに 4秒行ける。各 は 1.8mの高さである。この時に 球が 地上より 最大でいくつ高くなるか?

Options :

1. ✗ 19.4m
2. ✗ 20.4m
3. ✓ 21.4m
4. ✗ 22.4m
When the temperature difference between the source and sink increases, the efficiency of the heat engine ______

Options:
1. Decreases
2. Increases
3. is not affected
4. may increase or decrease

Question Number : 96 Question Id : 813561576 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
The $V - I$ graph for a conductor at temperature $T_1$ and $T_2$ are as shown in the figure. $T_2 - T_1$ is proportional to ________

$T_1$ మరియు $T_2$ యె వచ్చిన వింతలు, $V - I$ గ్రాఫ్ మరియుగానే ఉంటుంది. $T_2 - T_1$ మేము
ఎందుకు ఏక్షన్ వచ్చిన కావచ్చు?

Options:
1. $\cos 2\theta$
2. $\sin 2\theta$
3. $\cot 2\theta$
4. $\tan 2\theta$

A bullet strikes against a wooden block and is embedded in it, the nature of collision is:

ఒక వరుస వింతం పిత్తా మనంతా రాయబడినంతం, వింతం ఎంతా చేసుకుంది?

Options:
Elastic

1. ✗

Perfectly inelastic

2. ✓

Inelastic

3. ✗

Perfectly elastic

4. ✗

Question Number : 98 Question Id : 813561578 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Three blocks of masses 700 g, 500 g, and 400 g, suspended at the end of a spring as shown in the figure, are in equilibrium. When the 700 g block is removed, the system has a period of oscillations of 3 s. If both 700 g and 500 g blocks are removed, the period of oscillation becomes _____

Options:
1. 1 s
2. 2 s
3. 3 s
4. $\sqrt{\frac{12}{5}}$ s

Question Number : 99 Question Id : 813561579 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
The distance between the successive node and antinode is ________

హరిక నడివైన, పరీక్షా వైపు నడి మిడి __________

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

Question Number : 100 Question Id : 813561580 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A prism ($\mu = 1.5$) has the refracting angle of $30^\circ$. The deviation of a monochromatic ray incident normally on its one surface will be. (Given $\sin 48^\circ 36' = 0.75$)

అనే ప్రిస్మ అయినప్పుడు పరీక్షా వైపు $30^\circ$ చెయ్యాడు అనే ఏండ్రోగ్యం నడి అనే సేటా యునిఫిల్షన్ చెయ్యాడు (సిన్ $48^\circ 36' = 0.75$)

Options:
1. $18^\circ 36'$
2. $22^\circ 38'$
3. 18°

4. 22° 1′

Question Number : 101 Question Id : 813561581 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A balloon of mass ‘M’ descends with an acceleration ‘a’ (< g). What mass need to be removed from the balloon so that it starts ascending with acceleration ‘a’?

మాదిరి "M" కు నిర్ధారించే స్థాయిమాత్ర మాటలు ‘a’ (< g) ఇందులో ఉండే మామాటుతుంది. అదే సమయంలో ‘a’ స్థాయిమాత్ర కు వేరుతుంది?

Options :

1. \( \frac{2M}{(a+g)} \)

2. \( \frac{2Ma}{(a+g)} \)

3. \( \frac{2Ma}{(a-g)} \)

4. \( \frac{2Ma}{(g-a)} \)

Question Number : 102 Question Id : 813561582 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
On a smooth inclined plane, a mass $M$ is attached between two massless springs of force constant $k$ each, as shown in the figure. The other ends of the springs are fixed to firm supports. The period of oscillation of the mass $M$ is

\[ 2\pi \left( \frac{M}{2k} \right)^{1/2} \]

Options:

1. \( 2\pi \left( \frac{M}{2k} \right)^{1/2} \)

2. \( 2\pi \left( \frac{2M}{k} \right)^{1/2} \)

3. \( 2\pi \left( \frac{Mg \sin \theta}{2k} \right) \)

4. \( 2\pi \left( \frac{2Mg}{k} \right)^{1/2} \)
A Fraunhofer diffraction pattern due to a narrow slit is obtained on a screen placed at a distance \(D\) from the slit whose slit width is \(a\). The distance of first secondary maximum from the central maximum is

\[
\frac{3D\lambda}{a}
\]

Options:
1. \(\frac{3D\lambda}{a}\)

\[
\frac{3D\lambda}{2a}
\]

2. \(\frac{2D\lambda}{3a}\)

\[
\frac{2D\lambda}{a}
\]

3. \(\frac{2D\lambda}{a}\)

In the Uranium radioactive series, the initial nucleus is \(^{238}_{92}U\) and final nucleus is \(^{206}_{82}Pb\). When the Uranium nucleus decays to Lead, the number of \(\alpha\) particles emitted is _______ and the number of \(\beta\) particles emitted is _______

Options:

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A machine which is 70% efficient raises a 10 kg body through a certain distance and spends 100 J energy. The body is then released. On reaching the ground, the kinetic energy of the body will be

Options:

1. ☒ 0 J
2. ☒ 70 J
3. ☒ 50 J
4. ☒ 35 J
Orientation : Vertical
The temperature of a body is measured both in °C and °F. A graph is plotted with °F on x-axis and °C on y-axis. Then the cosine of angle between the graph and the x-axis is ______

Options :
1. 0
2. \( \frac{9}{5} \)
3. \( \frac{5}{\sqrt{106}} \)
4. \( \frac{9}{\sqrt{106}} \)

Question Number : 107 Question Id : 813561587 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation : Vertical
If the raw egg and boiled egg are subjected to spin on a table by applying the equal torque, then the egg that spins with the greater speed is?

Options :
1. raw egg
boiled egg

Both eggs have equal speed

Both eggs never spin

Question Number : 108 Question Id : 813561588 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A swimmer can swim in still water with speed ‘v’ and the river flowing with velocity v/2. To cross the river in shortest time, he should swim making angle ‘θ’ with the upstream. What is the ratio of the time taken to swim across in the shortest time to that in swimming across over shortest distance?

Options :
1. ✗ cos θ
2. ✗ cot θ
3. ✔ sin θ
4. ✗ tan θ
Question Number : 109 Question Id : 813561589 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A sound source is moving towards a stationary listener with $1/10^{th}$ of the speed of sound. The ratio of apparent to real frequency is ________

అన్ని సంహరిత పద్ధతిలో ఉన్న నిష్పత్తి ఆమె 10 ఎక్కువ నిష్పత్తి కలుపుకుంటుంది. అంటే, ఆమె నిష్పత్తి నిష్పత్తి సంఖ్య = ________

Options :
1. $\frac{10}{9}$
2. $\frac{11}{10}$
3. $\left(\frac{11}{10}\right)^2$
4. $\left(\frac{9}{10}\right)^2$

Question Number : 110 Question Id : 813561590 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Electromagnetic waves are produced by ________

ఇంటి ఎంపిక పతనాలు సంపూర్ణ రెండీ నిష్పత్తి, ________

Options :
Charges at rest only
1. సంయోగ సమాధాన సంచయాలు
Changes in uniform motion only

Accelerated or decelerated charges only

An uncharged stable particle at rest

**Question Number : 111 Question Id : 813561591 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

A solid cylinder of mass \( M \) and radius \( R \) rolls on a flat surface. Its moment of inertia about the line of contact is ________

\[ \text{Options :} \]

1. \( \left( \frac{3}{2} \right) MR^2 \) **✓**

2. \( MR^2 \) ❌

3. \( \left( \frac{2}{3} \right) MR^2 \) ❌

4. \( 2 MR^2 \) ❌
Question Number : 112 Question Id : 813561592 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
A bomb at rest explodes into three parts of equal mass. If the momentum of two parts are $-2p\hat{i}$ and $p\hat{j}$, find the magnitude of momentum of the third part.

Options :
1. $p$
2. $\sqrt{3}p$
3. $\sqrt{5}p$
4. 0

Question Number : 113 Question Id : 813561593 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
The second line of Balmer series has wavelength 4861 Å. The wavelength of the first line of Balmer series is ________

Options :
1. $1216$ Å
2. 6563 Å

3. 4340 Å

4. 4101 Å

Question Number : 114 Question Id : 813561594 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

What is the phase difference between the flux linked with a coil rotating in a magnetic field, and the induced e.m.f. produced in it?

Options :

1. 0

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

3. \( \frac{\pi}{2} \)

4. \( \pi \)

Question Number : 115 Question Id : 813561595 Question Type : MCQ Display Question
A coil of inductance \( L \) is divided into four equal parts and all the parts are connected in parallel. The effective inductance of the combination is ________.

\[ \frac{L}{4} \]

\[ \frac{L}{8} \]

\[ \frac{L}{16} \]

\[ 4L \]

When a pure resistor is connected to an AC source, the phase difference between the voltage and the current through the resistor is ________.

\[ 90^\circ \]
Question Number : 117 Question Id : 813561597 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The capacitance of a spherical condenser is $1 \mu F$. If the spacing between the two spheres is $1 \text{ mm}$, the radius of the outer sphere is _______

Options :
1. $30 \text{ cm}$
2. $6 \text{ m}$
3. $5 \text{ cm}$
4. $3 \text{ m}$

Question Number : 118 Question Id : 813561598 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
A straight wire carrying current \( i \) is turned into a circular loop. If the magnitude of magnetic moment associated with it in M.K.S. units is \( M \), the length of wire will be ________

\[ \frac{4\pi i M}{\sqrt{4\pi i M}} \]

\[ \sqrt[4]{4\pi i M} \]

\[ \sqrt{\frac{4\pi i M}{M}} \]

\[ \frac{M\pi}{4i} \]

Question Number : 119  
Question Id : 813561599  
Question Type : MCQ  
Display Question Number : Yes  
Is Question Mandatory : No  
Single Line Question Option : No  
Orientation : Vertical

Options :
1. \( 4\pi i M \)
2.
3.
4. \( \frac{M\pi}{4i} \)

Two water pipes of diameters 2 cm and 4 cm are separately connected to a main supply line. The velocity of flow of water in the pipe of 2 cm diameter is ________

\[ \frac{2 \text{ cm}}{4 \text{ cm}} \]

\( \text{times} \)

Options :
1. \( \text{times that in the other pipe} \)
2. \( \text{times that in the other pipe} \)
3. \( \text{times that in the other pipe} \)
4. \( \text{times that in the other pipe} \)
A body is projected vertically upwards from the surface of a planet of radius R, with a velocity equal to half the escape velocity of that planet. Then, the maximum height attained by the body is

\[ \frac{R}{3} \]

Options:
1. \( \frac{R}{3} \) - Correct
2. \( \frac{R}{2} \) - Incorrect
3. \( \frac{R}{4} \) - Incorrect
Chemistry

Section Number: 3
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: 121 Question Id: 813561601 Question Type: MCQ Display Question Number: Yes Is Question Mandatory: No Single Line Question Option: No Option Orientation: Vertical

Presence of which of the following is suitable for the synthesis of bromobenzene from benzene diazonium salts?

ేంపడి చెప్పిన విధానం ఎలా చేయగలిగం చేయంచే నాణికి సమయంలో బ్రోమోఅండ్ అండ్ ప్రతిష్ఠించబడిన నిర్దేశాలను వివరించండి?

Options:

1. $HBr$
2. $MgBr, HBr$
3. \( \text{Cu}_2\text{Br}_2, \text{HBr} \)

4. \( \text{KBr} \)

Question Number : 122 Question Id : 813561602 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which statement is incorrect regarding Hall-Heroult process for metallurgy of aluminum?

1. Use of \( Na_3\text{AlF}_6 \) lowers the melting point of \( \text{Al}_2\text{O}_3 \)
2. Steel vessel with lining of carbon acts as cathode
3. Graphite is used as anode
4. Carbon dioxide gas is generated at cathode

Which statement is incorrect regarding Hall-Heroult process for metallurgy of aluminum?

1. \( Na_3\text{AlF}_6 \) lowers the melting point of \( \text{Al}_2\text{O}_3 \)
2. Steel vessel with lining of carbon acts as cathode
3. Graphite is used as anode
4. Carbon dioxide gas is generated at cathode

Options :

1. ✗ 1
2. ✗ 2
3. ✗ 3
4. ✔ 4
The artificial sweetener sucralose is _____________

Options:

1. Hexachloro derivative of sucrose

2. Trichloro derivative of sucrose

3. Pentachloro derivative of sucrose

4. Tetrachloro derivative of sucrose

Question Number : 124 Question Id : 813561604 Question Type : MCQ Display Question
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation : Vertical
Which of the following is a neurologically active drug?

Options:
Question Number : 125 Question Id : 813561605 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Calculate the density of an aqueous solution of KI if its molarity and molality are 1.44 M and 1.5 mol kg\(^{-1}\) respectively.

\[ \text{KI} \quad \text{अस्वादहरु मॉल} \quad \text{मॉलालिटी} \text{ भन्ने} \quad 1.44 \text{ M} \quad \text{मोला} \quad 1.5 \text{ mol kg}^{-1} \]

पछि, भन्नु हो ?

Options :

1. \(2.20 \text{ g L}^{-1}\)
2. \(2.50 \text{ g L}^{-1}\)
3. \(1.20 \text{ g L}^{-1}\)
4. \(0.50 \text{ g L}^{-1}\)
Which among the following represents Schrödinger wave equation?

Which among the following represents Schrödinger wave equation?

Options:

\[
\frac{d^2 \psi}{dx^2} + \frac{d^2 \psi}{dy^2} + \frac{d^2 \psi}{dz^2} + \frac{4\pi m}{\hbar} (E - V) \psi = 0
\]

1. \[ \hat{H} = \frac{\hbar}{4\pi^2 m} \left( \frac{d^2}{dx^2} + \frac{d^2}{dy^2} + \frac{d^2}{dz^2} \right) + V \]

2. \[ \hat{H} = \frac{-\hbar^2}{8\pi^2 m} \left( \frac{d^2}{dx^2} + \frac{d^2}{dy^2} + \frac{d^2}{dz^2} \right) + P \]

3. \[ \frac{d^2 \psi}{dx^2} + \frac{d^2 \psi}{dy^2} + \frac{d^2 \psi}{dz^2} + \frac{8\pi^2 m}{\hbar^2} (E - V) \psi = 0 \]

4. \[ \frac{d^2 \psi}{dx^2} + \frac{d^2 \psi}{dy^2} + \frac{d^2 \psi}{dz^2} + \frac{4\pi m}{\hbar} (E - V) \psi = 0 \]
Number of hydrogen atoms in the given compound is

Options:
1. 10
2. 12
3. 14
4. 16

Question Number: 128 Question Id: 813561608 Question Type: MCQ Display Question Number: Yes Is Question Mandatory: No Single Line Question Option: No Option Orientation: Vertical

Identify the products formed when chlorine reacts with cold and dilute sodium hydroxide solution

Options:
1. NaCl, NaClO₃, H₂O
2. NaCl, NaClO₄, H₂O
3. NaCl, NaOCl, H₂O
4. *NaCl*, *HCl*, *H₂O

**Question Number : 129 Question Id : 813561609 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The product formed when formaldehyde reacts with ammonia is ________

్యోగుడి, ఆమెలోంది చేసే అమెనోమాసు ఫోర్మాట్ లో పండుతుంది ________ పండుతుంది

**Options :**

1. *Melamine*  
   మెలామిన్

2. *Formic acid*  
   ఫోర్మిక్ ఏసిడ్

3. *Ammonium formate*  
   ఆమెనోమాసు ఫోర్మాట్

4. *Urotropine*  
   యూరాట్రౌప్నైన్

**Question Number : 130 Question Id : 813561610 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Choose the alkali metal with highest reactivity among the following

ఈ ప్రాంతంలో అత్యుత్తమ పరికారతा కలిగిన ఉత్తమ మేతలు రాదుతుంది?
Options:

1. ✓ Cs

2. ✗ Li

3. ✗ Na

4. ✗ Rb

Question Number: 131 Question Id: 813561611 Question Type: MCQ Display Question Number: Yes Is Question Mandatory: No Single Line Question Option: No Option Orientation: Vertical

How many unpaired electrons will be present in the ground state of an atom which has valence electronic configuration $3d^6$ in its +3 oxidation state?

+3 అంశంలో ఉండే $3d^6$ విభాగం నిష్పత్తులు జాతి కంటే మధ్యంలో సంఖ్యల విభాగం లో ఉన్నప్పటి అంశంలోను ఉండే ప్రమాణాన్ని కంటే సంఖ్యలు

Options:

1. ✗ 1

2. ✓ 3

3. ✗ 4

4. ✗ 7
Question Number: 132

Question: Calculate the molarity of NaOH solution prepared by dissolving 0.4 g of NaOH in enough water to form 500ml of the solution.

Options:
1. 0.02
2. 0.05
3. 0.04
4. 0.03

Question Number: 133

Question: [Question not visible in the image]
Which among the following statements is incorrect for interstitial compounds?

1. They are very hard and rigid
2. They have higher melting point than pure metal
3. They do not show conductivity
4. They are chemically inert

Options:
1. ☒
2. ☒
3. ☑
4. ☒

The magnetic property of \( NO_2 \) is ____________

\( NO_2 \) అమ్మాను అక్షాలు ఎలా ఉంటాయం?

Options:
Question Number : 135 Question Id : 813561615 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation : Vertical
Options :
1. ✓
2. ❌
3. ❌
4. ✓

The number of 120°, Cl – P – Cl angles in phosphorus pentachloride are

杈ు శ్రేణు కోబుల్చి Cl – P – Cl అంశాల సంఖ్య 120° వల్ల ఎంత ఉంటాయం?

Options :
1. ✓ 3
2. 6
3. 9
4. 1
Question Number : 136 Question Id : 813561616 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

When a current of 0.5 A is passed for 2 hours through a molten metal salt, 3.88 g of the metal was deposited. If atomic mass of the metal is 208 units, the oxidation state of the metal in the salt is _______.

0.5 A ప్రమాణంగా 2 ఘటనులందుస్తే లాదా మయెట్ట ప్లాట్టీ నుండి 3.88 g ప్రక్రియ ఉండి ఉంచబడింది. అ మయెట్ట మూలా పదార్థంలో మయెట్ట ఉంటుంది 208 మూలా ఉంటుంది, అందువల్ల మయెట్ట మూలా ఉంటుంది.

Options :
1. ✗ + 1
2. ✔ + 2
3. ✗ + 3
4. ✗ + 4

Question Number : 137 Question Id : 813561617 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Identify the primary halide among the following compounds.

ప్రముఖ హలీడ్లను పిలుపుకుండా పద్ధతి ఉంటుంది.

Options :
1- bromo but-2-ene
1. ✔ 1- bromo but-2-ene
2. 4-bromo pent-2-ene
3. 2-bromo-2-methyl propane
4. t-butyl bromide

Question Number : 138 Question Id : 813561618 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A commercial sample of $H_2O_2$ marked as 100 volume hydrogen peroxide means

1 ml of $H_2O_2$ will give 100 ml of $O_2$ at STP

1 L of $H_2O_2$ will give 100 ml of $O_2$ at STP

1 L of $H_2O_2$ will give 22.4 L of $O_2$ at STP

1 ml of $H_2O_2$ will give 1 mole of $O_2$ at STP
Question Number : 139 Question Id : 813561619 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

When 30 ml of $H_2$ reacts with 20 ml of $O_2$ to form water, what is leftover when the reaction ends?

$30 \text{ ml } H_2$ మాత్రమే $20 \text{ ml } O_2$ యు మాత్రమే ఉండవచ్చును ఆటాలు పూర్తి. ఎంతా యే మాత్రమే మిగిలినది _______

Options :
1. $10 \text{ ml } H_2$
2. $5 \text{ ml } H_2$
3. $10 \text{ ml } O_2$
4. $5 \text{ ml } O_2$

Question Number : 140 Question Id : 813561620 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The $pK_a$ of a weak acid, benzoic acid and $pK_b$ of a weak base, ammonium hydroxide are 4.25 and 4.75 respectively. Then, the pH of 0.1 $M$ solution of ammonium benzoate will be _______

ఎంపిక్సు కొండి ఒంభి ఒంభి ఎంపిక్సు ఎంపిక్సు $pK_a = 4.25$ యు ఎంపిక్సు ఎంపిక్సు ఎంపిక్సు $pK_b = 4.75$ యు, 0.1 $M$ ఎంపిక్సు ఒంభి ఎంపిక్సు ఎంపిక్సు ఎంపిక్సు $pH$ తెలిస్తే.

Options :
What will be the product A in the reaction given below?

What will be the product A in the reaction given below?

\[
\text{NH}_2 \text{C}_6\text{H}_5\text{OH} + \text{HNO}_2 + \text{HCl} \rightarrow A + 2\text{H}_2\text{O}
\]

Options:

1. Phenol
   - Benzene diazonium salt

2. Benzene
3. Phenol
Nitrobenzene

Question Number : 142 Question Id : 813561622 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Arrange the following carbocations in the increasing order of stability with respect to their labels:

<table>
<thead>
<tr>
<th>Label</th>
<th>Carbocation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>((\text{CH}_3)_2\text{CH}^+)</td>
</tr>
<tr>
<td>2</td>
<td>(\text{CH}_3^+)</td>
</tr>
<tr>
<td>3</td>
<td>((\text{CH}_3)_3\text{C}^+)</td>
</tr>
<tr>
<td>4</td>
<td>(\text{CH}_3 - \text{CH}_2^+)</td>
</tr>
</tbody>
</table>

Options :
1.  
\[ 2 < 4 < 1 < 3 \]

2. 
\[ 1 < 2 < 3 < 4 \]

3. 
\[ 4 < 3 < 2 < 1 \]

4. 
\[ 2 < 4 < 3 < 1 \]

Question Number : 143 Question Id : 813561623 Question Type : MCQ Display Question
For an isothermal and free expansion of an ideal gas, which of the following is true?

1. For an adiabatic change, heat (q) is non zero
2. For an adiabatic change, heat (q) is zero
3. For an isothermal reversible change, heat (q) is zero
4. For an isothermal process, the temperature changes

Options:

1. ✗
2. ✔
3. ✗
4. ✗
Which oxide among the following cannot act as a reducing agent?

1. \( SO_2 \)
2. \( NO_2 \)
3. \( CO_2 \)
4. \( ClO_2 \)

Rate of the reaction \( xA + yB \rightarrow zC \) is given by \( r = K[A]^x[B]^y \). If the concentration of \( A \) is tripled, rate of reaction increased by 27 times over the initial. Then choose the correct plot for variation of half-life \( (t_{1/2} \text{ on } y\text{-axis}) \) of the reaction w.r.t total initial concentration of reactants (on \( x\)-axis) is ________

1. \( x + y \)
Which of the following compounds will exhibit cis-trans isomerism?

Options:

1. 2-butene

2. 2-menthyl
For the reaction $NO_2 + CO \rightleftharpoons NO + CO_2$ one mole of $NO_2$ and 2 moles of $CO$ were kept in a vessel. Calculate the equilibrium constant $K_p$ if at equilibrium 25% of initial amount $CO$ is consumed.

Options:

1. $\frac{1}{2}$
2. $\frac{1}{3}$
3. 1
Which among the following statements is true about reactivity of haloarenes towards nucleophilic substitution reactions?

1. Haloarenes are very reactive towards nucleophilic substitution reaction
2. In haloarenes, the $C - X$ bond acquires partial double bond character
3. The $C - X$ bond in haloarenes is longer than the $C - X$ bond in haloalkanes
4. In haloarenes, the phenyl cation formed as a result of self-ionization is stable

Options:
1. 
2. 
3. 
4. 

Which among the following statements is true about reactivity of haloarenes towards nucleophilic substitution reactions?

1. ✔ Haloarenes are very reactive towards nucleophilic substitution reaction
2. ✔ In haloarenes, the $C - X$ bond acquires partial double bond character
3. ✗ The $C - X$ bond in haloarenes is longer than the $C - X$ bond in haloalkanes
4. ✗ In haloarenes, the phenyl cation formed as a result of self-ionization is stable
The de Broglie wavelength of a tennis ball of mass 60 g moving with a velocity of \(10 \text{ m/s}^{-1}\) is approximately \(\lambda\) (Planck’s constant \(h = 6.63 \times 10^{-34} \text{ J.s}\)).

\[\lambda = \frac{h}{mv} \quad \text{(where } h = 6.63 \times 10^{-34} \text{ J.s)}\]

Options:
1. \(1.1 \times 10^{-31} \text{ m}\)
2. \(1.1 \times 10^{-33} \text{ m}\)
3. \(1.1 \times 10^{-34} \text{ m}\)
4. \(1.1 \times 10^{-32} \text{ m}\)
Match the item given in Column-I (method used for determining colligative property) and Column-II (for the corresponding colligative property) and find the correct order.

<table>
<thead>
<tr>
<th>Column-I</th>
<th>Column-II</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Beckmann method</td>
<td>i. Osmotic pressure</td>
</tr>
<tr>
<td>b. Ostwald-Walker method</td>
<td>ii. Elevation in B.P.</td>
</tr>
<tr>
<td>c. Berkeley-Hartley method</td>
<td>iii. Depression in F.P.</td>
</tr>
<tr>
<td>d. Landsberger method</td>
<td>iv. Relative lowering of Vapour pressure</td>
</tr>
</tbody>
</table>

Options:

1. (a – ii), (b – iv), (c – iii), (d – i)
2. (a – i), (b – iv), (c – ii), (d – iii)
3. (a – ii), (b – iii), (c – iv), (d – i)
4. (a – iii), (b – iv), (c – i), (d – ii)

Question Number : 151 Question Id : 813561631 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

AP EAMCET 2020
Calamine, Bauxite, Malachite and Siderite respectively are ores of __________

రమ్మించి, బ్యాక్సైట్, మాలాచైట్ మరియు సిడరైట్ అనేవి ఇంచడానికి __________ ని మనం ఉపయోగిస్తాం

Options:

1. ✓ Zn, Al, Cu, Fe

2. ✗ Cu, Al, Zn, Fe

3. ✗ Zn, Al, Fe, Cu

4. ✗ Al, Fe, Zn, Cu
Match the following graphs of a gas with their corresponding y and x coordinates.

1. (i) vs. (a) \(pV\) vs. \(V\)
2. (ii) vs. (b) \(p\) vs. \(V\)
3. (iii) vs. (c) \(p\) vs. \(\frac{1}{V}\)

Options:

1. Correct: (i - b), (ii - c), (iii - a)
2. Incorrect: (i - a), (ii - c), (iii - b)
3. Incorrect: (i - b), (ii - a), (iii - c)
4. Incorrect: (i - a), (ii - b), (iii - c)
The compounds formed when $KMnO_4$ is heated to $513\ K$ are ________

$513\ K$ లో $KMnO_4$ ను నిండి పోంది పవిత్రాన్ని సృష్టించాయ ________

Options:

1. $MnO_2$, $O_2$ and $KOH$
2. $MnO_2$, $O_2$ లామచే $KOH$
3. $K_2MnO_4$, $MnO_2$ and $O_2$
4. $K_2MnO_4$, $MnO_2$ లామచే $O_2$

Glucose $+$ ? $\rightarrow$ Sucrose

గ్లూక్స్ $+$ ? $\rightarrow$ సుక్రస్

Options:

1. Glucose
2. గ్లూక్స్

Question Number : 154 Question Id : 813561634 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Fructose

3. ×

Arabinose

4. ×

Lactase

3. ×

Question Number : 155 Question Id : 813561635 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following relations is true based on the partial pressure and mole fraction?


Options :

1. × \( p_i = x_i \times T \)

2. ✓ \( p_i = x_i \times p_{Total} \)

3. × \( \frac{p_i}{x_i} = \gamma \)

4. × \( p_i x_i = p_{Total} \)

Question Number : 156 Question Id : 813561636 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation: Vertical

Match the entries from column I and Column II and choose the correct order.

<table>
<thead>
<tr>
<th>Column I</th>
<th>Column II</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. Leclanche cell</td>
<td>a) Converts energy of combustion into electrical energy</td>
</tr>
<tr>
<td>ii. Fuel cell</td>
<td>b) Rechargeable cell</td>
</tr>
<tr>
<td>iii. Ni-Cd Cell</td>
<td>c) At Anode Zn $\rightarrow$ Zn$^{+2} + Ze^{-}$</td>
</tr>
</tbody>
</table>

Options:
1. $\Box$ (i – c), (ii – b), (iii – a)
2. $\Box$ (i – a), (ii – b), (iii – c)
3. ✔️ $\Box$ (i – c), (ii – a), (iii – b)
4. $\Box$ (i – b), (ii – a), (iii – c)

AP EAMCET 2020
Which of the following is true about sodium chloride?

哪一项是正确的关于氯化钠？

Options:

1. Molecular mass = 58.5 amu

2. Formula mass = 58.5 amu

3. Molecular mass = 5.85 amu

4. Formula mass = 5.85 amu

What sized ring is formed when two carboxylic acids form a dimeric structure through inter-molecular hydrogen bonding? (consider hydrogen bond as a bond)

哪些类型的环形结构在两个羧酸形成二聚体结构时形成，通过分子间氢键？（考虑氢键作为键）

Options:

1. 5-membered
2. 6-membered

3. 4-membered

4. 8-membered

Question Number : 159 Question Id : 813561639 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Dilute sodium hydroxide does not react with which of the following?

పిన్నడి నాటి నిషేధం ప్రతి రాశి కాంతి మంచి మారాలి?

Options :

1. Ga

2. Al

3. Ti

4. B

Question Number : 160 Question Id : 813561640 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Which of the following is a biodegradable polymer of polyamide class?

Which of the following is a biodegradable polymer of polyamide class?

Options:

1. Dextron

2. Nylon-2, nylon-6

3. Nylon-6, 6

4. PHBV