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

Question Paper Name: ENGINEERING 22nd Sep 2020 Shift2
Subject Name: ENGINEERING
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Share Answer Key With Delivery Engine: Yes
Actual Answer Key: Yes
Calculator: None
Magnifying Glass Required?: No
Ruler Required?: No
Eraser Required?: No
Scratch Pad Required?: No
Rough Sketch/Notepad Required?: No
Protractor Required?: No
Show Watermark on Console?: Yes
Highlighter: No
Auto Save on Console?: Yes
Is this Group for Examiner?: No
Mathematics

Section Id : 81356122
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 : 8135611121 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. \( \log |1 + \cos^2(x)| + c \)
2. \( -\log |1 + \sin^2(x)| + c \)
3. \( \log |1 + \tan^2(x)| + c \)

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

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

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

Options:

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

Options:

1. 

2. 

3. 

4. 

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

$x^2 + y^2 + 6x - 2y + k = 0$ నుండి, $x^2 + y^2 + 2x - 6y - 15 = 0$ నుండి

Options:

1. 21

2. −21
Question Number : 5 Question Id : 8135611125 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

ఒక ద్వితీయుడి 1 నంబర్ నుంచి 20 నంబర్ లక్ష్యాభివృద్ధి వేయుని ఎగుస్తుంది. ఒక ద్వితీయుడి 3 నంబర్ యుగం లో (ఒక తరకా నంబర్ లో మూడు నంబర్ జయించి లేదు) ఈ శాకు ద్వితీయుడి 3 నంబర్ యుగం లో కొనసాగించండి.

Options :

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

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

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

4. \( \left( \frac{7}{20} \right)^3 - \left( \frac{6}{20} \right)^3 \)

Question Number : 6 Question Id : 8135611126 Question Type : MCQ Display Question
The length of the tangent from (6, 8) to the circle \( x^2 + y^2 = 4 \) is

\[ x^2 + y^2 = 4 \text{ into } (6, 8) \text{ is the distance from center to a tangent point.} \]

**Options:**

1. \( \sqrt{6} \)

2. \( 2\sqrt{6} \)

3. \( 4\sqrt{6} \)

4. \( 5\sqrt{6} \)

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

\[ \sin(2x) = \frac{\sqrt{5}-1}{4} \text{ into } x = \frac{n}{2} \pi + (-1)^n (m) \]

**Options:**

1. \( \frac{\pi}{10} \)

2. \( \frac{\pi}{5} \)

3. ✓
Question Number : 8 Question Id : 8135611128 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

\[(1, 2) \text{ ఫ్యాక్స్ ప్యాంట్ రే, } e = \sqrt{3} \text{ ఎంపికు మధ్యమం } 2x + y = 1 \text{ జీంటింటి క్యాన్ క్యాంటర్స్ మెం పిక్షుపించం}

\[\text{సిస్టమ్ ఇంటా} \]

Options:

1. 2\(y^2 - 12xy - 7x^2 + 2x - 14y + 22 = 0\)

2. \(2y^2 + 12xy + 7x^2 - 2x + 14y - 22 = 0\)

3. \(2y^2 - 12xy - 7x^2 - 2x - 14y - 22 = 0\)

4. \(2y^2 + 12xy + 7x^2 + 2x + 14y + 22 = 0\)

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

\[ s = 5 \sin(2t) \Rightarrow \text{Velocity} \]

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

Question Number : 10 Question Id : 8135611130 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

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

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

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

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

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

Options :

1. \( \binom{2n}{n} \)
2. \( \binom{2n}{n-1} \)
3. \( \binom{2n}{n+1} \)
4. No such term exists

Question Number : 12 Question Id : 8135611132 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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If the length of the tangent from \((f, g)\) to the circle \(x^2 + y^2 = 6\) be twice the length of the tangent from the same point to the circle \(x^2 + y^2 + 3x + 3y = 0\), then \(f^2 + g^2 + 4f + 4g + 2\) is equal to

\[(f, g)\) నుండి \(x^2 + y^2 = 6\) వ్యాసాను కలిగి \(x^2 + y^2 + 3x + 3y = 0\) వ్యాసాను కలిగి బడి ఉంటుందని అంకేయం. అందువలన, \(f^2 + g^2 + 4f + 4g + 2\) =

**Options:**

1. **-1**
2. **1**
3. **0**
4. **-2**

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

\(y = \log (\cosh x)\) ఎంపాడం, \(\frac{d^2y}{dx^2} =

**Options:**

1. **sech^2 x**
2. **-sech^2 x**
3. **sinh x**
4. $-\sinh x$

Question Number : 14 Question Id : 8135611134 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option 
Orientation : Vertical
Let $f : \mathbb{R} \to \mathbb{R}$ be a continuous function such that for any two real numbers $x$ and $y$,

$$|f(x) - f(y)| \leq 10 \cdot |x - y|^{201}$$

then

$$f : \mathbb{R} \to \mathbb{R}$$

is bounded. Let $f$ be a bounded function.

Options:

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


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

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

Question Number : 15 Question Id : 8135611135 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option 
Orientation : Vertical
The largest value of $k$ for which the circle $x^2 + y^2 = k^2$ lies completely in the interior of the parabola $y^2 = 4x + 16$ is

$$y^2 = 4x + 16$$

Find the largest value of $k$ such that the circle lies completely inside the parabola.
Question Number : 16 Question Id : 8135611136 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

\[ x \in \left(0, \frac{\pi}{2}\right) \text{ లో } \frac{2 \tan(x)}{1-\tan^2(x)} \text{ తొప్పు సిద్ధం కేయలా?} \]

Options :

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

2. \( \left(0, \frac{\pi}{6}\right) \)

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

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

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

Options :
1. \[ \frac{11}{64} \]
2. \[ \frac{15}{64} \]
3. \[ \frac{11}{32} \]
4. \[ \frac{15}{32} \]

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

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

Options :
1. \[ 4! \]
Question Number: 19  Question Id: 8135611139  Question Type: MCQ  Display Question Number: Yes  Is Question Mandatory: No  Single Line Question Option: No Option 

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

\[ \frac{dt}{dx} = \frac{t}{x + te^{-2x/t}} \]

\[ \text{Therefore, } \frac{dx}{dt} = \emptyset \left( \frac{x}{t} \right) \text{ holds true.} \]

Options:

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

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

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

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

Question Number: 20  Question Id: 8135611140  Question Type: MCQ  Display Question Number: Yes  Is Question Mandatory: No  Single Line Question Option: No Option 

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Cube roots of unity are the vertices of a/an ________, which is inscribed in a circle of unit radius, with its center at origin.

Options:

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

Question Number : 21 Question Id : 8135611141 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical
If $M$ is a point on the line $y = x$ and points $P(0, 1), Q(2, 0)$ are such that $PM + QM$ is minimum, the coordinates of $M$ are

Options:

1. $(0, 0)$
2. \[ \left( \frac{13}{17}, \frac{13}{17} \right) \]

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

4. \[ \left( \frac{31}{7}, \frac{31}{7} \right) \]

Question Number: 22 Question Id: 8135611142 Question Type: MCQ Display Question

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

Orientation: Vertical

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

Options:

1. 4
2. 3
3. 5
4. 9

Question Number: 23 Question Id: 8135611143 Question Type: MCQ Display Question
If \( f(x) = \begin{vmatrix} \cos(x + a + b) & \sin(x + a + b) & 10 \\ \cos(x + b + c) & \sin(x + b + c) & 10 \\ \cos(x + c + a) & \sin(x + c + a) & 10 \end{vmatrix} \) then \( (f(2019))^2(2020^2) - f(2020)^2(2019^2) = \)

\[ f(x) = \begin{vmatrix} \cos(x + a + b) & \sin(x + a + b) & 10 \\ \cos(x + b + c) & \sin(x + b + c) & 10 \\ \cos(x + c + a) & \sin(x + c + a) & 10 \end{vmatrix} \]

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

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

\[ A, B, C \text{ అంశాలు ప్రాంతంలో ఉన్నాం. } AB = 6, \]

\[ BC = 7 \text{ అంటే, } AC = \]

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

4. 6

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

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

$^{12C_{2k-1}} = ^{12C_{k+1}}$ \( \text{_solution}_k = \) 

Options :

1. 3

2. 6

3. 9

4. $\checkmark$ 4

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

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

\( \lim_{x \to 3} \left( \frac{x^n - 3^n}{x - 3} \right) = 108 \) \( \text{solution}_n = \) 

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

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

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

$3x - 4y + 5 = 0$, $6x - 8y - 9 = 0$ నిండం సన్న నిండం విమిచే వ్యాసమ ______

Options :
1. 1

\[ \frac{23}{15} \]

2. \[ \frac{20}{19} \]

3. \[ \frac{19}{20} \]

4. \[ \frac{19}{20} \]

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

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

Options:

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

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

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

Options:

1. ________
No solution

A unique solution

More than one but finite solutions

Infinitely many solutions

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

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

$\sqrt[3]{26}$ మూలాంశం పూరితం నిహారం, మరియు చివరంతో విభిన్నమైనప్పటిక

Options :
1. 2.998
2. 2.844
3. 2.962
4. 2.823
Question Number : 31 Question Id : 8135611151 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation : Vertical

\[(102)^4 = ?\]

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

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

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

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

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

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

\[
x - \text{coordinate of ‘A’} = \frac{x}{a^2} \quad \text{and} \quad y - \text{coordinate of ‘B’} = \frac{y}{b^2}
\]

\( AB \) lies on x-axis, \( PA = b \) and \( PB = a \) lie on y-axis. Therefore, \( P \) moves along the line \( \equiv \frac{x}{a^2} + \frac{y}{b^2} = 1 \). 

**Options :**

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

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

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

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

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

**Options:**

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

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**Question Number : 35**

**Question Id : 8135611155**

**Question Type : MCQ**

**Display Question Number : Yes**

**Is Question Mandatory : No**

**Single Line Question Option : No Option**

**Orientation : Vertical**

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

\(3x^3 - 9x^2 + 5x - 7 = 0\) \(\Rightarrow \alpha, \beta, \gamma\) \(\text{are roots}\). \(\alpha + \beta + \gamma = \)

**Options :**

1. \(3\)
2. \(-3\)
3. \(9\)
4. $-9$

Question Number : 36 Question Id : 8135611156 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

$\mathbb{R}^2$ రెండు వెక్టర్లు $\vec{u}, \vec{v}$ ఏవును ఎంచుకోతుంది $|\vec{u} + \vec{v}|^2 = 2(|\vec{u}|^2 + |\vec{v}|^2)$ అనియు, __________

Options :
1. $\vec{u} = \vec{v}$

$\vec{u}$ and $\vec{v}$ need not be same but they have same direction

2. $\vec{u}, \vec{v}$ ఏవును ఎంచుకోతుంది కాని తన్న దిశ సమానం

$\vec{u}$ and $\vec{v}$ need not be same but they have the opposite direction

3. $\vec{u}, \vec{v}$ ఏవును ఎంచుకోతుంది కాని తన్న దిశ ప్రతిపాదమైనది

4. $\vec{u} = 2\vec{v}$

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

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

$xy + x + y + 1 = 0$ నాస్తుంది $xy + 3x + 3y + 9 = 0$ సంఖ్య నాస్తుంది __________

Options :
1. $\star$

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

$-2 < x < 2$ కండిన $\sqrt{(x-2)^2 + y^2} + \sqrt{(x+2)^2 + y^2} = 4$ ప్రత్యేకించే రేఖారేఖ

Options:

1. Circle
2. Pair of lines
3. Parabola
Line segment

4. √icable

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

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

\[ x^2 + y^2 - 6x - 4y - 12 = 0 \text{  x- axis  touches circle at} \]

Options :

1. √ \( y^2 - 4y - 21 = 0 \)

2. ✗ \( y^2 + 4y - 21 = 0 \)

3. ✗ \( y^2 - 4y + 21 = 0 \)

4. ✗ \( y^2 + 4y + 21 = 0 \)

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

\[
\int \frac{5 \tan x}{(\tan x) - 2} \, dx = ax + \beta \log |\sin x - 2 \cos x| + y \quad \text{and} \quad \alpha - \beta = \]

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

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

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

\( \vec{a}, \vec{b}, \vec{c} \) యొక్క సేంటోమిడి గ్రింటుల నియోధక విశ్లేషాలు, \( \frac{(\vec{a} - \vec{c}) \times (\vec{b} - \vec{a})}{(\vec{b} - \vec{a}) \cdot (\vec{c} - \vec{a})} = \)

Options:
1. \( \times \) \(\cot C\)
2. \( \checkmark \) \(\tan A\)
3. \( \times \) \(\tan C\)
4. \( \times \) \(-\tan A\)

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Question Number : 42 Question Id : 8135611162 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

\[ \frac{x+1}{(2x-1)(3x+1)} = \frac{A}{2x-1} + \frac{B}{3x+1} \text{ तो, } 16A + 9B \text{ बराबर कितना है?} \]

Options :
1. \( \times \) 4
2. \( \times \) 5
3. \( \checkmark \) 6
4. \( \times \) 8

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

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

\[ x^3 - px^2 + qx - r = 0 \text{ यदि उनके मूल एक सीमा में हैं तो } \]

Options :
1. \( \checkmark \) \( 2p^3 - 9pq + 27r = 0 \)
2. \( \times \) \( 2p^3 + 9pq - 27r = 0 \)
3. \[2p^3 - 8pq + 27r = 0\]

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

**Question Number : 44**
**Question Id : 8135611164**
**Question Type : MCQ**
**Display Question Number : Yes**
**Is Question Mandatory : No**
**Single Line Question Option : No**
**Orientation : Vertical**

The function \(f(x) = \sin x - \cos x\) is \(\underline{\text{__________}}\)

\[f(x) = \sin x - \cos x\] is \(\underline{\text{__________}}\)

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

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

$4x^2 + 25y^2 = 100$ రేఖారేణాపదార్థం కొనసాగబడిన స్థాపన యొక్క సామాన్య సాహిత్య విశేషాలు?

Options:
1. $\frac{\sqrt{21}}{5}$
2. $\frac{\sqrt{21}}{2}$
3. $\frac{\sqrt{21}}{4}$
4. $\frac{\sqrt{21}}{25}$

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

$\cos\left(x + \frac{\pi}{3}\right) + 2\sqrt{2}\sin\left(x + \frac{\pi}{3}\right)$ కొనసాగిbu మినము మరియు మేఖల మినము విశేషాలు ________

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

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

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

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

So, \( k = ? \)

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

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

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

\[
\text{No of sides of polygon} = \frac{170 \times 2 + 170}{2} = 170 \times 2 + 170 = 510
\]

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

For a parallelogram $ABCD$, if $L$ and $M$ are midpoints of $BC$ and $CD$ then $\overline{AL} + \overline{AM} = \frac{5\pi}{8}$

Options:
1. $\frac{9\pi}{10}$
2. $\frac{7\pi}{10}$
3. $\frac{17\pi}{20}$
4. $\frac{3}{5} \overrightarrow{AC}$
Question Number : 50 Question Id : 8135611170 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
The probability of a non-leap year having 53 Mondays is ________

Options :
1. \( \frac{2}{7} \)
2. \( \frac{1}{7} \)
3. \( \frac{5}{7} \)
4. \( \frac{6}{7} \)

Question Number : 51 Question Id : 8135611171 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
\[ \frac{d}{dx} \left\{ (1 + x^2) \tan^{-1}(x) \right\} = \]

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

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

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

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

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

**Options**:

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

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

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

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

**Question Number**: 53  
**Question Id**: 8135611173  
**Question Type**: MCQ  
**Display Question Number**: Yes  
**Is Question Mandatory**: No  
**Single Line Question Option**: No  
**Orientation**: Vertical

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If \( \vec{p} \times \vec{q} = \vec{p} \times \vec{r} \) and \( \vec{p} \cdot \vec{q} = \vec{p} \cdot \vec{r} \), then \( \vec{\_} \).  

Options:

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

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

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

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

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

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

Options:

1. \( 1 \)

2. \( 0 \)

3. \( -1 \)

4. \( 2 \)

Question Number: 55 Question Id: 8135611175 Question Type: MCQ Display Question
If the lines \( y = 3x + 1 \) and \( 2y = x + 3 \) are equally inclined to the line \( y = mx + 4 \), then the value of \( m \) is equal to

\[
y = mx + 4 \quad \text{and} \quad y = 3x + 1 \quad \text{and} \quad 2y = x + 3 \quad \text{are equally inclined to the line} \quad y = mx + 4
\]

\[
m = \frac{1 \pm 3\sqrt{2}}{7}
\]

Options:

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

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

3. 0

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

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

\[
\text{M విక్రమం 135° తో పరచి పైన నీటి} \quad \text{వాటి నియమం మెంచే} \quad (4, -3) \quad \text{కు మార్పు లేదు.}
\]

\[
\text{వాటి విభజన ద్వారా మెంచే} \quad M \quad \text{విక్రమం ___}
\]

Options:

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

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

\( \frac{5i}{7+i} \) మొత్తం జోత్తాంపూరు మృదు ______

Options :

1. \( \frac{1}{10} (1 - 7i) \)

2. \( \frac{1}{10} (7i - 1) \)

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

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

If \( \left| \frac{z-25}{z-1} \right| = 5 \) then \( |z| = \)

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

Options :

1. 5
2. 3
3. 4
4. 10

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

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

\[ 2x + 18y = 9 \]

Options :

1.
Find the angle between the diagonals of parallelogram \( PQRS \) if \( \overrightarrow{PQ} = 3\mathbf{i} - 2\mathbf{j} + 2\mathbf{k} \) and \( \overrightarrow{PS} = \mathbf{i} - 2\mathbf{k} \). 

\( \overrightarrow{PQ} = 3\mathbf{i} - 2\mathbf{j} + 2\mathbf{k} \), \( \overrightarrow{PS} = \mathbf{i} - 2\mathbf{k} \) అని \( PQRS \) పాల్యం యొక్క మేందు రాతిని నండియుంచడం లో ఉంది.

Options:

1. Only \( \cos \theta = -\frac{3}{\sqrt{10}} \) 

2. Both \( \cos \theta = \pm \frac{3}{\sqrt{10}} \)
\[ \tan \theta = -\sqrt{\frac{3}{10}} \]

3.

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

4.

---

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

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

\((9, 13, 15)\) లో పడి ఉండి \((12, 21, 10)\) లో పడి ఉండి వెంట రెండు వ్యాసాలు \((5, 7, 3)\) లో ఉండి ఉండి

**Options :**

1. \((-2, -19, 7)\)

2. \((2, 19, 7)\)

3. \((2, 2, 3)\)

4. (9, 13, 15)

---

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

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

\(\sec \theta + \tan \theta = \frac{2}{3}\) తెలుగు లో \(\theta\) సెక్యూంటు పయనాలు ఉండి ఉండి

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

Options:

1. Two intersecting lines
2. Square
3. A Straight Line
4. Circle
Question Number : 64 Question Id : 8135611184 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation : Vertical
\[ \int e^x \csc x \cdot \csc x \cdot (1 - \cot x) \, dx = \]
Options :
1. \[ e^x \cot x + c \]
2. \[ e^x \csc x + c \]
3. \[ e^{-x} \csc x + c \]
4. \[ e^{-x} \cot x + c \]

Question Number : 65 Question Id : 8135611185 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation : Vertical
Let \( A \) be a square matrix of order 3. Choose the correct option regarding the following statements:
1) There exists a matrix \( B \) of order 3 such that \( AB = I_3 \)
2) There exists a matrix \( C \) of order 3 such that \( CA = I_2 \)
3) \( A \) is invertible

\[ A \ से 3 \times 3 \ भाग से गांधर्व समानता निश्चित होती है.
1) \[ AB = I_3 \] तथ्यानुसार \( B \) तथा \( A \) में विषम समानता
2) \[ CA = I_3 \] तथ्यानुसार \( C \) तथा \( A \) में विषम समानता
3) \( A \) सुनिश्चित विषम समानता

Options :
Only 3 implies 1 and 2
1. \[ 3 \Rightarrow 1 \text{ and } 2, \text{ only when } 3 \text{ implies } 1, 2 \]
1, 2 and 3 are equivalent statements
1, 2, 3 ఎవి సమానమైన విధానాలు

In 1 and 2, B can be different from C
1 మాత్రం 2 ప్రత్యేకంగా B, C మరికొన్ని విభిన్న ఉంటుంది

None of the options are correct
పాటు ఒక్కొని మేఖల కాండా

---

Question Number : 66 Question Id : 8135611186 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The value of \( f(1) \), given the equation

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

is

\[
\int_0^{x^2} x f(t) \, dt = x^5 - x^3 \quad \Rightarrow \quad f(1) = \text{?}
\]

Options :

1. \( \square \) 4
2. \( \square \) 3
3. \( \square \) 2
4. \( \checkmark \) 1
Question Number : 67 Question Id : 8135611187 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

\[ f : N \times N \rightarrow N, f((m,n)) = 2^{m-1}(2n - 1), \forall (m,n) \in N \times N. \]

Options:

1. One-one but not onto
   - \( \text{ఒక్షేష్ కొంతుంటుంది, కాని ఆప్షేష్ కొంతుంది} \)
2. Onto but not one-one
   - \( \text{యొగ్యం, కాని ఒక్షేష్ కొంతుంది} \)
3. Neither one-one nor onto
   - \( \text{ఒక్షేష్ కొంతుంది లేకుండా ఆప్షేష్ కొంతుంది} \)
4. Both one-one and onto
   - \( \text{ఒక్షేష్ అనేది ఆప్షేష్ కొంతుంది} \)

Question Number : 68 Question Id : 8135611188 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

\[ \text{మరుభూమి చైతన్యం రెండవంది విధంగా 6 లెక్క ప్రత్యేకానికి విస్తరణ రెండవంది} \]

Options:
1. ✗ 36%

2. ✓ 12%

3. ✗ 3%

4. ✗ 4%

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

Orientation: Vertical

The incentre of triangle formed by the lines $x + y = 1$, $x = 1$, $y = 1$ is $x + y = 1$, $x = 1$, $y = 1$ లోని త్రిభుజం యొక్క మిగిలిన కేంద్రం:

Options:

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

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

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

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

Question Number: 70 Question Id: 8135611190 Question Type: MCQ Display Question Number: Yes Is Question Mandatory: No Single Line Question Option: No Option

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Orientation : Vertical

The Cartesian equation of the line passing through the point \((-1, 3, -2)\) and perpendicular to the lines \(\frac{x}{1} = \frac{y}{2} = \frac{z}{3}\) and \(\frac{x+2}{-3} = \frac{y-1}{2} = \frac{z+1}{5}\) is __________

\(\frac{x}{1} = \frac{y}{2} = \frac{z}{3}\) नीत्र्न रेखावर हेक्स \((-1, 3, -2)\) सावे, \(\frac{x+2}{-3} = \frac{y-1}{2} = \frac{z+1}{5}\) कोषांक (केण्ट) सावे __________

Options :

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

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

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

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

Question Number : 71 Question Id : 813561191 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

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

विनिमयक तीत पुनः अनुभव तीत त्यो तीत कोषांक (केण्ट) तीत कोषांक (केण्ट)

Options :

They are always equal

1. ☑ They are always equal

2. ☐
They are always not equal

Sometimes they are equal

No relation exists between them

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

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

Options :
1. 30°
2. 60°
3. 45°
4. 90°
Question Number : 73 Question Id : 8135611193 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

For which value of ‘k’, the roots of equation $2x^2 + 5x + k = 0$ are rational?

‘k’ ఎలా చేయాలి ప్రత్యయం, $2x^2 + 5x + k = 0$ ఎంపికి సాధారణంగా ప్రత్యేకాలే యేసాయా? 

Options:

1. ✗ 5
2. ✗ 8
3. ✗ 25
4. ✗ 4

Question Number : 74 Question Id : 8135611194 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Find the area of the circle $(x + 1)(x + 2) + (y - 1)(y + 3) = 0$

$(x + 1)(x + 2) + (y - 1)(y + 3) = 0$ ఎంపికి స్థానంప్రత్యేకాలే యేసాయా?

Options:

1. ✔ 17π
2. ✗ 4

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

Options:
1. **1**
2. **$-1$**
3. **$c$**
4. **$-c$**

**Solution:**
Given the equation $x^3 - ax^2 + bx - c = 0$ and the roots are in G.P., we can use the AM-GM inequality to find the relationship between the coefficients.

The AM-GM inequality states that for any non-negative real numbers $a$ and $b$, $\frac{a + b}{2} \geq \sqrt{ab}$, with equality if and only if $a = b$.

Here, $a = x^3$, $b = ax^2 - bx + c$. Applying AM-GM,

$$\frac{x^3 + (ax^2 - bx + c)}{2} \geq \sqrt{x^3(ax^2 - bx + c)}$$

Simplify and solve for $\frac{b^3}{a^3}$.

**Answer:**
After simplifying, we find that $\frac{b^3}{a^3} = c$. Hence, the correct option is 3. **$c$**.
Tangent at any point \( \theta \) on the curve \( x = 35 \sec \theta, y = 35 \tan \theta \) is ______

\( \text{ప్రంతం} \) \( \text{మొత్తం} \) \( x = 35 \sec \theta, y = 35 \tan \theta \) నుండి రెండు వందల నిమిషం ______

Options:
1. \( y \sin \theta = x + 35 \cos \theta \)
2. \( y \sin \theta = x - 35 \cos \theta \)
3. \( y \cos \theta = x - 35 \sin \theta \)
4. \( y \cos \theta = x + 35 \sin \theta \)

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

ఒక బాగులో 10 మిత్తాలు, దానిలో 4 వంటి, 6 వంటి వంటించేందుకు, 3 తొలి పంచివంతం, తరువాతి తొలి పంచి వంటించాలి, తరువాతి తొలి పంచి వంటించాలి, తరువాతి తొలి పంచి వంటించాలి ______

Options:
1. \( \frac{6}{10} \)
2. \( \frac{3}{10} \)
3. \( \frac{1}{6} \)
4. \[
\frac{3}{6}
\]

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

Orientation : Vertical

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

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

Options :

1. \( 1 : 1 \)

2. \( 2 : 1 \)

3. \( 3 : 1 \)

4. \( 4 : 1 \)

Question Number : 79 Question Id : 8135611199 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical
The harmonic conjugate of \((2, 3, 4)\) with respect to the points \((3, -2, 2)\) and \((6, -17, -4)\) is

\[(3, -2, 2) \quad \text{and} \quad (6, -17, -4) \quad \text{is the harmonic conjugate of} \quad (2, 3, 4)\]

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

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

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

Options:

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

Options:

1. 1.003 MHz & 0.997 MHz

2. 3001 kHz & 2997 kHz

3. 1003 kHz & 1000 kHz

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

A pressure of 1 mm of mercury is equivalent to __________

ఇక్కడ ఉన్న 1 mm లో చేస్తాక సమాధానం అంటే కేయు కంటెంటే సమాధానం.

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

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

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

$4\pi \times 10^{-3}$ T యొక్క చమ్మకాన్ని క్రమాన్ని ఉండి 10 cm పై ఉన్న, $10^{-3}$ W కాలుగా ఉన్న రెండు రెండు ప్లాస్టిక్ కాలుగా ఉన్న ప్లాస్టిక్. ఇది మద్య వంతు యొక్క సంఖ్య సాధనాన్ని 30° వంతు రెండు మాధ్యమాలు సంఖ్యలను. అంటే, ఇది చమ్మకాన్ని క్రమాన్ని ఉండి విద్యార్థుల సంఖ్య సాధనాన్ని అనకపోయించలు.

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

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2. $2\pi \times 10^{-5} \text{ N.m}$

3. $0.5 \text{ N.m}$

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

Question Number : 85 Question Id : 8135611205 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A body of mass $m$ is placed on the earth’s surface. It is taken from the earth’s surface to a height $h = 3R$ ($R$ is radius of earth). The change in gravitational potential energy of the body is ______

Options :

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

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

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

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

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

\[ 5 \text{ cm} \times 5 \text{ cm} \times 5 \text{ cm} \text{ विद्युत बॉल का, } 5 \text{ g. cm}^{-3} \text{ भराणशीलता वाला केस ईमानदार } \]

\[ \text{विद्युत बॉल} \text{ वाला केस का वजन धारण करने} = \]

Options :

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

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

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

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

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

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

\[ 2\sqrt{gh} \text{ वेक्टरां} \text{ द्वारा प्रस्तुत किया गया है, तथा } \text{ दो} \text{ अंतर्क्रम के लिए } \text{ है तथा } \text{ } 2h \text{ दूरी से एक दूसरे से। तब दर्शाया जाए} \]

Options :
The molecular motion ceases at

Options:
1. \(273 \text{ K}\)
2. \(273 \, ^\circ\text{C}\)
3. \(-273 \text{ K}\)
4. \(-273 \, ^\circ\text{C}\)
Question Number : 89 Question Id : 8135611209 Question Type : MCQ Display Question
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation : Vertical

The maximum velocity of a particle performing simple harmonic motion is 6.28 cm.s⁻¹. If the length of its path is 8 cm, what is its period?

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

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

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

Options :
1. +3 %
2. -3 %
3. ☒ + 3.2 %

4. ☒ – 3.2 %

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

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

অক্ষালির চতুর্ভাগীক কন্ডেন্সারের ধ্যান 5 µF। কাদার প্লেট স্থায়ী যেন এর মধ্যে রাখা হয় তখন তার ধ্যানের একাংশের আড়ালের ভূমির সাদৃশ্যের সংখ্যা 1/8 থেকে উল্লো। তাহলে, কাদার মাত্রার

Options :

1. ☒ 4

2. ☒ 6

3. ☒ 7

4. ☒ 8

Question Number : 92 Question Id : 8135611212 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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Lenz's law is a consequence of the law of conservation of _______

సంతకం యొక్క విషయం పై విశ్లేషణ యొక్క విషయం?

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

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

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

సంతకం యొక్క విషయం పై విశ్లేషణ యొక్క విషయం?

Options:
1. 1
2. 4
Question Number : 94 Question Id : 8135611214 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

During phase change, entropy ___________

Options:

1. Always increases

2. May increase or decrease

3. Always decreases

4. remains constant
An infinite line charge produces a field of $9 \times 10^4 \text{ N.C}^{-1}$ at a distance of 2 cm. its linear charge density is _______.

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

Question Number : 96 Question Id : 8135611216 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options:
1. ✗ $18.89 \text{ V}$
2. ✔️ $3 \text{ V}$
3. ✗ $15 \text{ V}$

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4. 9.42 V

Question Number : 97 Question Id : 8135611217 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

16 దిస్చింది దిశలో నామా రాయిదాని దిశలో మరియు చిత్తు పెరుగుతూ చిత్తు పెరుగుతూ పెరుగుతూ పెరుగుతూ పెరుగుతూ పెరుగుతూ _______ దిశలో మరియు

Options :
1. ✗ 6
2. ✗ 4
3. ✔ 8
4. ✗ 12

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

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

పని నిర్ధారించబడిన పరమాణా ప్రకారం నిర్ధారించబడిన పరమాణా నిర్ధారించబడిన పరమాణా నిర్ధారించబడిన పరమాణా నిర్ధారించబడిన పరమాణా నిర్ధారించబడిన _______

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

ఇది 50 N అదే ప్రాంతాను ప్రవహించి పంచి ప్రాంతాను పునఃప్రవహించాయి. అంచె ఐదు అడిట్టు ఉంటుంది. నిలుపబడిన పరమాణు ఎలాంటి ఉంటే?

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

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

శిత్రి మూల ఇలక్ట్రమాడిక గెలుగు. శిత్రి శాస్త్ర గెలుగు = ______

Options :

1. $\sqrt{\mu_0 \varepsilon_0}$

2. $\frac{\mu_0}{\varepsilon_0}$

3. $\frac{\varepsilon_0}{\mu_0}$

4. $\frac{1}{\sqrt{\mu_0 \varepsilon_0}}$

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

Options:

1. OR gate, AND gate
2. AND door, AND door

3. NOT gate, AND gate
4. AND door, OR gate
Cylindrical rod of copper of length 2 m and cross-sectional area 2 cm² is insulated at its curved surface. The one end of rod is maintained in steam chamber and other is maintained in ice at 0 °C. The thermal conductivity of copper is 386 J.s⁻¹.m⁻¹.°C⁻¹. Find the temperature at a point which is at a distance of 120 cm from the colder end.

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

A body whose momentum is constant must have constant ________

పర్కము పరమాణు మాట మాట మాట మాట __________ పరమాణు మాట మాట మాట మాట మాట

Options:
1. Acceleration
2. 

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Question Number : 104 Question Id : 8135611224 Question Type : MCQ Display Question
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation : Vertical
Young’s modulus for perfectly rigid body material is ______

యంగ్స్ మోడయల్స్ ఫర్ ప్రెఫక్యూలర్ బాడ్ మ్యాటериал్ ఇస్ ______

Options :
Zero
1. ☒

Infinite
2. ☐

3. \(1 \times 10^{10} \text{ N} \cdot \text{m}^{-2}\)
3. ☒

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

27°C ఎవరకు ఎంపికంలో కలిగిన మార్థి తయారు చేస్తుంది 25%. ఆ సమీపం ఎన్నికలు సూచించడం తరువాత ఎంపికంలో ఎవరకు ఎంపికంలో ఏమిటి?

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

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

ఒక కారులో నడిపు వేగం కలిగిన మార్థి రెండు వందియను ఈపింగు వేస్తుంది. ఈపింగు ________ నిర్మించాడానికి ఎంపికంలో కలిస్తుంది.

Options:
Outside the car
1. కరు ఇద్దకి
In the car ahead of the boy

In the car beside the boy

Exactly in his hand

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

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

Options :

1. \(2L\)

2. \(\frac{L}{2}\)

3. \(\frac{L}{4}\)

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


Options :
1. 0°
2. 90°
   Will not be reflected
3. ఒక లేదా ప్రాంతం లేదా ప్రాంతం లేదా ప్రాంతం 
4. 60°

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

700 K లేదా ప్రాంతం లేదా ప్రాంతం లేదా ప్రాంతం లేదా ప్రాంతం లేదా ప్రాంతం లేదా ప్రాంతం లేదా ప్రాంతం లేదా ప్రాంతం లేదా ప్రాంతం లేదా ప్రాంతం లేదా ప్రాంతం లేదా ప్రాంతం లేదా ప్రాంతం లేదా ప్రాంతం లేదా ప్రాంతం లేదా ప్రాంతం లేదా ప్రాంతం లేదా ప్రాంతం లేదా ప్రాంతం లేదా ప్రాంతం లేదా ప్రాంతం లేదా ప్రాంతం లేదా ప్రాంతం లేదా ప్రాంతం 

Options :
1. 1.02 μm
2. 16.32 μm
A mass $M$ is supported by a mass less string wound around a uniform cylinder of mass $M$ and radius $R$. On releasing the mass from rest, it will fall with acceleration ________

$M$ is a mass, $R$ is the radius of the cylinder, $M$ is the mass of the mass. The diameter $R$ is the radius. The mass will fall with acceleration ________

Options:

1. $g$
2. $\frac{g}{2}$
3. $\frac{2g}{3}$
4. $\frac{3g}{2}$
Orientation: Vertical

Bottom of a cylindrical vessel has a hole of area ‘A’. If water is filled up to a height ‘h’, it flows out in ‘t’ seconds. If water is filled to a height ‘4h’, it will flow out in time ____

Andhra Pradesh వేదిక ముడు కారణం కొన్నా యుగాన ఫెస్టివల్. అ స్థానం ముడు కారణం కొన్నా యుగాన ఫెస్టివేల్. ‘4h’ స్థానం కొన్నా యుగాన ఫెస్టివల్. వెసి తారంపై అంకెలు చెస్తారు. వెసి తారంపై అంకెలు చెస్తారు.

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

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

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

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

\[ \frac{5\mu_0 i}{36\pi R} \]
According to the Hooke’s law the force required to change the length of a wire by ‘l’ is proportional to _____

హూక్ ప్రమాణం అనుకుంటే నిఖరించబడిన పరిమాణానికి ‘l’ నిఖరించే దాటక వలన అంటే __ ను ఏక్కడు చెవిరుపించబడింది?

Options:
1. \( l^{-2} \)
2. \( l^{-1} \)
3. \( l \)
4. \( l^2 \)

Question Number : 114 Question Id : 813561234 Question Type : MCQ Display Question
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation : Vertical

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

120 rpm దాని 1 m స్పృహం కలిగి బత్తులు నిఖరించి మీదుగా 20 kg సార్లలో గలదు 120 rpm ఉంటే అసలు జింపించడానికి ఎంత?

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

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

**Options :**

1. \[\lambda_3 = \lambda_1 + \lambda_2\]

2. \[\lambda_3 = \frac{\lambda_1 \lambda_2}{\lambda_1 + \lambda_2}\]

3. \[\lambda_1 + \lambda_2 + \lambda_3 = 0\]

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

Conditions of diffraction is ________

ప్రభావిత విదేశాలు ________

Options :

1. $\frac{a}{\lambda} \neq 1$

2. $\frac{a}{\lambda} >> 1$

3. $\frac{a}{\lambda} << 1$

4. $\frac{a}{\lambda} \leq 1$

---

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

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

20 C చారిత్రం 0.2 m తూర్ణ వద్ద చేసి మరొక తూర్ణ వద్ద ప్రమాణ విభాగానికి 2 J కొని పని చేయబడింది. మరొక తూర్ణ వద్ద స్థానం వచ్చిన ప్రమాణ విభాగానికి ఎంతో ప్రత్యేకంగా పని చేయబడింది?

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

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

3. \( 8 \text{ V} \)

4. \( 0.1 \text{ V} \)

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

The electric potential at a point on the axis of an electric dipole depends on the distance \( r \) of the point from the dipole as ______

Options :

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

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

3. \( \propto r \)

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

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

Options:
1. 2
2. 3
3. 4
4. 5

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

Options:
1. 50%
2. 25%
Chemistry

Question Number: 121  Question Id: 8135611241  Question Type: MCQ  Display Question Number: Yes  Is Question Mandatory: No  Single Line Question Option: No  Option Orientation: Vertical

A mixture of three compounds A, B, C is passed through a column of Al₂O₃ by using alcohol as eluant. The order in which they are eluted out of the column is C, B, A. Which of the following statement is true?

Options:

1. ‘C’ is strongly adsorbed on the adsorbent
‘C’ is weakly adsorbed on the adsorbent

3. ✗

‘A’ is weakly adsorbed on the solvent

4. ✗

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

2. ✔

Question Number : 122 Question Id : 8135611242 Question Type : MCQ Display Question
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option
Orientation : Vertical

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

3. ✗

Options :

1. ✗

2. ✔

3. ✗

4. ✗

Question Number : 123 Question Id : 8135611243 Question Type : MCQ Display Question

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Which of the following statements is incorrect?

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

Options:

1. ✓
2. ✗
3. ✗
4. ✗

Question Number : 124 Question Id : 8135611244 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Choose the correct statement from the following:

1) Beryllium is not readily attacked by acids because of the presence of an oxide film on the surface of the metal
2) BeO is an amphoteric oxide
3) Beryllium exhibits coordination number more than four
4) Beryllium oxide is purely acidic in nature

Choose the correct statement from the following:

1) బెర్యలియం మొక్క మాత్రం సాగితే మరియు సంబంధమైన లోపి అవసరం కలదంతో అవసరం కలదంతో అవసరం కలదంతో అవసరం కలదంతో
2) బెర్యలియం పొరిగిన సంబంధమైన లోపి అవసరం కలదంతో అవసరం కలదంతో అవసరం కలదంతో
3) బెర్యలియం పొరిగిన సంబంధమైన లోపి అవసరం కలదంతో అవసరం కలదంతో
4) బెర్యలియం పొరిగిన సంబంధమైన లోపి అవసరం కలదంతో అవసరం కలదంతో

Options:
1.  
2.  
3.  
4.  

Question Number : 125 Question Id : 8135611245 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 NOT correct?

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

Which of the following is not an essential amino acid?

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

Question Number : 126 Question Id : 8135611246 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following is not an essential amino acid?

Options:
Lysine
1. ✗

Histidine
2. ✗

Valine
3. ✗

Tyrosine
4. ✔

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

Which halogen can be oxidized by concentrated nitric acid?

సాధనానిరోధం ఎంచూరిపోయే జాగ్రత్త ఉంటుంది?

Options:

Fluorine
1. ✗

Chlorine
2. ✗

Bromine
3. ✗

4. ✔
Iodine

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

The oxidation state and covalency of Al in \([\text{AlCl}(\text{H}_2\text{O})_5]^{2+}\) respectively are

\([\text{AlCl}(\text{H}_2\text{O})_5]^{2+}\) ఏ ఆల ఐనకి యొకే వస్తు లో నియమానం లేదు నీటిని చేయలేదు

Options:
1. ✓ +3 & 6
2. ✗ +6 & 3
3. ✗ +1 & 2
4. ✗ −2 & 1

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

For the reaction \(\text{N}_2\text{O}_4(g) \rightarrow 2\text{NO}_2(g)\) if dinitrogen tetroxide is 50% dissociated at 60 °C, the standard free energy change at this temperature and 1 atm pressure is

\(\text{N}_2\text{O}_4(g) \rightarrow 2\text{NO}_2(g)\) రిటెంబరు 60 °C, స్టాడియము లేదు పోషక కూల యొకే 50% విభజనం నిర్భాగం అంటే, అంటే స్టాడియము విభజక అంటే కాయం 1 atm ప్రాంతం లేదు పోషక యొకే విభజన జరిగింది?

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

Options:

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

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

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

4. $T_1 = 195 K$, $T_2 = 303 K$, $T_3 = 244 K$, $T_4 = 298 K$
**Question Number : 131**

**Question Id : 8135611251**

**Question Type : MCQ**

**Display Question Number : Yes**

**Is Question Mandatory : No**

**Single Line Question Option : No**

**Orientation : Vertical**

The iso structural molecules among \( CO_2, SiO_2, SO_2, TeO_2, [NO_2]^+ \) are \( CO_2, SiO_2, SO_2, TeO_2, [NO_2]^+ \) এই তালিকা একমাত্র একটি অন্যতম নিয়ম নির্দেশ

**Options :**

1. \( CO_2, SO_2, TeO_2 \)
2. \( CO_2, SiO_2, [NO_2]^+ \)
3. \( CO_2, [NO_2]^+ \)
4. \( SO_2, TeO_2 \)

---

**Question Number : 132**

**Question Id : 8135611252**

**Question Type : MCQ**

**Display Question Number : Yes**

**Is Question Mandatory : No**

**Single Line Question Option : No**

**Orientation : Vertical**

Which of the following are isoelectronic species? 

জোড়া সমূহের (মেট্র) জোড়া -জোড়া একমাত্র কিছু?

**Options :**

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

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

Which of the following solutions has the lowest freezing point?

ప్రవాహం కలుగా ఉండే ఈ చాలా మిశ్రమానికి శతమిత్ర ఉంది?

Options :
1. ✔ 1 M Urea
2. ✗ 1 M Na\(_2\)SO\(_4\)
3. ✗ 1 M NaCl
4. ✗ 1 M Al\(_2\)(SO\(_4\))\(_3\)

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

Find the equivalent weight of \( MnO_4^- \) for acid medium reactions.
(atomic weight of \( Mn = 55 \), atomic weight of \( O = 16 \))

యాత్రికంగా \( MnO_4^- \) ఉపయోగించడానికి ఉపయోగించిన సమాధానాను గుర్తించండి?

(యొక్కరంగా \( Mn = 55 \), \( O = 16 \))

Options :
1. ✗ 118.93

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Question Number : 135 Question Id : 8135611255 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

For the reaction given below, which of the following is not a possible product?

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

Options :

1. \( CH_2 - Br \)
   
2. \( CH_2 - Br \)
   
3. \( CH_2 - Cl \)
   
4. \( CH_2 - OH \)

2. ✔ 23.78

3. ✗ 64.00

4. ✗ 54.93
\[ \text{CH}_2 - \text{Cl} \]
\[ \text{CH}_2 - \text{Cl} \]

Question Number : 136 Question Id : 8135611256 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
The highest temperature among the following is

Options :
1. 200 °F
2. 278 K
3. 105 °C
4. 105 K

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

DDT is __________

Options :
An antibiotic
1. ఆముదు
Biodegradable pollutant

2. ✗

Non-Biodegradable pollutant

3. ✓

Nitrogen containing insecticide

4. ✗

Find the product in the reaction given below:

\[
\text{CH}_2 - \text{OH} + \begin{align*}
\text{CH}_2 - \text{OH} \\
\text{COOH} \\
\text{COOH}
\end{align*} \xrightarrow{\text{Polymerization}} ?
\]

Options:

1. ✗ तरंग

2. ✗ बुना-S

3. ✓
Question Number : 139 Question Id : 8135611259 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following laws gives the relation between volume and temperature?

Options :

1. Boyle’s law
2. Charles’s law
3. Gay Lussac’s law
4. Avogadro’s law

Question Number : 140 Question Id : 8135611260 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
The dipole-dipole interaction energy between polar molecules in the solid state will be proportional to \( \frac{1}{r^6} \) [if \( r \) denotes the distance between polar molecules].

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

\( H_3O^+ \) ల మెమోరియల్ జెమిటీ ఏది? 

Options:

1. Trigonal pyramid
   - త్రిమాణ ప్యాడిమ్

2. Tetrahedral
   - టెట్రాహెడ్రల్
Square planar
नल्लా కమేష్యా

Trigonal bipyramidal
ప్రతిభా కమేష్యా

Trigonal planar
ప్రతిభా కమేష్యా

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

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

\[
n = 3 \quad \text{and} \quad m_s = \frac{-1}{2} \quad \text{number of electrons present} = ?
\]

Options :
1. ✗ 18
2. ✗ 9
3. ✅ 14
4. ✗ 12

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

Options:

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

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

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

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

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

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

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

Options:
1. ✓ \( n(n + 2) \)
2. ✓ \( \sqrt{n(n - 2)} \)
3. ✓ \( \sqrt{n(n + 2)} \)
4. ✓ \( n(n - 2) \)
Assertion and reason are correct, and reason is not the correct explanation for the assertion.

Assertion is correct, reason is wrong

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

Options :

1. Pseudo first order

2. First order

3. Second order

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

$A \rightarrow$ products : कौन सा $[A]$ समय से समय तक सीधी है सार्वजनिक $A$ की समय से समय तक सीधी है?

Options :

1. Pseudo first order

2. First order

3. Second order

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Zero order

Question Number : 147 Question Id : 8135611267 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

In order to increase the volume of a gas by 10% at constant temperature the pressure of the gas should be ________

ే చెట్టు పొడి విస్తరించడానికి 10% పెంచడానికి సమయం మేధస్తుందా ________

Options :

1. Increased by 10%
   10 % పెంచడి

2. Increased by 1%
   1 % పెంచడి

3. Decreased by 1%
   1% కొడడి

4. Decreased by 10%
   10% కొడడి

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

1. \( B{{H}_{4}}^{-} \)
2. \( N{{H}_{2}}^{-} \)
3. \( C{{O}_{3}}^{2-} \)
4. \( H_{3}O^{+} \)

In the preparation of a 1°-amine from an alkyl halide, with simultaneous addition of one \( C{{H}_{2}} \) group to the carbon chain, the reagent used as source of nitrogen is

1. Sodium amide, \( NaNH_{2} \)
2. Sodium azide, \( NaN_{3} \)
3. Naphthyl amine, \( NaNH_{2} \)

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Potassium cyanide, \( KCN \)

\( \text{పత్రికా చాను చెట్టు} \), \( KCN \)

Potassium phthalimide, \( C_6H_4(CO)_2N^- \ K^+ \)

\( \పత్రికా చాను చెట్టు, \( C_6H_4(CO)_2N^- \ K^+ \)

4. ✻

---

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

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

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

ప్రతి అది చాను చెట్టు ఒకర్షుం సుమారు వాయిలిషన్ సమాధ్య రెండు. ఇవి అది చాను చెట్టు రెండు

<table>
<thead>
<tr>
<th>సంఖ్య</th>
<th>అది చాను చెట్టు</th>
<th>అది చాను చెట్టు రెండు</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>( (HCOOH) )</td>
<td>( 1.8 \times 10^{-4} )</td>
</tr>
<tr>
<td>2</td>
<td>( (HClO) )</td>
<td>( 3.0 \times 10^{-8} )</td>
</tr>
<tr>
<td>3</td>
<td>( (HNO_2) )</td>
<td>( 4.5 \times 10^{-4} )</td>
</tr>
<tr>
<td>4</td>
<td>( (HCN) )</td>
<td>( 4.9 \times 10^{-10} )</td>
</tr>
</tbody>
</table>

**Options :**
1. $4 < 2 < 1 < 3$

2. $1 < 2 < 3 < 4$

3. $2 < 3 < 1 < 4$

4. $4 < 3 < 2 < 1$

Question Number : 151 Question Id : 8135611271 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which among the following is a unitless physical quantity?

ఎందుకంటే యొక్క మూలకు మూలకు సంఖ్య నిలుసినది?

Options:

- Molality
- మొలాలిటీ

- Molarity
- మారిటీ

- Mole fraction
- మార్పంలేదాయం

- Normality
- న్యామాలిటీ
The correct order of acidic character of group-16 hydrides is:

Options:

1. $H_2O < H_2S < H_2Se < H_2Te$

2. $H_2O > H_2S > H_2Se > H_2Te$

3. $H_2O < H_2S > H_2Se > H_2Te$

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

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

Question Number : 154 Question Id : 8135611274 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

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

Options :
1. ✓
2. ×
3. ×
4. ×
Aniline
1. ☑️

p-nitrophenol
2. ✗

Toluene
3. ✗

Nitrobenzene
4. ✗

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

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

HF, HCl, HBr మందం HBr పోగు నడపలో పొడి దాని మరింతం?

Options :

1. ☑️ HF >> HCl >> HBr >> HI

2. ✗ HF << HCl << HBr << HI

3. ✗ HF > HCl >> HBr >> HI

4. ✗ HF << HCl >> HBr >> HI

Question Number : 156 Question Id : 8135611276 Question Type : MCQ Display Question
The largest element among $O, Se, S, Te$ is

$O, Se, S, Te$ ఎందుకు మంచినంతి ఉంటాయి?

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

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

Calculate the amount of $NO_2$ required for producing 4 g moles of $HNO_2$ as per the chemical reaction $3NO_2 + H_2O \rightarrow 2HNO_3 + NO$. Given, The gram molecular weights of di-nitrogen and di-oxygen gases are 28 g and 32 g respectively.

$3NO_2 + H_2O \rightarrow 2HNO_3 + NO$

$3$ పిడులు నియంత్రించిన $NO_2$ ఎక్కడి 4 గ్రామాలు ఉంటాయి $HNO_3$

మాత్రమే $NO_2$ ఎక్కడి? కాని నిష్ణమంది: $3$ పిడులు నియంత్రించిన $NO_2$ ఎక్కడి 4 గ్రామాలు $HNO_3$

Options:
1. ✔ 276 g
2. ✗ 274 g
3. 2 g

4. 275 g

Question Number : 158 Question Id : 8135611278 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

ఎంపలి ఉదాహరణగా ఎందుకంటే సంస్థానం మరియు శైలి?

Options :

1. Tollens reagent

2. Schiff reagent

3. Fehling reagent

4. Grignard reagent

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

Options:

1. Tartaric, Oxalic

2. Citric, Citric

3. Oxalic, Ascorbic

4. Ascorbic, Oxalic

Calculate the energy associated with the second orbit of $Li^+$ and find its radius.

$Li^+$ ఎన్నిక రెండవ స్థితి ఎనిముఖంగా ఎందుకు మిరిందో రెండవ స్థితి ఎనిముఖం కనిపిస్తుంది?
4. \( 4.905 \times 10^{-18} \text{ J}, \ 0.0705 \text{ nm} \)