

National Testing Agency

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B. Tech

Group Number :	1
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Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	300
Is this Group for Examiner? :	No
Examiner permission :	Cant View
Show Progress Bar? :	No

Mathematics Section A

Section Id :	40585968
Section Number :	1

Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	20
Number of Questions to be attempted :	20
Section Marks :	80
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	40585968
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 1 Question Id : 4058591105 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

If $f(x) = \frac{4x+3}{6x-4}, x \neq \frac{2}{3}$ and $(f \circ f)(x) = g(x)$, where $g: \mathbb{R} - \left\{\frac{2}{3}\right\} \rightarrow \mathbb{R} - \left\{\frac{2}{3}\right\}$, then $(g \circ g \circ g)(4)$ is equal to

Options :

4058593501. $\frac{19}{20}$

4058593502. 4

4058593503. $-\frac{19}{20}$

4058593504. -4

Question Number : 1 Question Id : 4058591105 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

यदि $f(x) = \frac{4x+3}{6x-4}, x \neq \frac{2}{3}$ तथा $(f \circ f)(x) = g(x)$, हैं, जहाँ $g: \mathbb{R} - \left\{\frac{2}{3}\right\} \rightarrow \mathbb{R} - \left\{\frac{2}{3}\right\}$ है, तो $(g \circ g \circ g)(4)$ बराबर है।

Options :

4058593501. $\frac{19}{20}$

4058593502. 4

4058593503. $-\frac{19}{20}$

4058593504. -4

Question Number : 2 Question Id : 4058591106 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Let S be the set of postive integral values of a for which

$\frac{ax^2 + 2(a+1)x + 9a + 4}{x^2 - 8x + 32} < 0, \forall x \in \mathbb{R}$. Then, the number of elements in S is :

Options :

4058593505. 1

4058593506. 3

4058593507. 0

4058593508. ∞

Question Number : 2 Question Id : 4058591106 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

माना a के धन पूर्णांक मानों, जिन के लिए $\frac{ax^2 + 2(a+1)x + 9a + 4}{x^2 - 8x + 32} < 0, \forall x \in \mathbb{R}$ है, का समच्चय S है। तो S में अवयवों की संख्या है।

Options :

4058593505. 1

4058593506. 3

4058593507. 0

4058593508. ∞

Question Number : 3 Question Id : 4058591107 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

If $f(x) = \begin{vmatrix} x^3 & 2x^2 + 1 & 1 + 3x \\ 3x^2 + 2 & 2x & x^3 + 6 \\ x^3 - x & 4 & x^2 - 2 \end{vmatrix}$ for all $x \in \mathbb{R}$, then $2f(0) + f'(0)$ is equal to

Options :

4058593509. 24

4058593510. 18

4058593511. 42

4058593512. 48

Question Number : 3 Question Id : 4058591107 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

यदि सभी $x \in \mathbb{R}$ के लिए, $f(x) = \begin{vmatrix} x^3 & 2x^2+1 & 1+3x \\ 3x^2+2 & 2x & x^3+6 \\ x^3-x & 4 & x^2-2 \end{vmatrix}$ है, तो $2f(0) + f'(0)$ बराबर है।

Options :

4058593509. 24

4058593510. 18

4058593511. 42

4058593512. 48

Question Number : 4 Question Id : 4058591108 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

If the system of linear equations

$$x - 2y + z = -4$$

$$2x + \alpha y + 3z = 5$$

$$3x - y + \beta z = 3$$

has infinitely many solutions, then $12\alpha + 13\beta$ is equal to

Options :

4058593513. 54

4058593514. 58

4058593515. 60

4058593516. 64

Question Number : 4 Question Id : 4058591108 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

यदि रेखिक समीकरण निकाय

$$x - 2y + z = -4$$

$$2x + \alpha y + 3z = 5$$

$$3x - y + \beta z = 3$$

के अनंत हल हैं, तो $12\alpha + 13\beta$ बराबर है।

Options :

4058593513. 54

4058593514. 58

4058593515. 60

4058593516. 64

Question Number : 5 Question Id : 4058591109 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The sum of the series $\frac{1}{1-3 \cdot 1^2+1^4} + \frac{2}{1-3 \cdot 2^2+2^4} + \frac{3}{1-3 \cdot 3^2+3^4} + \dots$ up to 10-terms is

Options :

4058593517. $\frac{45}{109}$

4058593518. $\frac{55}{109}$

4058593519. $-\frac{55}{109}$

4058593520. $-\frac{45}{109}$

Question Number : 5 Question Id : 4058591109 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

श्रेणी $\frac{1}{1-3 \cdot 1^2+1^4} + \frac{2}{1-3 \cdot 2^2+2^4} + \frac{3}{1-3 \cdot 3^2+3^4} + \dots$ 10 पदों तक का योग है।

Options :

4058593517. $\frac{45}{109}$

4058593518. $\frac{55}{109}$

4058593519. $-\frac{55}{109}$

4058593520. $-\frac{45}{109}$

Question Number : 6 Question Id : 4058591110 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

$$\lim_{x \rightarrow 0} \frac{e^{2|\sin x|} - 2|\sin x| - 1}{x^2}$$

Options :

4058593521. is equal to 2

4058593522. is equal to 1

4058593523. is equal to -1

4058593524. does not exist

Question Number : 6 Question Id : 4058591110 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

$$\lim_{x \rightarrow 0} \frac{e^{2|\sin x|} - 2|\sin x| - 1}{x^2}$$

Options :

4058593521. 2 के बराबर है

4058593522. 1 के बराबर है

4058593523. -1 के बराबर है

4058593524. का अस्तित्व नहीं है

Question Number : 7 Question Id : 4058591111 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Let a be the sum of all coefficients in the expansion of

$(1-2x+2x^2)^{2023} (3-4x^2+2x^3)^{2024}$ and $b = \lim_{x \rightarrow 0} \left(\frac{\int_0^x \frac{\log(1+t)}{t^{2024}+1} dt}{x^2} \right)$. If the equations

$cx^2 + dx + e = 0$ and $2bx^2 + ax + 4 = 0$ have a common root, where $c, d, e \in \mathbb{R}$, then $d : c : e$ equals

Options :

4058593525. $2 : 1 : 4$

4058593526. $1 : 1 : 4$

4058593527. $4 : 1 : 4$

4058593528. $1 : 2 : 4$

Question Number : 7 Question Id : 4058591111 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

माना $(1-2x+2x^2)^{2023} (3-4x^2+2x^3)^{2024}$ के प्रसार में सभी पदों के गुणांकों का योग a है

तथा $b = \lim_{x \rightarrow 0} \left(\frac{\int_0^x \frac{\log(1+t)}{t^{2024}+1} dt}{x^2} \right)$ है। यदि समीकरणों $cx^2 + dx + e = 0$ तथा $2bx^2 + ax$

$+ 4 = 0$ का एक उभयनिष्ठ मूल है, जहाँ $c, d, e \in \mathbb{R}$ हैं, तो $d : c : e$ बराबर है।

Options :

4058593525. 2 : 1 : 4

4058593526. 1 : 1 : 4

4058593527. 4 : 1 : 4

4058593528. 1 : 2 : 4

Question Number : 8 Question Id : 4058591112 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

For $0 < c < b < a$, let $(a + b - 2c)x^2 + (b + c - 2a)x + (c + a - 2b) = 0$ and $\alpha \neq 1$ be one of its root. Then, among the two statements

(I) If $\alpha \in (-1, 0)$, then b cannot be the geometric mean of a and c

(II) If $\alpha \in (0, 1)$, then b may be the geometric mean of a and c

Options :

4058593529. only (I) is true

4058593530. only (II) is true

4058593531. Both (I) and (II) are true

4058593532. Neither (I) nor (II) is true

Question Number : 8 Question Id : 4058591112 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

$0 < c < b < a$, के लिए माना $(a + b - 2c)x^2 + (b + c - 2a)x + (c + a - 2b) = 0$ का
एक मूल $\alpha \neq 1$ है। तो दो कथनों

(I) यदि $\alpha \in (-1, 0)$ है, तो a तथा c का गुणोत्तर माध्य b नहीं हो सकता।

(II) यदि $\alpha \in (0, 1)$ है, तो a तथा c का गुणोत्तर माध्य b हो सकता है।

Options :

4058593529. केवल (I) सत्य है

4058593530. केवल (II) सत्य है

4058593531. (I) तथा (II) दोनों सत्य हैं

4058593532. न तो (I) न ही (II) सत्य हैं

Question Number : 9 Question Id : 4058591113 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Let $g(x)$ be a linear function and $f(x) = \begin{cases} g(x) & , x \leq 0 \\ \left(\frac{1+x}{2+x}\right)^{\frac{1}{x}} & , x > 0 \end{cases}$, is continuous at $x = 0$.

If $f'(1) = f'(-1)$, then the value $g(3)$ is

Options :

4058593533.

$$\frac{1}{3} \log_e \left(\frac{4}{9e^{1/3}} \right)$$

4058593534. $\log_e \left(\frac{4}{9e^{1/3}} \right)$

4058593535. $\frac{1}{3} \log_e \left(\frac{4}{9} \right) + 1$

4058593536. $\log_e \left(\frac{4}{9} \right) - 1$

Question Number : 9 Question Id : 4058591113 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

माना $g(x)$ एक रेखिक फलन है तथा $f(x) = \begin{cases} g(x) & , x \leq 0 \\ \left(\frac{1+x}{2+x} \right)^{\frac{1}{x}} & , x > 0 \end{cases}$, $x = 0$ पर संतत है। यदि

$f'(1) = f'(-1)$ है, तो $g(3)$ का मान है।

Options :

4058593533. $\frac{1}{3} \log_e \left(\frac{4}{9e^{1/3}} \right)$

4058593534. $\log_e \left(\frac{4}{9e^{1/3}} \right)$

4058593535. $\frac{1}{3} \log_e \left(\frac{4}{9} \right) + 1$

4058593536.

$$\log_e \left(\frac{4}{9} \right) - 1$$

Question Number : 10 Question Id : 4058591114 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The area of the region $\left\{ (x, y) : y^2 \leq 4x, x < 4, \frac{xy(x-1)(x-2)}{(x-3)(x-4)} > 0, x \neq 3 \right\}$ is

Options :

4058593537. $\frac{8}{3}$

4058593538. $\frac{16}{3}$

4058593539. $\frac{32}{3}$

4058593540. $\frac{64}{3}$

Question Number : 10 Question Id : 4058591114 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

क्षेत्र $\left\{ (x, y) : y^2 \leq 4x, x < 4, \frac{xy(x-1)(x-2)}{(x-3)(x-4)} > 0, x \neq 3 \right\}$ का क्षेत्रफल है।

Options :

4058593537. $\frac{8}{3}$

4058593538. $\frac{16}{3}$

4058593539. $\frac{32}{3}$

4058593540. $\frac{64}{3}$

Question Number : 11 Question Id : 4058591115 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Let $y = y(x)$ be the solution of the differential equation

$$\frac{dy}{dx} = \frac{(\tan x) + y}{\sin x (\sec x - \sin x \tan x)}, x \in \left(0, \frac{\pi}{2}\right) \text{ satisfying the condition } y\left(\frac{\pi}{4}\right) = 2.$$

Then, $y\left(\frac{\pi}{3}\right)$ is

Options :

4058593541. $\sqrt{3}(2 + \log_e 3)$

4058593542. $\frac{\sqrt{3}}{2}(2 + \log_e 3)$

4058593543. $\sqrt{3}(2 + \log_e \sqrt{3})$

4058593544. $\sqrt{3}(1 + 2 \log_e 3)$

Question Number : 11 Question Id : 4058591115 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

माना अवकल समीकरण $\frac{dy}{dx} = \frac{(\tan x) + y}{\sin x (\sec x - \sin x \tan x)}$, $x \in \left(0, \frac{\pi}{2}\right)$ के हल $y = y(x)$ के लिए $y\left(\frac{\pi}{4}\right) = 2$ है। तो $y\left(\frac{\pi}{3}\right)$ बराबर है।

Options :

4058593541. $\sqrt{3}(2 + \log_e 3)$

4058593542. $\frac{\sqrt{3}}{2}(2 + \log_e 3)$

4058593543. $\sqrt{3}(2 + \log_e \sqrt{3})$

4058593544. $\sqrt{3}(1 + 2 \log_e 3)$

Question Number : 12 Question Id : 4058591116 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The solution curve of the differential equation

$y \frac{dx}{dy} = x(\log_e x - \log_e y + 1)$, $x > 0, y > 0$ passing through the point $(e, 1)$ is

Options :

4058593545. $2 \left| \log_e \frac{x}{y} \right| = y + 1$

4058593546.

$$\left| \log_e \frac{y}{x} \right| = y^2$$

4058593547. $\left| \log_e \frac{y}{x} \right| = x$

4058593548. $\left| \log_e \frac{x}{y} \right| = y$

Question Number : 12 Question Id : 4058591116 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

बिंदु $(e, 1)$ से होकर जाने वाला, अवकल समीकरण

$y \frac{dx}{dy} = x(\log_e x - \log_e y + 1), x > 0, y > 0$ का हल वक्र है

Options :

4058593545. $2 \left| \log_e \frac{x}{y} \right| = y + 1$

4058593546. $\left| \log_e \frac{y}{x} \right| = y^2$

4058593547. $\left| \log_e \frac{y}{x} \right| = x$

4058593548. $\left| \log_e \frac{x}{y} \right| = y$

Question Number : 13 Question Id : 4058591117 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

If one of the diameters of the circle $x^2 + y^2 - 10x + 4y + 13 = 0$ is a chord of another circle C, whose center is the point of intersection of the lines $2x + 3y = 12$ and $3x - 2y = 5$, then the radius of the circle C is :

Options :

4058593549. $\sqrt{20}$

4058593550. 6

4058593551. $3\sqrt{2}$

4058593552. 4

Question Number : 13 Question Id : 4058591117 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

यदि वृत्त $x^2 + y^2 - 10x + 4y + 13 = 0$ का एक व्यास, एक दूसरे वृत्त C, जिसका केन्द्र, रेखाओं $2x + 3y = 12$ तथा $3x - 2y = 5$ का प्रतिच्छेदन बिंदु है, की एक जीवा है, तो वृत्त C की त्रिज्या है :

Options :

4058593549. $\sqrt{20}$

4058593550. 6

4058593551. $3\sqrt{2}$

4058593552. 4

Question Number : 14 Question Id : 4058591118 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Let $\alpha, \beta, \gamma, \delta \in \mathbb{Z}$ and let $A(\alpha, \beta)$, $B(1, 0)$, $C(\gamma, \delta)$ and $D(1, 2)$ be the vertices of a parallelogram ABCD. If $AB = \sqrt{10}$ and the points A and C lie on the line $3y = 2x + 1$, then $2(\alpha + \beta + \gamma + \delta)$ is equal to

Options :

4058593553. 5

4058593554. 8

4058593555. 10

4058593556. 12

Question Number : 14 Question Id : 4058591118 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

माना $\alpha, \beta, \gamma, \delta \in \mathbb{Z}$ हैं तथा माना एक समांतर चतुर्भुज ABCD के शीर्ष $A(\alpha, \beta)$, $B(1, 0)$, $C(\gamma, \delta)$ तथा $D(1, 2)$ हैं। यदि $AB = \sqrt{10}$ है तथा बिंदु A और C, रेखा $3y = 2x + 1$ पर हैं, तो $2(\alpha + \beta + \gamma + \delta)$ बराबर है।

Options :

4058593553. 5

4058593554. 8

4058593555. 10

4058593556. 12

Question Number : 15 Question Id : 4058591119 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The distance of the point $Q(0, 2, -2)$ from the line passing through the point $P(5, -4, 3)$ and perpendicular to the lines $\vec{r} = (-3\hat{i} + 2\hat{k}) + \lambda(2\hat{i} + 3\hat{j} + 5\hat{k})$, $\lambda \in \mathbb{R}$ and $\vec{r} = (\hat{i} - 2\hat{j} + \hat{k}) + \mu(-\hat{i} + 3\hat{j} + 2\hat{k})$, $\mu \in \mathbb{R}$ is :

Options :

4058593557. $\sqrt{86}$

4058593558. $\sqrt{74}$

4058593559. $\sqrt{54}$

4058593560. $\sqrt{20}$

Question Number : 15 Question Id : 4058591119 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

बिंदु $P(5, -4, 3)$ से होकर जाने वाली तथा रेखाओं

$\vec{r} = (-3\hat{i} + 2\hat{k}) + \lambda(2\hat{i} + 3\hat{j} + 5\hat{k})$, $\lambda \in \mathbb{R}$ तथा

$\vec{r} = (\hat{i} - 2\hat{j} + \hat{k}) + \mu(-\hat{i} + 3\hat{j} + 2\hat{k})$, $\mu \in \mathbb{R}$ के तंबवत रेखा से बिंदु $Q(0, 2, -2)$ की दूरी है।

Options :

4058593557. $\sqrt{86}$

4058593558. $\sqrt{74}$

4058593559. $\sqrt{54}$

4058593560. $\sqrt{20}$

Question Number : 16 Question Id : 4058591120 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

If the foci of a hyperbola are same as that of the ellipse $\frac{x^2}{9} + \frac{y^2}{25} = 1$ and the eccentricity of the hyperbola is $\frac{15}{8}$ times the eccentricity of the ellipse, then the smaller focal distance of the point $\left(\sqrt{2}, \frac{14}{3}\sqrt{\frac{2}{5}}\right)$ on the hyperbola, is equal to

Options :

4058593561. $7\sqrt{\frac{2}{5}} + \frac{8}{3}$

4058593562. $14\sqrt{\frac{2}{5}} - \frac{4}{3}$

4058593563. $7\sqrt{\frac{2}{5}} - \frac{8}{3}$

4058593564.

$$14\sqrt{\frac{2}{5}} - \frac{16}{3}$$

Question Number : 16 Question Id : 4058591120 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

यदि एक अतिपरवलय की नाभियों, दीर्घवृत्त $\frac{x^2}{9} + \frac{y^2}{25} = 1$ की नाभियों के समान हैं तथा अतिपरवलय की उत्केन्द्रता, दीर्घवृत्त की उत्केन्द्रता का $\frac{15}{8}$ गुना है, तो अतिपरवलय पर बिंदु $\left(\sqrt{2}, \frac{14}{3}\sqrt{\frac{2}{5}}\right)$ की छोटी नाभीय दूरी बराबर है

Options :

4058593561. $7\sqrt{\frac{2}{5}} + \frac{8}{3}$

4058593562. $14\sqrt{\frac{2}{5}} - \frac{4}{3}$

4058593563. $7\sqrt{\frac{2}{5}} - \frac{8}{3}$

4058593564. $14\sqrt{\frac{2}{5}} - \frac{16}{3}$

Question Number : 17 Question Id : 4058591121 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Three rotten apples are accidentally mixed with fifteen good apples. Assuming the random variable x to be the number of rotten apples in a draw of two apples, the variance of x is

Options :

4058593565. $\frac{37}{153}$

4058593566. $\frac{40}{153}$

4058593567. $\frac{47}{153}$

4058593568. $\frac{57}{153}$

Question Number : 17 Question Id : 4058591121 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

तीन गले हुए सेव गलती से 15 अच्छे सेव में मिल गए। इनमें से दो सेव निकालने पर गले हुए निकले सेव की संख्या को यादृच्छिक चर x मान लीजिए। तो x का प्रसरण है।

Options :

4058593565. $\frac{37}{153}$

4058593566. $\frac{40}{153}$

4058593567. $\frac{47}{153}$

Question Number : 18 Question Id : 4058591122 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Let $\vec{a} = 3\hat{i} + \hat{j} - 2\hat{k}$, $\vec{b} = 4\hat{i} + \hat{j} + 7\hat{k}$ and $\vec{c} = \hat{i} - 3\hat{j} + 4\hat{k}$ be three vectors. If a
vectors $\vec{p}$ satisfies $\vec{p} \times \vec{b} = \vec{c} \times \vec{b}$ and $\vec{p} \cdot \vec{a} = 0$, then $\vec{p} \cdot (\hat{i} - \hat{j} - \hat{k})$ is equal to

Options :

4058593569. 28

4058593570. 24

4058593571. 36

4058593572. 32

Question Number : 18 Question Id : 4058591122 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

माना तीन सदिश $\vec{a} = 3\hat{i} + \hat{j} - 2\hat{k}$, $\vec{b} = 4\hat{i} + \hat{j} + 7\hat{k}$ तथा $\vec{c} = \hat{i} - 3\hat{j} + 4\hat{k}$ हैं। यदि एक
सदिश $\vec{p}$ के लिए $\vec{p} \times \vec{b} = \vec{c} \times \vec{b}$ तथा $\vec{p} \cdot \vec{a} = 0$ हैं, तो $\vec{p} \cdot (\hat{i} - \hat{j} - \hat{k})$ बराबर है।

Options :

4058593569. 28

4058593570. 24

4058593571. 36

4058593572. 32

Question Number : 19 Question Id : 4058591123 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Two marbles are drawn in succession from a box containing 10 red, 30 white, 20 blue and 15 orange marbles, with replacement being made after each drawing. Then the probability, that first drawn marble is red and second drawn marble is white, is

Options :

4058593573. $\frac{4}{25}$

4058593574. $\frac{2}{25}$

4058593575. $\frac{4}{75}$

4058593576. $\frac{2}{3}$

Question Number : 19 Question Id : 4058591123 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

एक डब्बे में 10 लाल, 30 सफेद, 20 नीली तथा 15 नारंगी मारबल हैं। इसमें से दो मारबल, प्रतिस्थापना सहित निकाले जाते हैं। तो पहले मारबल के लाल तथा दूसरे मारबल के सफेद होने की प्रायिकता है।

Options :

4058593573. $\frac{4}{25}$

4058593574. $\frac{2}{25}$

4058593575. $\frac{4}{75}$

4058593576. $\frac{2}{3}$

Question Number : 20 Question Id : 4058591124 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

For $\alpha, \beta, \gamma \neq 0$, if $\sin^{-1} \alpha + \sin^{-1} \beta + \sin^{-1} \gamma = \pi$ and $(\alpha + \beta + \gamma)(\alpha - \gamma + \beta) = 3\alpha\beta$, then γ equals

Options :

4058593577. $\frac{\sqrt{3}}{2}$

4058593578. $\frac{1}{\sqrt{2}}$

4058593579. $\sqrt{3}$

4058593580. $\frac{\sqrt{3}-1}{2\sqrt{2}}$

Question Number : 20 Question Id : 4058591124 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

$\alpha, \beta, \gamma \neq 0$, के लिए, यदि $\sin^{-1} \alpha + \sin^{-1} \beta + \sin^{-1} \gamma = \pi$ है तथा $(\alpha + \beta + \gamma)(\alpha - \gamma + \beta)$
 $= 3\alpha\beta$ है, तो γ बराबर है।

Options :

4058593577. $\frac{\sqrt{3}}{2}$

4058593578. $\frac{1}{\sqrt{2}}$

4058593579. $\sqrt{3}$

4058593580. $\frac{\sqrt{3}-1}{2\sqrt{2}}$

Mathematics Section B

Section Id :	40585969
Section Number :	2
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	10
Number of Questions to be attempted :	5
Section Marks :	20
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0

Sub-Section Number : 1
Sub-Section Id : 40585969
Question Shuffling Allowed : Yes
Is Section Default? : null

Question Number : 21 Question Id : 4058591125 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Let $A = \{1, 2, 3, 4\}$ and $R = \{(1, 2), (2, 3), (1, 4)\}$ be a relation on A. Let S be the equivalence relation on A such that $R \subset S$ and the number of elements in S is n. Then, the minimum value of n is _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 21 Question Id : 4058591125 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

माना $A = \{1, 2, 3, 4\}$ है तथा A पर एक संबंध $R = \{(1, 2), (2, 3), (1, 4)\}$ है। माना A पर एक तुल्यता संबंध S है, $R \subset S$ है तथा S में अवयवों की संख्या n है। तो n का निम्नतम मान है _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 22 Question Id : 4058591126 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

If α denotes the number of solutions of $|1-i|^x = 2^x$ and $\beta = \left(\frac{|z|}{\arg(z)} \right)$, where

$z = \frac{\pi}{4}(1+i)^4 \left[\frac{1-\sqrt{\pi}i}{\sqrt{\pi}+i} + \frac{\sqrt{\pi}-i}{1+\sqrt{\pi}i} \right]$, $i = \sqrt{-1}$, then the distance of the point (α, β) from the line $4x - 3y = 7$ is _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 22 Question Id : 4058591126 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

यदि $|1-i|^x = 2^x$ के हलों की संख्या α है तथा $\beta = \left(\frac{|z|}{\arg(z)} \right)$ है, जहाँ

$z = \frac{\pi}{4}(1+i)^4 \left[\frac{1-\sqrt{\pi}i}{\sqrt{\pi}+i} + \frac{\sqrt{\pi}-i}{1+\sqrt{\pi}i} \right]$, $i = \sqrt{-1}$ है, तो रेखा $4x - 3y = 7$ से बिंदु (α, β) की दूरी है _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 23 Question Id : 4058591127 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The total number of words (with or without meaning) that can be formed out of the letters of the word 'DISTRIBUTION' taken four at a time, is equal to _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 23 Question Id : 4058591127 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

'DISTRIBUTION' शब्द के अक्षरों से चार अक्षरों के बनाए जा सकने वाले शब्दों (अर्थपूर्ण या अर्थहीन) की कुल संख्या है _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 24 Question Id : 4058591128 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

In the expansion of $(1+x)(1-x^2)\left(1+\frac{3}{x}+\frac{3}{x^2}+\frac{1}{x^3}\right)^5$, $x \neq 0$, the sum of the coefficients of x^3 and x^{-13} is equal to _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 24 **Question Id :** 4058591128 **Question Type :** SA **Calculator :** None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 4 **Wrong Marks :** 1

$(1+x)(1-x^2)\left(1+\frac{3}{x}+\frac{3}{x^2}+\frac{1}{x^3}\right)^5$, $x \neq 0$, के प्रसार में x^3 तथा x^{-13} के गुणांकों का योग है _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 25 **Question Id :** 4058591129 **Question Type :** SA **Calculator :** None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 4 **Wrong Marks :** 1

Let $S = (-1, \infty)$ and $f : S \rightarrow \mathbb{R}$ be defined as

$$f(x) = \int_{-1}^x (e^t - 1)^{11} (2t - 1)^5 (t - 2)^7 (t - 3)^{12} (2t - 10)^{61} dt,$$

Let p = Sum of squares of the values of x , where $f(x)$ attains local maxima on S , and q = Sum of the values of x , where $f(x)$ attains local minima on S . Then, the value of $p^2 + 2q$ is _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 25 **Question Id :** 4058591129 **Question Type :** SA **Calculator :** None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 4 **Wrong Marks :** 1

माना $S = (-1, \infty)$ है तथा $f(x) = \int_{-1}^x (e^t - 1)^{11} (2t - 1)^5 (t - 2)^7 (t - 3)^{12} (2t - 10)^{61} dt$, द्वारा परिभाषित फलन $f : S \rightarrow \mathbb{R}$ है।

माना $p = x$ के उन मानों, जहाँ f, S पर स्थानीय उच्चतम प्राप्त करता है, के वर्गों को योग है। तथा $q = x$ के उन मानों, जहाँ f, S पर स्थानीय न्यूनतम प्राप्त करता है, का योग है। तो $p^2 + 2q$ का मान है _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 26 **Question Id :** 4058591130 **Question Type :** SA **Calculator :** None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Let $f : \mathbb{R} \rightarrow \mathbb{R}$ be a function defined by $f(x) = \frac{4^x}{4^x + 2}$ and

$$M = \int_{f(a)}^{f(1-a)} x \sin^4(x(1-x)) dx, N = \int_{f(a)}^{f(1-a)} \sin^4(x(1-x)) dx; a \neq \frac{1}{2}. \text{ If}$$

$\alpha M = \beta N, \alpha, \beta \in \mathbb{N}$, then the least value of $\alpha^2 + \beta^2$ is equal to _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 26 Question Id : 4058591130 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

माना फलन $f : \mathbb{R} \rightarrow \mathbb{R}$, $f(x) = \frac{4^x}{4^x + 2}$ द्वारा परिभाषित है तथा

$$M = \int_{f(a)}^{f(1-a)} x \sin^4(x(1-x)) dx, N = \int_{f(a)}^{f(1-a)} \sin^4(x(1-x)) dx; a \neq \frac{1}{2} \text{ हैं। यदि}$$

$\alpha M = \beta N, \alpha, \beta \in \mathbb{N}$ हैं, तो $\alpha^2 + \beta^2$ का न्यूनतम मान है _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 27 Question Id : 4058591131 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

If the integral $525 \int_0^{\frac{\pi}{2}} \sin 2x \cos^{\frac{11}{2}} x \left(1 + \cos^{\frac{5}{2}} x\right)^{\frac{1}{2}} dx$ is equal to $(n\sqrt{2} - 64)$, then n is equal to _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 27 Question Id : 4058591131 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

यदि समाकलन $525 \int_0^{\frac{\pi}{2}} \sin 2x \cos^{\frac{11}{2}} x \left(1 + \cos^{\frac{5}{2}} x\right)^{\frac{1}{2}} dx = (n\sqrt{2} - 64)$ है, तो n बराबर है _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 28 Question Id : 4058591132 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Let the foci and length of the latus rectum of an ellipse

$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1, a > b$ be $(\pm 5, 0)$ and $\sqrt{50}$, respectively. Then, the square of the eccentricity of the hyperbola $\frac{x^2}{b^2} - \frac{y^2}{a^2 b^2} = 1$ equals

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 28 **Question Id :** 4058591132 **Question Type :** SA **Calculator :** None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 4 **Wrong Marks :** 1

माना एक दीर्घवृत्त $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1, a > b$, की नाभियाँ तथा नाभिलंब जीवा की लंबाई क्रमशः $(\pm 5, 0)$ तथा $\sqrt{50}$ हैं। तो अतिपरवलय $\frac{x^2}{b^2} - \frac{y^2}{a^2 b^2} = 1$ की उत्केन्द्रता का वर्ग बराबर है _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 29 **Question Id :** 4058591133 **Question Type :** SA **Calculator :** None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 4 **Wrong Marks :** 1

Let Q and R be the feet of perpendiculars from the point $P(a, a, a)$ on the lines $x = y, z = 1$ and $x = -y, z = -1$ respectively. If $\angle QPR$ is a right angle, then $12a^2$ is equal to _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 29 **Question Id :** 4058591133 **Question Type :** SA **Calculator :** None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 4 **Wrong Marks :** 1

माना बिंदु $P(a, a, a)$ से रेखाओं $x = y, z = 1$ तथा $x = -y, z = -1$ पर डाले गए लंबों के पाद क्रमशः Q तथा R हैं। यदि $\angle QPR$ एक समकोण है, तो $12a^2$ बराबर है _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 30 **Question Id :** 4058591134 **Question Type :** SA **Calculator :** None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 4 **Wrong Marks :** 1

Let $\vec{a}$ and $\vec{b}$ be two vectors such that $|\vec{a}| = 1, |\vec{b}| = 4$, and $\vec{a} \cdot \vec{b} = 2$. If $\vec{c} = (2\vec{a} \times \vec{b}) - 3\vec{b}$ and the angle between $\vec{b}$ and $\vec{c}$ is α , then $192 \sin^2 \alpha$ is equal to _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 30 Question Id : 4058591134 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

माना दो सदिशों $\vec{a}$ तथा $\vec{b}$ के लिए $|\vec{a}|=1, |\vec{b}|=4$, तथा $\vec{a} \cdot \vec{b} = 2$ हैं। यदि $\vec{c} = (2\vec{a} \times \vec{b}) - 3\vec{b}$ है तथा $\vec{b}$ और $\vec{c}$ है के बीच कोण α है, तो $192 \sin^2 \alpha$ बराबर है _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Physics Section A

Section Id :	40585970
Section Number :	3
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	20
Number of Questions to be attempted :	20
Section Marks :	80
Enable Mark as Answered Mark for Review and	Yes

Clear Response :

Maximum Instruction Time : 0

Sub-Section Number : 1

Sub-Section Id : 40585970

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 31 Question Id : 4058591135 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

A force is represented by $F = ax^2 + bt^{\frac{1}{2}}$

where x = distance and t = time. The dimensions of b^2/a are:

Options :

4058593591. $[MLT^{-2}]$

4058593592. $[ML^{-1}T^{-1}]$

4058593593. $[ML^2T^{-3}]$

4058593594. $[ML^3T^{-3}]$

Question Number : 31 Question Id : 4058591135 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

एक बल को निम्न प्रकार प्रदर्शित किया गया है। $F = ax^2 + bt^{\frac{1}{2}}$

जहाँ x = दूरी व t = समय है। b^2/a की विमाएँ है:

Options :

4058593591. $[MLT^{-2}]$

4058593592. $[ML^{-1}T^{-1}]$

4058593593. $[ML^2T^{-3}]$

4058593594. $[ML^3T^{-3}]$

Question Number : 32 Question Id : 4058591136 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The relation between time ' t ' and distance ' x ' is $t = \alpha x^2 + \beta x$, where α and β are constants. The relation between acceleration (a) and velocity (v) is :

Options :

4058593595. $a = -2\alpha v^3$

4058593596. $a = -3\alpha v^2$

4058593597. $a = -4\alpha v^4$

4058593598. $a = -5\alpha v^5$

Question Number : 32 Question Id : 4058591136 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

समय 't' तथा दूरी x में संबंध $t = \alpha x^2 + \beta x$ है, जहाँ α तथा β नियतांक हैं। त्वरण (a) तथा वेग (v) के बीच संबंध है:

Options :

4058593595. $a = -2\alpha v^3$

4058593596. $a = -3\alpha v^2$

4058593597. $a = -4\alpha v^4$

4058593598. $a = -5\alpha v^5$

Question Number : 33 Question Id : 4058591137 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

A coin is placed on a disc. The coefficient of friction between the coin and the disc is μ . If the distance of the coin from the center of the disc is r , the maximum angular velocity which can be given to the disc, so that the coin does not slip away, is :

Options :

4058593599. $\frac{\mu g}{r}$

4058593600. $\sqrt{\frac{\mu g}{r}}$

4058593601. $\sqrt{\frac{r}{\mu g}}$

4058593602. $\frac{\mu}{\sqrt{rg}}$

Question Number : 33 Question Id : 4058591137 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

एक सिक्का किसी चकती (डिस्क) पर रखा गया है। सिक्के व चकती के बीच घर्षण गुणांक μ है। सिक्के की चकती के केन्द्र से दूरी r है। चकती को दिया गया वह अधिकतम कोणीय वेग, जिसके लिए सिक्का बाहर की ओर न फिसले, हैं :

Options :

4058593599. $\frac{\mu g}{r}$

4058593600. $\sqrt{\frac{\mu g}{r}}$

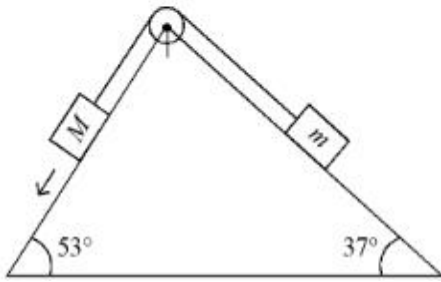
4058593601. $\sqrt{\frac{r}{\mu g}}$

4058593602. $\frac{\mu}{\sqrt{rg}}$

Question Number : 34 Question Id : 4058591138 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

In the given arrangement of a doubly inclined plane two blocks of masses M and m are placed. The blocks are connected by a light string passing over an ideal pulley as shown. The coefficient of friction between the surface of the plane and the blocks is 0.25. The value of m , for which $M = 10 \text{ kg}$ will move down with an acceleration of 2 m/s^2 , is: (take $g = 10 \text{ m/s}^2$ and $\tan 37^\circ = 3/4$)



Options :

4058593603. 4.5 kg

4058593604. 9 kg

4058593605. 2.25 kg

4058593606. 6.5 kg

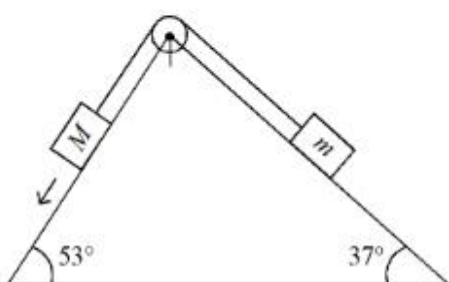
Question Number : 34 Question Id : 4058591138 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

दिये गये चित्र में दो आनत तलों पर क्रमशः M व m द्रव्यमान को दो गुटके रखे हैं। दोनों गुटके एक आदर्श पुली से गुजरने वाली हल्की डोरी से जुड़े हैं। तलों की सतहों व गुटकों के बीच घर्षण गुणांक 0.25 है। m का वह मान, जिसके लिए $M = 10$ किग्रा नीचे की ओर 2 m/s^2 के त्वरण से गति करे, _____ (दिया है $g = 10 \text{ मी/से}^2$ तथा $\tan 37^\circ = 3/4$)



Options :

4058593603. 4.5 kg

4058593604. 9 kg

4058593605. 2.25 kg

4058593606. 6.5 kg

Question Number : 35 Question Id : 4058591139 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

An artillery piece of mass M_1 fires a shell of mass M_2 horizontally. Instantaneously after the firing, the ratio of kinetic energy of the artillery and that of the shell is:

Options :

4058593607. $\frac{M_1}{M_2}$

4058593608. $\frac{M_2}{M_1}$

4058593609. $M_1 / (M_1 + M_2)$

4058593610. $M_2 / (M_1 + M_2)$

Question Number : 35 Question Id : 4058591139 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

M_1 द्रव्यमान की एक तोप M_2 द्रव्यमान की एक गोली को क्षैतिज दिशा में दागती है। दागने के तुरन्त बाद तोप तथा गोली की गतिज ऊर्जाओं का अनुपात है

Options :

4058593607. $\frac{M_1}{M_2}$

4058593608. $\frac{M_2}{M_1}$

4058593609. $M_1 / (M_1 + M_2)$

4058593610. $M_2 / (M_1 + M_2)$

Question Number : 36 Question Id : 4058591140 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Four identical particles of mass m are kept at the four corners of a square. If the gravitational force exerted on one of the masses by the other masses is

$\left(\frac{2\sqrt{2}+1}{32} \right) \frac{Gm^2}{L^2}$, the length of the sides of the square is

Options :

4058593611. $\frac{L}{2}$

4058593612. $4L$

4058593613. $2L$

4058593614. $3L$

Question Number : 36 Question Id : 4058591140 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

m द्रव्यमान के एक समान चार कणों को एक वर्ग के कोनों पर रखा गया है। यदि किसी एक द्रव्यमान पर अन्य द्रव्यमानों द्वारा आरोपित गुरुत्वीय बल $\left(\frac{2\sqrt{2}+1}{32}\right)\frac{Gm^2}{L^2}$ हो तो वर्ग की भुजा की लंबाई है:

Options :

4058593611. $\frac{L}{2}$

4058593612. $4L$

4058593613. $2L$

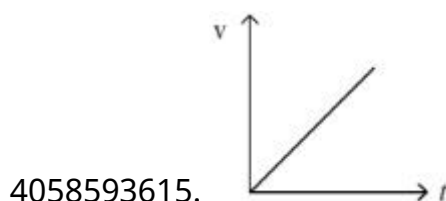
4058593614. $3L$

Question Number : 37 Question Id : 4058591141 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

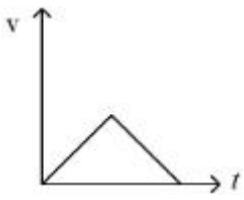
Correct Marks : 4 Wrong Marks : 1

A small steel ball is dropped into a long cylinder containing glycerine. Which one of the following is the correct representation of the velocity time graph for the transit of the ball?

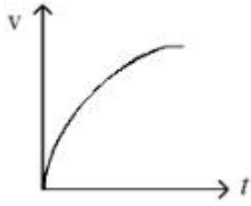
Options :



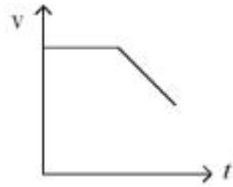
4058593616.



4058593617.



4058593618.



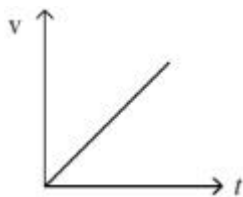
Question Number : 37 Question Id : 4058591141 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

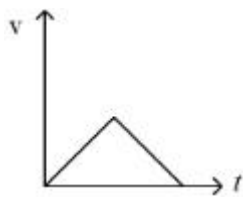
स्टील की एक छोटी गोली ग्लसरीन से भरे एक लम्बे बेलन में गिरती है। गोली के स्थानान्तरण के लिए निम्न में से कौन सा वेग - समय ग्राफ सही निरूपण करता है:

Options :

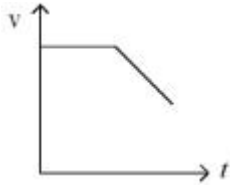
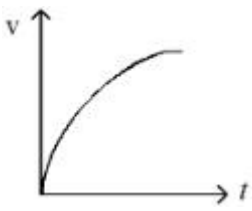
4058593615.



4058593616.



4058593617.

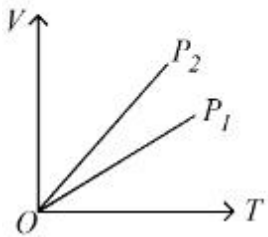


4058593618.

Question Number : 38 Question Id : 4058591142 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The given figure represents two isobaric processes for the same mass of an ideal gas, then



Options :

4058593619. $P_1 > P_2$

4058593620. $P_2 > P_1$

4058593621. $P_1 = P_2$

4058593622. $P_2 \geq P_1$

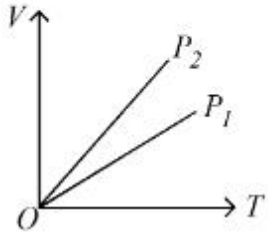
Question Number : 38 Question Id : 4058591142 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

किसी आदर्श गैस के समान द्रव्यमान के लिए दो समदाबी प्रक्रियाओं को चित्र में प्रदर्शित ग्राफ द्वारा दर्शाया गया है, तब



Options :

4058593619. $P_1 > P_2$

4058593620. $P_2 > P_1$

4058593621. $P_1 = P_2$

4058593622. $P_2 \geq P_1$

Question Number : 39 Question Id : 4058591143 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The parameter that remains the same for molecules of all gases at a given temperature is :

Options :

4058593623. mass

4058593624. speed

4058593625. momentum

4058593626. kinetic energy

Question Number : 39 Question Id : 4058591143 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

एक दिये गये तापमान पर सभी गैसों के अणुओं के लिए कौन सा घटक समान रहता है:

Options :

4058593623. द्रव्यमान

4058593624. चाल

4058593625. संवेग

4058593626. गतिज ऊर्जा

Question Number : 40 Question Id : 4058591144 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Two charges q and $3q$ are separated by a distance ' r ' in air. At a distance x from charge q , the resultant electric field is zero. The value of x is :

Options :

4058593627. $r(1 + \sqrt{3})$

4058593628. $\frac{(1 + \sqrt{3})}{r}$

4058593629.

$$\frac{r}{(1+\sqrt{3})}$$

4058593630. $\frac{r}{3(1+\sqrt{3})}$

Question Number : 40 Question Id : 4058591144 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

दो आवेश q व $3q$ वायु में ' r ' दूरी पर स्थित हैं। q आवेश से x दूरी पर परिणामी वैद्युतक्षेत्र शून्य है। x का मान है

Options :

4058593627. $r(1+\sqrt{3})$

4058593628. $\frac{(1+\sqrt{3})}{r}$

4058593629. $\frac{r}{(1+\sqrt{3})}$

4058593630. $\frac{r}{3(1+\sqrt{3})}$

Question Number : 41 Question Id : 4058591145 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Two conductors have the same resistances at 0°C but their temperature coefficients of resistance are α_1 and α_2 . The respective temperature coefficients for their series and parallel combinations are :

Options :

4058593631. $\frac{\alpha_1 + \alpha_2}{2}, \frac{\alpha_1 + \alpha_2}{2}$

4058593632. $\frac{\alpha_1 + \alpha_2}{2}, \alpha_1 + \alpha_2$

4058593633. $\alpha_1 + \alpha_2, \frac{\alpha_1 + \alpha_2}{2}$

4058593634. $\alpha_1 + \alpha_2, \frac{\alpha_1 \alpha_2}{\alpha_1 + \alpha_2}$

Question Number : 41 Question Id : 4058591145 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

0°C पर दो चालकों का प्रतिरोध समान तथा प्रतिरोध ताप गुणांक क्रमशः α_1 और α_2 है। श्रेणी क्रम व समान्तर क्रम में उनके संगत प्रतिरोध ताप गुणांक है:

Options :

4058593631. $\frac{\alpha_1 + \alpha_2}{2}, \frac{\alpha_1 + \alpha_2}{2}$

4058593632. $\frac{\alpha_1 + \alpha_2}{2}, \alpha_1 + \alpha_2$

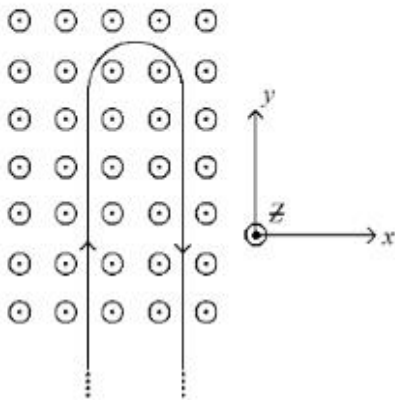
4058593633. $\alpha_1 + \alpha_2, \frac{\alpha_1 + \alpha_2}{2}$

4058593634. $\alpha_1 + \alpha_2, \frac{\alpha_1 \alpha_2}{\alpha_1 + \alpha_2}$

Question Number : 42 Question Id : 4058591146 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

A rigid wire consists of a semicircular portion of radius R and two straight sections. The wire is partially immersed in a perpendicular magnetic field $B = B_0 \hat{j}$ as shown in figure. The magnetic force on the wire if it has a current i is:



Options :

4058593635. $2iBR \hat{j}$

4058593636. $-2iBR \hat{j}$

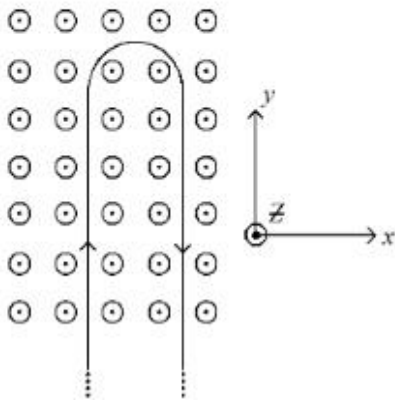
4058593637. $iBR \hat{j}$

4058593638. $-iBR \hat{j}$

Question Number : 42 Question Id : 4058591146 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

एक दृढ़ तार का एक भाग R त्रिज्या का अर्धवृत्त तथा दो भाग सीधे हैं। प्रदर्शित चित्र में तार को $B = B_0 \hat{j}$ चुम्बकीय क्षेत्र में क्षेत्र के लम्बवत अंशिकरूप से डाला गया है। यदि तार में प्रवाहित धारा i हो तो इस पर लगने वाला चुम्बकीय बल है:



Options :

4058593635. $2iBR \hat{j}$

4058593636. $-2iBR \hat{j}$

4058593637. $iBR \hat{j}$

4058593638. $-iBR \hat{j}$

Question Number : 43 Question Id : 4058591147 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

A coil is placed perpendicular to a magnetic field of 5000 T. When the field is changed to 3000 T in 2 s, an induced emf of 22 V is produced in the coil. If the diameter of the coil is 0.02 m, then the number of turns in the coil is:

Options :

4058593639. 7

4058593640. 140

4058593641. 35

4058593642. 70

Question Number : 43 Question Id : 4058591147 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

एक कुंडली को 5000 T. के एक चुम्बकीय क्षेत्र के लम्बवत रखा गया है। जब 2 से में क्षेत्र बदलकर 3000 T हो जाता है तो कुंडली में उत्पन्न प्रेरित वि.वा.बल 22V है। कुंडली का व्यास 0.02 मी हो तो कुंडली के फेरों की संख्या है:

Options :

4058593639. 7

4058593640. 140

4058593641. 35

4058593642. 70

Question Number : 44 Question Id : 4058591148 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

In a plane EM wave, the electric field oscillates sinusoidally at a frequency of 5×10^{10} Hz and an amplitude of 50 Vm^{-1} . The total average energy density of the electromagnetic field of the wave is : [Use $\epsilon_0 = 8.85 \times 10^{-12} \text{ C}^2 / \text{Nm}^2$]

Options :

4058593643. $1.106 \times 10^{-8} \text{ Jm}^{-3}$

4058593644. $2.212 \times 10^{-10} \text{ Jm}^{-3}$

4058593645. $2.212 \times 10^{-8} \text{ Jm}^{-3}$

4058593646. $4.425 \times 10^{-8} \text{ Jm}^{-3}$

Question Number : 44 Question Id : 4058591148 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

एक समतल विद्युत चुम्बकीय तरंग में विद्युत क्षेत्र $5 \times 10^{10} \text{ Hz}$ आवृत्ति तथा 50 Vm^{-1} आयाम के ज्या वक्रीय दोलन करता है। तरंग के विद्युत चुम्बकीय क्षेत्र का कुल औसत ऊर्जा घनत्व है: [दिया है, $\epsilon_0 = 8.85 \times 10^{-12} \text{ C}^2 / \text{Nm}^2$]

Options :

4058593643. $1.106 \times 10^{-8} \text{ Jm}^{-3}$

4058593644. $2.212 \times 10^{-10} \text{ Jm}^{-3}$

4058593645. $2.212 \times 10^{-8} \text{ Jm}^{-3}$

4058593646. $4.425 \times 10^{-8} \text{ Jm}^{-3}$

Question Number : 45 Question Id : 4058591149 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The refractive index of a prism with apex angle A is $\cot A/2$. The angle of minimum deviation is :

Options :

4058593647. $\delta_m = 180^\circ - 2A$

4058593648. $\delta_m = 180^\circ - 3A$

4058593649. $\delta_m = 180^\circ - 4A$

4058593650. $\delta_m = 180^\circ - A$

Question Number : 45 Question Id : 4058591149 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

शीर्ष (apex) कोण A के प्रिज्म का अपवर्तनांक $\cot A/2$ है। न्यूनतम विचलन कोण है:

Options :

4058593647. $\delta_m = 180^\circ - 2A$

4058593648. $\delta_m = 180^\circ - 3A$

4058593649. $\delta_m = 180^\circ - 4A$

4058593650. $\delta_m = 180^\circ - A$

Question Number : 46 Question Id : 4058591150 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

When a metal surface is illuminated by light of wavelength λ , the stopping potential is 8V. When the same surface is illuminated by light of wavelength 3λ , stopping potential is 2V. The threshold wavelength for this surface is:

Options :

4058593651. 4.5λ

4058593652. 3λ

4058593653. 5λ

4058593654. 9λ

Question Number : 46 Question Id : 4058591150 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

जब किसी धातु के पृष्ठ को λ तरंगदैर्घ्य के प्रकाश द्वारा प्रदीप्त किया जाता है तब निरोधी विभव $8V$ है। जब समान पृष्ठ को 3λ तरंगदैर्घ्य के प्रकाश द्वारा प्रदीप्त किया जाता है तो निरोधी विभव $2V$ है। इस सतह के लिए देहली तरंगदैर्घ्य है:

Options :

4058593651. 4.5λ

4058593652. 3λ

4058593653. 5λ

4058593654. 9λ

Question Number : 47 Question Id : 4058591151 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

If the wavelength of the first member of Lyman series of hydrogen is λ . The wavelength of the second member will be

Options :

4058593655. $\frac{27}{32}\lambda$

4058593656. $\frac{32}{27}\lambda$

4058593657. $\frac{27}{5}\lambda$

4058593658. $\frac{5}{27}\lambda$

Question Number : 47 Question Id : 4058591151 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

यदि हाइड्रोजन की लाइमन श्रेणी के प्रथम सदस्य की तरंगदैर्घ्य λ है तब द्वितीय सदस्य की तरंगदैर्घ्य होगी:

Options :

4058593655. $\frac{27}{32}\lambda$

4058593656. $\frac{32}{27}\lambda$

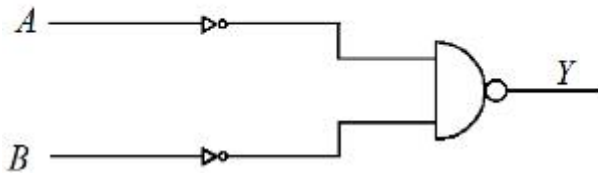
4058593657. $\frac{27}{5}\lambda$

4058593658. $\frac{5}{27}\lambda$

Question Number : 48 Question Id : 4058591152 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Identify the logic operation performed by the given circuit.



Options :

4058593659. AND

4058593660. OR

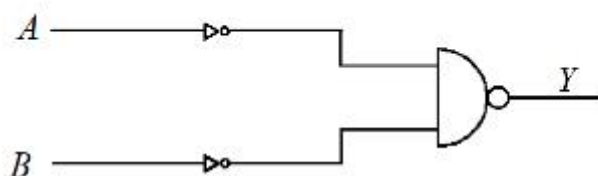
4058593661. NAND

4058593662. NOR

Question Number : 48 Question Id : 4058591152 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

दिये गये परिपथ द्वारा प्रवृत्त लोजिक ऑपरेशन पहचानिये:



Options :

4058593659. AND

4058593660. OR

4058593661. NAND

4058593662. NOR

Question Number : 49 Question Id : 4058591153 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The fundamental frequency of a closed organ pipe is equal to the first overtone frequency of an open organ pipe. If length of the open pipe is 60 cm, the length of the closed pipe will be:

Options :

4058593663. 60 cm

4058593664. 45 cm

4058593665. 30 cm

4058593666. 15 cm

Question Number : 49 Question Id : 4058591153 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

एक बन्द आर्गन पाइप की मूल आवृत्ति का मान किसी खुले आर्गन पाइप के प्रथम संनादी (first overtone) की आवृत्ति के बराबर हैं। यदि खुले पाइप की लम्बाई 60 सेमी हो तो बन्द पाइप की लम्बाई होगी:

Options :

4058593663. 60 cm

4058593664. 45 cm

4058593665. 30 cm

4058593666. 15 cm

Question Number : 50 Question Id : 4058591154 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

If the percentage errors in measuring the length and the diameter of a wire are 0.1% each. The percentage error in measuring its resistance will be:

Options :

4058593667. 0.1%

4058593668. 0.2%

4058593669. 0.3%

4058593670. 0.144%

Question Number : 50 Question Id : 4058591154 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

यदि किसी तार की लम्बाई तथा व्यास दोनों के मापन में प्रतिशत त्रुटि 0.1% है। इसके प्रतिरोध के मापन में प्रतिशत त्रुटि होगी:

Options :

4058593667. 0.1%

4058593668. 0.2%

4058593669. 0.3%

4058593670. 0.144%

Physics Section B

Section Id :	40585971
Section Number :	4
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	10
Number of Questions to be attempted :	5
Section Marks :	20
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	40585971
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 51 Question Id : 4058591155 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

A body starts falling freely from height H hits an inclined plane in its path at height h . As a result of this perfectly elastic impact, the direction of the velocity of the body becomes horizontal. The value of $\frac{H}{h}$ for which the body will take the maximum time to reach the ground is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 51 **Question Id :** 4058591155 **Question Type :** SA Calculator : None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 4 **Wrong Marks :** 1

एक पिण्ड H ऊँचाई से मुक्त रूप से नीचे गिरना प्रारम्भ करता है तथा एक आनत तल से h ऊँचाई पर टकराता है। इस पूर्ण प्रत्यास्थ संघट्ट के परिणाम स्वरूप पिण्ड के वेग की दिशा क्षैतिज हो जाती है। $\frac{H}{h}$ का मान _____ है जिसके लिए पिण्ड को पृथ्वी तल तक पहुँचने में लगा समय अधिकतम होगा।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 52 **Question Id :** 4058591156 **Question Type :** SA Calculator : None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 4 **Wrong Marks :** 1

A solid circular disc of mass 50 kg rolls along a horizontal floor so that its center of mass has a speed of 0.4 m/s. The absolute value of work done on the disc to stop it is _____ J.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 52 **Question Id :** 4058591156 **Question Type :** SA **Calculator :** None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 4 **Wrong Marks :** 1

50किग्रा की एक ठोस वृत्ताकार चकती एक क्षैतिज फर्श के अनुदिश इसतरह लुढ़कती है कि इसके द्रव्यमान केन्द्र की चाल 0.4 मी/से है। चकती को रोकने के लिए इस पर किये गये कार्य का विशिष्ट (मानक) मान _____ जूल है।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 53 **Question Id :** 4058591157 **Question Type :** SA **Calculator :** None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 4 **Wrong Marks :** 1

The depth below the surface of sea to which a rubber ball be taken so as to decrease its volume by 0.02% is _____ m.

(Take density of sea water = 10^3 kgm^{-3} , Bulk modulus of rubber = $9 \times 10^8 \text{ Nm}^{-2}$, and $g = 10 \text{ ms}^{-2}$)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 53 **Question Id :** 4058591157 **Question Type :** SA **Calculator :** None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 4 **Wrong Marks :** 1

समुद्र के तल से वह गहराई पर जिस पर रबड़ की गेंद को ले जाने से उसका आयतन 0.02% कम हो जाता है _____ मी है।

(दिया है, समुद्री जल का घनत्व = 10^3 किग्रामी- 3 , रबड़ का आयतन प्रत्यास्थता गुणांक = 9×10^8 Nm $^{-2}$, तथा $g = 10$ मी/से- 2)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 54 **Question Id :** 4058591158 **Question Type :** SA **Calculator :** None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 4 **Wrong Marks :** 1

A particle performs simple harmonic motion with amplitude A . Its speed is increased to three times at an instant when its displacement is $\frac{2A}{3}$. The new amplitude of motion is $\frac{nA}{3}$. The value of n is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 54 Question Id : 4058591158 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

एक कण A आयाम से सरल आवर्त गति करता है। जब इसका विस्थापन $\frac{2A}{3}$ है तो उस क्षण इसकी चाल तीन गुनी तक बढ़ा दी जाती है। गति का नया आयाम $\frac{nA}{3}$ है। n का मान _____ है।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 55 Question Id : 4058591159 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

A parallel plate capacitor with plate separation 5 mm is charged up by a battery. It is found that on introducing a dielectric sheet of thickness 2 mm, while keeping the battery connections intact, the capacitor draws 25% more charge from the battery than before. The dielectric constant of the sheet is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 55 Question Id : 4058591159 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

एक समान्तर प्लेट संधारित, जिसकी प्लेटों के बीच की दूरी 5 मिमी है, को एक बैटरी द्वारा आवेशित किया जाता है। यह पाया जाता है कि इसकी प्लेटों के बीच 2 मिमी मोटाई की एक परावैद्युत चादर रखने से इस पर पहले से 25% अधिक अवेश एकत्रित होता है जबकि बैटरी कनेक्शन लगा रहे, चादर का परावैद्युतांक _____ है।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

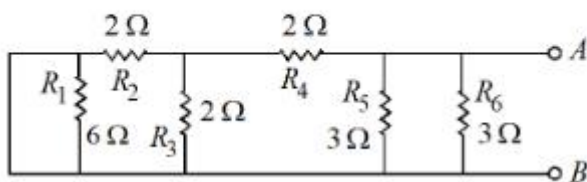
1

Question Number : 56 Question Id : 4058591160 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Equivalent resistance of the following network is _____ Ω .



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

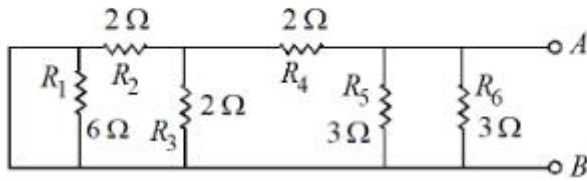
1

Question Number : 56 Question Id : 4058591160 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित नेटवर्क का समतुल्य प्रतिरोध _____ Ω है।



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 57 Question Id : 4058591161 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

An electron moves through a uniform magnetic field $\vec{B} = B_0 \hat{i} + 2B_0 \hat{j} T$. At a particular instant of time, the velocity of electron is $\vec{u} = 3\hat{i} + 5\hat{j} m/s$. If the magnetic force acting on electron is $\vec{F} = 5e\hat{k} N$, where e is the charge of electron, then the value of B_0 is _____ T .

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 57 Question Id : 4058591161 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

एक इलैक्ट्रान एक समान चुम्बकीय क्षेत्र $\vec{B} = B_0 \hat{i} + 2B_0 \hat{j} T$ से होकर गति करता है। किसी क्षण इलैक्ट्रान का वेग $\vec{u} = 3\hat{i} + 5\hat{j} \text{ m/s}$ है। यदि इलैक्ट्रान पर आरोपित चुम्बकीय बल $\vec{F} = 5e\hat{k}$ न्यूटन हो, जहाँ e इलेक्ट्रॉन का आवेश है तो B_0 का मान _____ T होगा।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 58 Question Id : 4058591162 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

A small square loop of wire of side l is placed inside a large square loop of wire of side L ($L = l^2$). The loops are coplanar and their centers coincide. The value of the mutual inductance of the system is $\sqrt{x} \times 10^{-7} H$, where $x =$ _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 58 Question Id : 4058591162 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

l भूजा के तार के एक छोटे वर्गाकार लूप को L ($L = l^2$) भूजा के एक बड़े वर्गाकार लूप के अन्दर रखा गया है। लूप समतलीय व सकेन्द्रीय हैं। निकाय के पारस्परिक प्रेरकत्व का मान $\sqrt{x} \times 10^{-7} H$ है, जहाँ $x = \underline{\hspace{2cm}}$ ।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 59 **Question Id :** 4058591163 **Question Type :** SA **Calculator :** None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 4 **Wrong Marks :** 1

Two waves of intensity ratio 1:9 cross each other at a point. The resultant intensities at that point, when (a) Waves are incoherent is I_1 (b) Waves are coherent

is I_2 and differ in phase by 60° . If $\frac{I_1}{I_2} = \frac{10}{x}$ then $x = \underline{\hspace{2cm}}$.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 59 **Question Id :** 4058591163 **Question Type :** SA **Calculator :** None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 4 **Wrong Marks :** 1

1:9 तीव्रता अनुपात की दो तरंगे किसी बिन्दु पर एक दुसरे को पार करती हैं। उस बिन्दु पर परिणामी तीव्रताएँ (a) I_1 , जब तरंगे कलासंबद्ध न हों (b) I_2 जब तरंगे कलासंबद्ध हो, हैं तथा

कलान्तर 60° है। यदि $\frac{I_1}{I_2} = \frac{10}{x}$ तो $x = \underline{\hspace{2cm}}$ ।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 60 **Question Id :** 4058591164 **Question Type :** SA **Calculator :** None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 4 **Wrong Marks :** 1

The mass defect in a particular reaction is 0.4g. The amount of energy liberated is $n \times 10^7$ kWh, where $n = \underline{\hspace{2cm}}$.

(speed of light = 3×10^8 m/s)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 60 **Question Id :** 4058591164 **Question Type :** SA **Calculator :** None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 4 **Wrong Marks :** 1

एक निश्चित अभिक्रिया में द्रव्यमान क्षति 0.4 ग्रा है। उत्पन्न ऊर्जा की मात्रा $n \times 10^7$ kWh है। जहाँ $n = \underline{\hspace{2cm}}$ ।

(दिया है, प्रकाश की चाल = 3×10^8 मी/से)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Chemistry Section A

Section Id :	40585972
Section Number :	5
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	20
Number of Questions to be attempted :	20
Section Marks :	80
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	40585972
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 61 Question Id : 4058591165 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The linear combination of atomic orbitals to form molecular orbitals takes place only when the combining atomic orbitals

- A. have the same energy
- B. have the minimum overlap
- C. have same symmetry about the molecular axis
- D. have different symmetry about the molecular axis

Choose the *most appropriate* from the options given below:

Options :

4058593681. A, B, C only

4058593682. B, C, D only

4058593683. A and C only

4058593684. B and D only

Question Number : 61 Question Id : 4058591165 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

परमाणु कक्षकों के रेखीय संयोजन द्वारा आण्विक कक्षकों का निर्माण तभी होता है जब संयोजन करने वाले परमाणु कक्षकों

- A. के पास समान उर्जा होती है
- B. का न्यूनतम अतिव्यापन होता है
- C. की आण्विक अक्ष पर समान सममिति होती है
- D. की आण्विक अक्ष पर भिन्न सममिति होती है

नीचे दिए गए विकल्पों में से सही उत्तर चुनें:

Options :

4058593681. केवल A, B, C

4058593682. केवल B, C, D

4058593683. केवल A और C

4058593684. केवल B और D

Question Number : 62 Question Id : 4058591166 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Identify the mixture that shows positive deviations from Raoult's Law

Options :

4058593685. $\text{CHCl}_3 + (\text{CH}_3)_2\text{CO}$

4058593686. $(\text{CH}_3)_2\text{CO} + \text{C}_6\text{H}_5\text{NH}_2$

4058593687. $\text{CHCl}_3 + \text{C}_6\text{H}_6$

4058593688. $(\text{CH}_3)_2\text{CO} + \text{CS}_2$

Question Number : 62 Question Id : 4058591166 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

राउल्ट के नियम से धनात्मक विचलन प्रदर्शित करने वाले मिश्रण को पहचानें:

Options :

4058593685. $\text{CHCl}_3 + (\text{CH}_3)_2\text{CO}$

4058593686. $(\text{CH}_3)_2\text{CO} + \text{C}_6\text{H}_5\text{NH}_2$

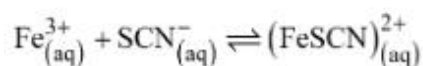
4058593687. $\text{CHCl}_3 + \text{C}_6\text{H}_6$

4058593688. $(\text{CH}_3)_2\text{CO} + \text{CS}_2$

Question Number : 63 Question Id : 4058591167 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

For the given reaction, choose the correct expression of K_C from the following :-



Options :

4058593689.
$$K_C = \frac{[\text{FeSCN}^{2+}]^2}{[\text{Fe}^{3+}][\text{SCN}^{-}]}$$

4058593690.
$$K_C = \frac{[\text{FeSCN}^{2+}]}{[\text{Fe}^{3+}]^2[\text{SCN}^{-}]^2}$$

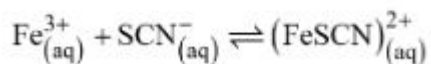
4058593691.
$$K_C = \frac{[\text{FeSCN}^{2+}]}{[\text{Fe}^{3+}][\text{SCN}^{-}]}$$

4058593692.
$$K_C = \frac{[\text{Fe}^{3+}][\text{SCN}^{-}]}{[\text{FeSCN}^{2+}]}$$

Question Number : 63 Question Id : 4058591167 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

दिए गए अभिक्रिया के लिए, निम्न में से K_C के लिए सही अभिव्यक्ति को चुनें:



Options :

4058593689.
$$K_C = \frac{[\text{FeSCN}^{2+}]^2}{[\text{Fe}^{3+}][\text{SCN}^{-}]}$$

4058593690.
$$K_C = \frac{[\text{FeSCN}^{2+}]}{[\text{Fe}^{3+}]^2[\text{SCN}^{-}]^2}$$

4058593691.
$$K_C = \frac{[\text{FeSCN}^{2+}]}{[\text{Fe}^{3+}][\text{SCN}^{-}]}$$

4058593692.
$$K_C = \frac{[\text{Fe}^{3+}][\text{SCN}^{-}]}{[\text{FeSCN}^{2+}]}$$

Question Number : 64 Question Id : 4058591168 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Identify the factor from the following that *does not* affect electrolytic conductance of a solution.

Options :

4058593693. The nature of the electrolyte added.

4058593694. The nature of the electrode used.

4058593695. The nature of solvent used.

4058593696. Concentration of the electrolyte.

Question Number : 64 Question Id : 4058591168 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

निम्न में से उस कारक को पहचानें जो किसी विलयन के वैद्युत अपघटनी चालकत्व को प्रभावित नहीं करता है:

Options :

4058593693. मिलाए गए विद्युत अपघट्य की प्रकृति

4058593694. प्रयोग किए गए इलेक्ट्रोड की प्रकृति

4058593695. प्रयोग किए गए विलयन की प्रकृति

4058593696. विद्युत अपघट्य की सान्द्रता

Question Number : 65 Question Id : 4058591169 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Integrated rate law equation for a first order gas phase reaction is given by

(where P_i is initial pressure and P_t is total pressure at time t)

Options :

4058593697.
$$k = \frac{2.303}{t} \times \log \frac{(2P_i - P_t)}{P_i}$$

4058593698.

$$k = \frac{2.303}{t} \times \log \frac{P_i}{(2P_i - P_t)}$$

4058593699.

$$k = \frac{2.303}{t} \times \log \frac{2P_i}{(2P_i - P_t)}$$

4058593700.

$$k = \frac{2.303}{t} \times \frac{P_i}{(2P_i - P_t)}$$

Question Number : 65 Question Id : 4058591169 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

किसी प्रथम कोटि गैस प्रावस्था अभिक्रिया के लिए समाकलन वेग नियम है:

(जहाँ P_i प्रारम्भिक दाब एवं P_t समय t पर कुल दाब है)

Options :

4058593697.

$$k = \frac{2.303}{t} \times \log \frac{(2P_i - P_t)}{P_i}$$

4058593698.

$$k = \frac{2.303}{t} \times \log \frac{P_i}{(2P_i - P_t)}$$

4058593699.

$$k = \frac{2.303}{t} \times \log \frac{2P_i}{(2P_i - P_t)}$$

4058593700.

$$k = \frac{2.303}{t} \times \frac{P_i}{(2P_i - P_t)}$$

Question Number : 66 Question Id : 4058591170 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The correct sequence of electron gain enthalpy of the elements listed below is

- A. Ar
- B. Br
- C. F
- D. S

Choose the *most appropriate* from the options given below:

Options :

4058593701. $D > C > B > A$

4058593702. $C > B > D > A$

4058593703. $A > D > C > B$

4058593704. $A > D > B > C$

Question Number : 66 Question Id : 4058591170 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

नीचे दिए गए तत्वों की इलेक्ट्रॉन लब्धि एन्थैल्पी का सही क्रम है:

- A. Ar
- B. Br
- C. F
- D. S

नीचे दिए गए विकल्पों में से सही उत्तर चुनें:

Options :

4058593701. $D > C > B > A$

4058593702. $C > B > D > A$

4058593703. $A > D > C > B$

4058593704. $A > D > B > C$

Question Number : 67 Question Id : 4058591171 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Consider the oxides of group 14 elements

SiO_2 , GeO_2 , SnO_2 , PbO_2 , CO and GeO. The amphoteric oxides are

Options :

4058593705. SiO_2 , GeO_2

4058593706. SnO_2 , CO

4058593707. GeO, GeO_2

4058593708. SnO_2 , PbO_2

Question Number : 67 Question Id : 4058591171 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

समूह 14 तत्वों के ऑक्साइडों पर विचार करें:

SiO_2 , GeO_2 , SnO_2 , PbO_2 , CO और GeO उभयधर्मी ऑक्साइड हैं:

Options :

4058593705.

SiO₂, GeO₂

4058593706. SnO₂, CO

4058593707. GeO, GeO₂

4058593708. SnO₂, PbO₂

Question Number : 68 Question Id : 4058591172 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Identify correct statements from below:

- A. The chromate ion is square planar.
- B. Dichromates are generally prepared from chromates.
- C. The green manganate ion is diamagnetic.
- D. Dark green coloured K₂MnO₄ disproportionates in a neutral or acidic medium to give permanganate.
- E. With increasing oxidation number of transition metal, ionic character of the oxides decreases.

Choose the correct answer from the options given below:

Options :

4058593709. B, D, E only

4058593710. A, B, C only

4058593711. B, C, D only

4058593712. A, D, E only

Question Number : 68 Question Id : 4058591172 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

नीचे दिए गए कथनों में से सही कथनों को चुनें:

- A. क्रोमेट आयन वर्ग समतलीय है।
- B. डाइक्रोमेटों को प्रायः क्रोमेटों से निर्मित किया जाता है।
- C. हरा मैंगनेट आयन प्रतिचुम्बकीय होता है।
- D. गाढ़े हरे रंग का K_2MnO_4 उदासीन या अम्लीय माध्यम में असमानुपातित होकर परमैंगनेट देता है।
- E. संक्रमण धातु के बढ़ते ऑक्सीकरण संख्या के साथ आयनिक लक्षण घटता है।

नीचे दिए गए विकल्पों में से सही उत्तर चुनें:

Options :

4058593709. केवल B, D, E

4058593710. केवल A, B, C

4058593711. केवल B, C, D

4058593712. केवल A, D, E

Question Number : 69 Question Id : 4058591173 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The metals that are employed in the battery industries are

- A. Fe
- B. Mn
- C. Ni
- D. Cr
- E. Cd

Choose the correct answer from the options given below:

Options :

4058593713. A, B, C, D and E

4058593714. A, B, C and D only

4058593715. B, D and E only

4058593716. B, C and E only

Question Number : 69 Question Id : 4058591173 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

बैटरी उद्योगों में उपयोग किए जाने वाले धातु हैं:

- A. Fe
- B. Mn
- C. Ni
- D. Cr
- E. Cd

नीचे दिए गए विकल्पों में से सही उत्तर चुनें:

Options :

4058593713. A, B, C, D एवं E

4058593714. केवल A, B, C एवं D

4058593715. केवल B, D एवं E

4058593716. केवल B, C एवं E

Question Number : 70 Question Id : 4058591174 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The correct statements from following are:

- A. The strength of anionic ligands can be explained by crystal field theory.
- B. Valence bond theory does not give a quantitative interpretation of kinetic stability of coordination compounds.
- C. The hybridization involved in formation of $[\text{Ni}(\text{CN})_4]^{2-}$ complex is dsp^2 .
- D. The number of possible isomer(s) of $\text{cis-}[\text{PtCl}_2(\text{en})_2]^{2+}$ is one

Choose the correct answer from the options given below:

Options :

4058593717. A, C only

4058593718. A, D only

4058593719. B, D only

4058593720. B, C only

Question Number : 70 Question Id : 4058591174 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

निम्न में सही कथन हैं:

- A. ऋणायनिक लिगण्डों के शक्ति की व्याख्या क्रिस्टल क्षेत्र सिद्धांत के द्वारा की जा सकती है।
- B. संयोजकता आबन्ध सिद्धांत उपसहसंयोजन यौगिकों के गतिक स्थायित्व की मात्रात्मक व्याख्या नहीं करता है।
- C. $[\text{Ni}(\text{CN})_4]^{2-}$ संकुल के निर्माण में dsp^2 संकरण हिस्सा लेता है।
- D. $\text{cis-}[\text{PtCl}_2(\text{en})_2]^{2+}$ में सम्भवित समावयव की संख्या एक है।

नीचे दिए गए विकल्पों में से सही उत्तर चुने:

Options :

4058593717. केवल A, C

4058593718. केवल A, D

4058593719. केवल B, D

4058593720. केवल B, C

Question Number : 71 Question Id : 4058591175 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

'Adsorption' principle is used for which of the following purification method?

Options :

4058593721. Chromatography

4058593722. Distillation

4058593723. Extraction

4058593724. Sublimation

Question Number : 71 Question Id : 4058591175 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

निम्न में से किस शोधन विधि में 'अधिशोषण' सिद्धांत का उपयोग किया जाता है?

Options :

4058593721. वर्णलेखन

4058593722. आसवन

4058593723. निष्कर्षण

4058593724. उर्ध्वपातन

Question Number : 72 Question Id : 4058591176 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Match List I with List II

LIST I (Technique)		LIST II (Application)	
A.	Distillation	I.	Separation of glycerol from spent-lye
B.	Fractional distillation	II.	Aniline - Water mixture
C.	Steam distillation	III.	Separation of crude oil fractions
D.	Distillation under reduced pressure	IV.	Chloroform - Aniline

Choose the correct answer from the options given below:

Options :

4058593725. A-I, B-II, C-IV, D-III

4058593726. A-II, B-III, C-I, D-IV

4058593727. A-IV, B-I, C-II, D-III

4058593728. A-IV, B-III, C-II, D-I

Question Number : 72 Question Id : 4058591176 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

सूची I का मिलान सूची II से करें

सूची I (तकनीक)		सूची II (अनुप्रयोग)	
A.	आसवन	I.	शेष लाई से ग्लिसरॉल का पृथक्करण
B.	प्रभाजी आसवन	II.	ऐनिलीन - जल मिश्रण
C.	भाप आसवन	III.	कच्चे तेल के प्रभाजों का पृथक्करण
D.	निम्न दाब पर आसवन	IV.	क्लोरोफार्म - ऐनिलीन

नीचे दिए गए विकल्पों में से सही उत्तर चुने:

Options :

4058593725. A-I, B-II, C-IV, D-III

4058593726. A-II, B-III, C-I, D-IV

4058593727. A-IV, B-I, C-II, D-III

4058593728. A-IV, B-III, C-II, D-I

Question Number : 73 Question Id : 4058591177 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Give below are two statements:

Statement - I: Noble gases have very high boiling points.

Statement - II: Noble gases are monoatomic gases. They are held together by strong dispersion forces. Because of this they are liquefied at very low temperature. Hence, they have very high boiling points.

In the light of the above statements, choose the *correct answer* from the options given below:

Options :

4058593729. Both Statement I and Statement II are true.

4058593730. Both Statement I and Statement II are false.

4058593731. Statement I is true but Statement II is false.

4058593732. Statement I is false but Statement II is true.

Question Number : 73 Question Id : 4058591177 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

नीचे दो कथन दिए गए हैं:

कथन - I: उत्कृष्ट गैसों का कथनांक अत्यन्त उच्च होता है।

कथन - II: उत्कृष्ट गैसों एक-परमाण्विक गैसों हैं। वे आपस में प्रबल परिक्षेपण (डिस्पर्सन) बलों द्वारा बंधे होते हैं। इसके कारण वे अत्यन्त निम्न ताप पर द्रवीकृत होते हैं। अतः उनका कथनांक अत्यन्त उच्च होता है।

उपर्युक्त कथनों के संदर्भ में नीचे दिए गए विकल्पों में से सही उत्तर चुनें:

Options :

4058593729. दोनों कथन I तथा कथन II सही हैं

4058593730. दोनों कथन I तथा कथन II गलत हैं

4058593731. कथन I सही है लेकिन कथन II गलत है

4058593732. कथन I गलत है लेकिन कथन II सही है

Question Number : 74 Question Id : 4058591178 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

A species having carbon with sextet of electrons and can act as electrophile is called

Options :

4058593733. pentavalent carbon

4058593734. carbon free radical

4058593735. carbanion

4058593736. carbocation

Question Number : 74 Question Id : 4058591178 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

वह स्पीशीज़ जिसमें कार्बन के पास छः (सेक्स्टेट) इलेक्ट्रॉन हों तथा इलेक्ट्रॉन स्नेही के रूप में कार्य कर सकता हो, कहलाता है-

Options :

4058593733. पंचसंयोजी कार्बन

4058593734. कार्बन मुक्त मूलक

4058593735. कार्बक्रणायन

4058593736. कार्बधनायन

Question Number : 75 Question Id : 4058591179 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Given below are two statements:

Statement I: IUPAC name of $\text{HO} - \text{CH}_2 - (\text{CH}_2)_3 - \text{CH}_2 - \text{COCH}_3$ is

7-hydroxyheptan-2-one.

Statement II: 2-oxoheptan-7-ol is the correct IUPAC name for above compound.

In the light of the above statements, choose the *most appropriate answer* from the options given below:

Options :

4058593737. Both Statement I and Statement II are correct.

4058593738. Both Statement I and Statement II are incorrect.

4058593739. Statement I is correct but Statement II is incorrect.

4058593740. Statement I is incorrect but Statement II is correct.

Question Number : 75 Question Id : 4058591179 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

नीचे दो कथन दिए गए हैं:

कथन I: $\text{HO} - \text{CH}_2 - (\text{CH}_2)_3 - \text{CH}_2 - \text{COCH}_3$ का IUPAC नाम

7-हाइड्रॉक्सीहेप्टेन-2-ओन है

कथन II: उपर्युक्त यौगिक का केवल सही IUPAC नाम है - 2-ऑक्सोहेप्टेन-7-ऑल
उपर्युक्त कथनों के संदर्भ में नीचे दिए गए विकल्पों में से सर्वाधिक उपयुक्त उत्तर चुनें:

Options :

4058593737. दोनों कथन I तथा कथन II सही हैं

4058593738. दोनों कथन I तथा कथन II गलत हैं

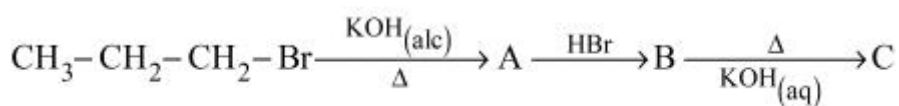
4058593739. कथन I सही है परन्तु कथन II गलत है

4058593740. कथन I गलत है परन्तु कथन II सही है

Question Number : 76 Question Id : 4058591180 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The product (C) in the below mentioned reaction is :



Options :

4058593741. Propene

4058593742. Propyne

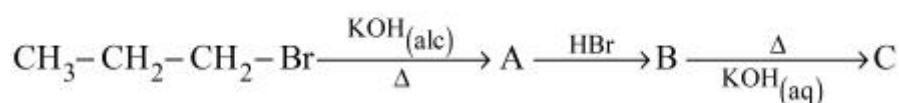
4058593743. Propan-1-ol

4058593744. Propan-2-ol

Question Number : 76 Question Id : 4058591180 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

निम्न उल्लिखित अभिक्रिया में उत्पाद (C) है :



Options :

4058593741. प्रोपीन

4058593742. प्रोपाइन

4058593743. प्रोपेन-1-ऑल

4058593744. प्रोपेन-2-ऑल

Question Number : 77 Question Id : 4058591181 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Given below are two statements: One is labelled as **Assertion A** and the other is labelled as **Reason R**:

Assertion A: pK_a value of phenol is 10.0 while that of ethanol is 15.9.

Reason R: Ethanol is stronger acid than phenol.

In the light of the above statements, choose the *correct answer* from the options given below:

Options :

4058593745. Both A and R are true and R is the correct explanation of A.

4058593746. Both A and R are true but R is NOT the correct explanation of A.

4058593747. A is true but R is false.

4058593748. A is false but R is true.

Question Number : 77 Question Id : 4058591181 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

नीचे दो कथन दिए गए हैं। एक को अभिकथन A तथा दूसरे को कारण R लेबल किया गया है:

अभिकथन A: फ़ीनॉल के pK_a का मान 10.0 है जबकि ऐथेनॉल का 15.9 है।

कारण R: ऐथेनॉल, फ़ीनॉल से प्रबल अम्ल है।

उपर्युक्त कथनों के संदर्भ में नीचे दिए गए विकल्पों में से सही उत्तर चुनें:

Options :

4058593745. दोनों A एवं R सही हैं तथा A की सही व्याख्या R है।

4058593746. दोनों A एवं R सही हैं लेकिन A की सही व्याख्या R नहीं है।

4058593747. A सही है परन्तु R गलत है।

4058593748. A गलत है परन्तु R सही है।

Question Number : 78 Question Id : 4058591182 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Given below are two statements: One is labelled as **Assertion A** and the other is labelled as **Reason R**:

Assertion A: Alcohols react both as nucleophiles and electrophiles.

Reason R: Alcohols react with active metals such as sodium, potassium and aluminum to yield corresponding alkoxides and liberate hydrogen.

In the light of the above statements, choose the *correct answer* from the options given below:

Options :

4058593749. Both A and R are true and R is the correct explanation of A.

4058593750. Both A and R are true but R is NOT the correct explanation of A.

4058593751. A is true but R is false.

4058593752. A is false but R is true.

Question Number : 78 Question Id : 4058591182 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

नीचे दो कथन दिए गए हैं। एक को अभिकथन A तथा दूसरे को कारण R लेबल किया गया है:

अभिकथन A: ऐल्कोहॉल नाभिक स्नेही एवं इलेक्ट्रॉन स्नेही दोनों के रूप में अभिक्रिया करते हैं।

कारण R: ऐल्कोहॉल सक्रिय धातुएँ जैसे सोडियम, पोटैशियम एवं ऐलुमिनियम के साथ अभिक्रिया कर संगत ऐल्कोक्साइड बनाते हैं तथा हाइड्रोजन निर्मुक्त करते हैं। उपर्युक्त कथनों के संदर्भ में नीचे दिए गए विकल्पों में से सही उत्तर चुनें:

Options :

4058593749. दोनों A एवं R सही हैं तथा A की सही व्याख्या R है।

4058593750. दोनों A एवं R सही हैं परन्तु A की सही व्याख्या R नहीं है।

4058593751. A सही है परन्तु R गलत है।

4058593752. A गलत है परन्तु R सही है।

Question Number : 79 Question Id : 4058591183 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Match List I with List II

LIST I		LIST II	
A.	Glucose/ NaHCO_3/Δ	I.	Gluconic acid
B.	Glucose/ HNO_3	II.	No reaction
C.	Glucose/ HI/Δ	III.	n-hexane
D.	Glucose/Bromine water	IV.	Saccharic acid

Choose the correct answer from the options given below:

Options :

4058593753. A-I, B-IV, C-III, D-II

4058593754. A-IV, B-I, C-III, D-II

4058593755. A-III, B-II, C-I, D-IV

4058593756. A-II, B-IV, C-III, D-I

Question Number : 79 Question Id : 4058591183 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

सूची I का मिलान सूची II से करें

सूची I		सूची II	
A.	ग्लूकोस/ NaHCO_3/Δ	I.	ग्लूकोनिक अम्ल
B.	ग्लूकोस/ HNO_3	II.	कोई अभिक्रिया नहीं
C.	ग्लूकोस/ HI/Δ	III.	n-हेक्सेन
D.	ग्लूकोस/ब्रोमीन जल	IV.	सेक्रिक अम्ल

नीचे दिए गए विकल्पों में से सही उत्तर चुने:

Options :

4058593753. A-I, B-IV, C-III, D-II

4058593754. A-IV, B-I, C-III, D-II

4058593755. A-III, B-II, C-I, D-IV

4058593756. A-II, B-IV, C-III, D-I

Question Number : 80 Question Id : 4058591184 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The compound that is white in color is

Options :

4058593757. ammonium arsinomolybdate

4058593758. lead iodide

4058593759. lead sulphate

4058593760. ammonium sulphide

Question Number : 80 Question Id : 4058591184 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

निम्न में से सफेद रंग का यौगिक है:

Options :

4058593757. अमोनियम आर्सिनोमोलिब्डेट

4058593758. लेड आयोडाइड

4058593759. लेड सल्फेट

4058593760. अमोनियम सल्फाइड

Chemistry Section B

Section Id :	40585973
Section Number :	6
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	10
Number of Questions to be attempted :	5
Section Marks :	20
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	40585973
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 81 Question Id : 4058591185 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Number of moles of methane required to produce 22g $\text{CO}_{2(g)}$ after combustion is $x \times 10^{-2}$ moles. The value of x is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 81 Question Id : 4058591185 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

मेथेन के मोलों की आवश्यक संख्या जो दहन के उपरान्त $22\text{g CO}_{2(\text{g})}$ उत्पन्न करता हो, $x \times 10^{-2}$ मोल है। x का मान है: _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 82 Question Id : 4058591186 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The ionization energy of sodium in kJ mol^{-1} , if electromagnetic radiation of wavelength 242 nm is just sufficient to ionize sodium atom is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 82 Question Id : 4058591186 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

यदि सोडियम परमाणु को आयनित करने हेतु विद्युत चुम्बकीय विकिरण की 242 nm तरंगदैर्घ्य पर्याप्त हो तो सोडियम की आयनन ऊर्जा (kJ mol^{-1} में) है: _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 83 Question Id : 4058591187 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The number of species from the following in which the central atom uses sp^3 hybrid orbitals in its bonding is _____.

NH_3 , SO_2 , SiO_2 , BeCl_2 , CO_2 , H_2O , CH_4 , BF_3

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 83 Question Id : 4058591187 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

निम्न में से स्पीशीजों की संख्या जिसमें केन्द्रीय परमाणु द्वारा अपने आबन्धन में sp^3 संकरण का उपयोग किया जाता है, है _____.

NH_3 , SO_2 , SiO_2 , $BeCl_2$, CO_2 , H_2O , CH_4 , BF_3

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 84 **Question Id :** 4058591188 **Question Type :** SA **Calculator :** None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 4 **Wrong Marks :** 1

Consider the following reaction at 298 K. $\frac{3}{2}O_{2(g)} \rightleftharpoons O_{3(g)}$. $K_P = 2.47 \times 10^{-29}$.

$\Delta_r G^\circ$ for the reaction is _____ kJ. (Given $R = 8.314 \text{ JK}^{-1} \text{ mol}^{-1}$)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 84 **Question Id :** 4058591188 **Question Type :** SA **Calculator :** None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 4 **Wrong Marks :** 1

298 K पर निम्न अभिक्रिया पर विचार करें: $\frac{3}{2}O_{2(g)} \rightleftharpoons O_{3(g)}$; $K_P = 2.47 \times 10^{-29}$

उक्त अभिक्रिया के लिए $\Delta_r G^\circ$ है: _____ kJ. (दिया गया है:

$R = 8.314 \text{ JK}^{-1} \text{ mol}^{-1}$)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 85 **Question Id :** 4058591189 **Question Type :** SA **Calculator :** None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 4 **Wrong Marks :** 1

One Faraday of electricity liberates $x \times 10^{-1}$ gram atom of copper from copper sulphate. x is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 85 **Question Id :** 4058591189 **Question Type :** SA **Calculator :** None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 4 **Wrong Marks :** 1

एक फैराडे विद्युत कॉपर सल्फेट विलयन से $x \times 10^{-1}$ ग्राम कॉपर परमाणु निर्मुक्त करता है। x का मान है: _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 86 Question Id : 4058591190 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The 'Spin only' Magnetic moment for $[\text{Ni}(\text{NH}_3)_6]^{2+}$ is _____ $\times 10^{-1}$ BM.
(given = Atomic number of Ni : 28)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 86 Question Id : 4058591190 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

$[\text{Ni}(\text{NH}_3)_6]^{2+}$ का 'प्रचकण मात्र' चुम्बकीय आधूर्ण _____ $\times 10^{-1}$ BM. है। (दिया गया है: Ni का परमाणु क्रमांक: 28)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 87 Question Id : 4058591191 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Number of alkanes obtained on electrolysis of a mixture of CH_3COONa and $\text{C}_2\text{H}_5\text{COONa}$ is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 87 Question Id : 4058591191 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

CH_3COONa एवं $\text{C}_2\text{H}_5\text{COONa}$ के एक मिश्रण का विद्युत अपघटन करने पर प्राप्त ऐल्केनों की संख्या है: _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

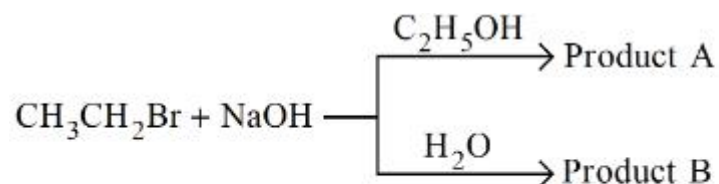
Possible Answers :

1

Question Number : 88 Question Id : 4058591192 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1



The total number of hydrogen atoms in product A and product B is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

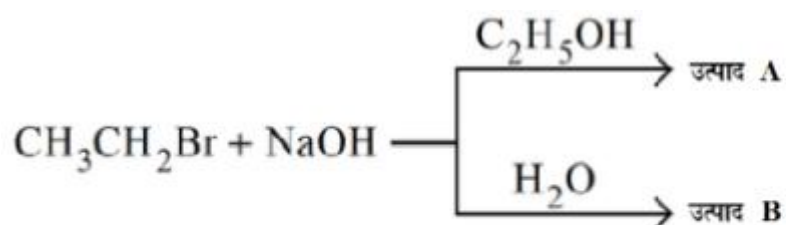
Possible Answers :

1

Question Number : 88 **Question Id :** 4058591192 **Question Type :** SA **Calculator :** None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 4 **Wrong Marks :** 1



उत्पाद A एवं उत्पाद B में हाइड्रोजन परमाणुओं की कुल संख्या है: _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

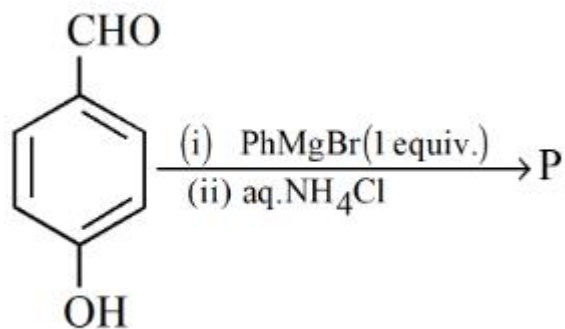
1

Question Number : 89 **Question Id :** 4058591193 **Question Type :** SA **Calculator :** None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 4 **Wrong Marks :** 1

The product of the following reaction is P.



The number of hydroxyl groups present in the product P is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

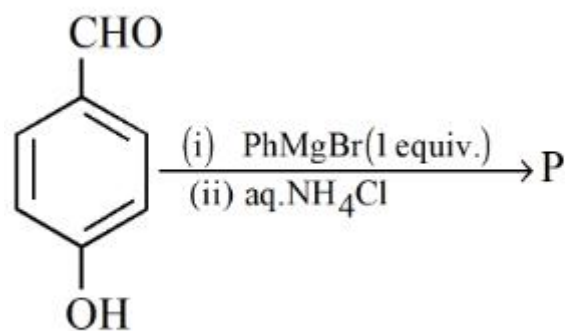
1

Question Number : 89 **Question Id :** 4058591193 **Question Type :** SA **Calculator :** None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 4 **Wrong Marks :** 1

निम्न अभिक्रिया में उत्पाद P है:



उत्पाद P में हाइड्रॉक्सिल समूहों की संख्या है: _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 90 Question Id : 4058591194 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Molar mass of the salt from NaBr, NaNO₃, KI and CaF₂ which does not evolve coloured vapours on heating with concentrated H₂SO₄ is _____ g mol⁻¹.

(Molar mass in g mol⁻¹ : Na : 23, N : 14, K : 39, O : 16, Br : 80, I : 127, F : 19, Ca : 40)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 90 Question Id : 4058591194 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

NaBr, NaNO₃, KI एवं CaF₂ में से वह लवण जो सान्द्र H₂SO₄ के साथ गर्म करने पर रंगीन वाष्प उत्पन्न नहीं करता है, का मोलर द्रव्यमान है: _____ g mol⁻¹.

(g mol⁻¹ में मोलर द्रव्यमान: Na : 23, N : 14, K : 39, O : 16, Br : 80, I : 127, F : 19, Ca : 40)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

