National Testing Agency

Question Paper Name :	B Tech 30th Jan 2024 Shift 2 SET12
Subject Name :	B. Tech
Creation Date :	2024-01-30 21:01:59
Duration :	180
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Display Marks:	Yes

B. Tech

Group Number :	1
Group Id :	40585912
Group Maximum Duration :	0
Group Minimum Duration :	180
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 :	40585962
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 : 40585962

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 1 Question Id : 4058591015 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 domain of the function $f(x) = \log_e\left(\frac{2x+3}{4x^2+x-3}\right) + \cos^{-1}\left(\frac{2x-1}{x+2}\right)$ is $(\alpha, \beta]$, then the value of $5\beta - 4\alpha$ is equal to

Options :

4058593231. 9

4058593232. 10

4058593233. 11

4058593234. 12

Question Number : 1 Question Id : 4058591015 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 फलन $f(x) = \log_e\left(\frac{2x+3}{4x^2+x-3}\right) + \cos^{-1}\left(\frac{2x-1}{x+2}\right)$ का प्रांत $(\alpha, \beta]$ है, तो $5\beta - 4\alpha$ का मान बराबर है

Options :

4058593231. 9

4058593232. 10

4058593233. 11

4058593234. 12

Question Number : 2 Question Id : 4058591016 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 z is a complex number, then the number of common roots of the equations $z^{1985} + z^{100} + 1 = 0$ and $z^3 + 2z^2 + 2z + 1 = 0$, is equal to

Options :

4058593235. 0

4058593236. 1

4058593237. 2

4058593238. 3

Question Number : 2 Question Id : 4058591016 Question Type : MCQ Option Shuffling : Yes Is

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Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

यदि z एक सम्मिश्र संख्या है, तो समीकरणों $z^{1985} + z^{100} + 1 = 0$ तथा $z^3 + 2z^2 + 2z + 1 = 0$ के उभयनिष्ठ मूलों की संख्या है:

Options :

4058593235. 0

4058593236. 1

4058593237. 2

4058593238. 3

Question Number : 3 Question Id : 4058591017 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 $R = \begin{pmatrix} x & 0 & 0 \\ 0 & y & 0 \\ 0 & 0 & z \end{pmatrix}$ be a non-zero 3×3 matrix, where

$x\sin\theta = y\sin\left(\theta + \frac{2\pi}{3}\right) = z\sin\left(\theta + \frac{4\pi}{3}\right) \neq 0$, $\theta \in (0, 2\pi)$. For a square matrix M, let trace (M) denote the sum of all the diagonal entries of M. Then, among the statements:

(I) Trace $(R) = 0$

(II) If trace (adj(adj(R))=0, then R has exactly one non-zero entry.

Options :

4058593239. Only (I) is true

4058593240. Only (II) is true

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4058593241. Both (I) and (II) are true

4058593242. Neither (I) nor (II) is true

Question Number : 3 Question Id : 4058591017 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 $R=\begin{pmatrix} x & 0 & 0 \\ 0 & y & 0 \\ 0 & 0 & z \end{pmatrix}$, 3×3 का एक शून्येत्तर आव्यूह है, जहाँ

$x\sin\theta = y\sin\left(\theta+\frac{2\pi}{3}\right) = z\sin\left(\theta+\frac{4\pi}{3}\right) \neq 0,\ \theta \in (0,2\pi)$. एक वर्ग आव्यूह M के लिए, माना trace (M), M के विकर्ण के सभी अवयवों के योग को दर्शाता है। तो कथनों

(I) Trace $(R) = 0$

(II) यदि trace $(\text{adj}(\text{adj}(R))=0$ है, तो R का केवल एक अवयव शून्येत्तर है

Options :

4058593239. केवल (I) सत्य है

4058593240. केवल (II) सत्य है

4058593241. (I) तथा (II) दोनों सत्य हैं

4058593242. न तो (I) नहीं (II) सत्य है

Question Number : 4 Question Id : 4058591018 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

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Consider the system of linear equations $x + y + z = 5$, $x + 2y + \lambda^2 z = 9$, $x + 3y + \lambda z = \mu$, where $\lambda, \mu \in \mathbb{R}$. Then, which of the following statement is NOT correct?

Options :

4058593243. System is consistent if $\lambda \neq 1$ and $\mu = 13$

4058593244. System is inconsistent if $\lambda = 1$ and $\mu \neq 13$

4058593245. System has unique solution if $\lambda \neq 1$ and $\mu \neq 13$

4058593246. System has infinite number of solutions if $\lambda = 1$ and $\mu = 13$

Question Number : 4 Question Id : 4058591018 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

रैखिक समीकरण निकाय $x + y + z = 5$, $x + 2y + \lambda^2 z = 9$, $x + 3y + \lambda z = \mu$, जहाँ $\lambda, \mu \in \mathbb{R}$ हैं, का विचार कीजिए। तो निम्न में से कौन सा कथन सत्य नहीं है?

Options :

4058593243. निकाय संगत है यदि $\lambda \neq 1$ तथा $\mu = 13$ हैं

4058593244. निकाय असंगत है यदि $\lambda = 1$ तथा $\mu \neq 13$ हैं

4058593245. निकाय का अद्वितीय हल है यदि $\lambda \neq 1$ तथा $\mu \neq 13$ हैं

4058593246. निकाय के अनंत हल हैं यदि $\lambda = 1$ तथा $\mu = 13$ हैं

Question Number : 5 Question Id : 4058591019 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

Suppose $2-p, p, 2-\alpha, \alpha$ are the coefficients of four consecutive terms in the expansion of $(1+x)^n$. Then the value of $p^2-\alpha^2+6\alpha+2p$ equals

Options :

4058593247. 6

4058593248. 4

4058593249. 8

4058593250. 10

Question Number : 5 Question Id : 4058591019 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 $(1+x)^n$ के प्रसार में चार क्रमागत पदों के गुणांक $2-p, p, 2-\alpha, \alpha$ हैं। तो $p^2-\alpha^2+6\alpha+2p$ का मान बराबर है

Options :

4058593247. 6

4058593248. 4

4058593249. 8

4058593250. 10

Question Number : 6 Question Id : 4058591020 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

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Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Let a and b be be two distinct positive real numbers. Let 11^{th} term of a GP, whose first term is a and third term is b, is equal to p^{th} term of another GP, whose first term is a and fifth term is b. Then p is equal to

Options :

4058593251. 21

4058593252. 20

4058593253. 24

4058593254. 25

Question Number : 6 Question Id : 4058591020 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 तथा b दो भिन्न घनात्मक वास्तविक संख्याएं हैं। माना एक GP, जिसका पहला पद a तथा तीसरा पद b है, का $11^{वाँ}$ पद, एक अन्य GP, जिसका पहला a तथा पांचवाँ पद b है, के p^{th} पद के बराबर है। तो p बराबर है

Options :

4058593251. 21

4058593252. 20

4058593253. 24

4058593254. 25

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Question Number : 7 Question Id : 4058591021 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 $f : \mathbb{R} - \{0\} \rightarrow \mathbb{R}$ be a function satisfying $f\left(\frac{x}{y}\right) = \frac{f(x)}{f(y)}$ for all $x, y, f(y) \neq 0$. If $f'(1) = 2024$, then

Options :

4058593255. $xf'(x) - 2024 f(x) = 0$

4058593256. $xf'(x) + 2024 f(x) = 0$

4058593257. $xf'(x) - 2023 f(x) = 0$

4058593258. $xf'(x) + f(x) = 2024$

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Question Number : 7 Question Id : 4058591021 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 एक फलन $f : I\!R - \{0\} \rightarrow I\!R$, सभी $x, y, f(y) \neq 0$ के लिए $f\left(\frac{x}{y}\right) = \frac{f(x)}{f(y)}$ को संतुष्ट करता है। यदि $f'(1) = 2024$ है, तो

Options :

4058593255. $xf'(x) - 2024 f(x) = 0$

4058593256. $xf'(x) + 2024 f(x) = 0$

4058593257. $xf'(x) - 2023 f(x) = 0$

4058593258. $xf'(x) + f(x) = 2024$

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Question Number : 8 Question Id : 4058591022 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 and b be real constants such that the function f defined by

$f(x)=\begin{cases} x^2+3x+a & , x\le 1 \\ bx+2 & , x>1 \end{cases}$ be differentiable on $\mathbb{R}$. Then, the value of $\int_{-2}^{2} f(x)dx$

equals

Options :

4058593259. 15/6

4058593260. 19/6

4058593261. 17

4058593262. 21

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Question Number : 8 Question Id : 4058591022 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 वास्तविक अचर a तथा b इस प्रकार हैं कि फलन

$f(x)=\begin{cases} x^2+3x+a & , x\le 1 \\ bx+2 & , x>1 \end{cases}$, $\mathbb{R}$ पर अवकलनीय है। तो $\int_{-2}^{2} f(x)dx$ का मान बराबर है

Options :

4058593259. 15/6

4058593260. 19/6

4058593261. 17

4058593262. 21

Question Number : 9 Question Id : 4058591023 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 $f(x) = (x + 3)^2 (x - 2)^3$, $x \in [-4, 4]$. If M and m are the maximum and minimum values of f, respectively in $[-4, 4]$, then the value of $M - m$ is

Options :

4058593263. 600

4058593264. 392

4058593265. 608

4058593266. 108

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Question Number : 9 Question Id : 4058591023 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 $f(x) = (x + 3)^2 (x - 2)^3$, $x \in [-4, 4]$ हैं। यदि f के $[-4, 4]$ में अधिकतम तथा न्यूनतम मान क्रमशः M तथा m हैं, तो $M - m$ का मान है

Options :

4058593263. 600

4058593264. 392

4058593265. 608

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4058593266. 108

Question Number : 10 Question Id : 4058591024 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 f : R→R be defined as $f(x) = ae^{2x} + be^{x} + cx$. If $f(0) = -1$, $f'(\log_e 2) = 21$ and $\int_0^{\log_e 4} (f(x) - cx)\,dx = \frac{39}{2}$, then the value of $|a + b + c|$ equals

Options :

4058593267. 8

4058593268. 10

4058593269. 12

4058593270. 16

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Question Number : 10 Question Id : 4058591024 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 f : R→R, $f(x) = ae^{2x} + be^{x} + cx$ द्वारा परिभाषित है। यदि $f(0) = -1$, $f'(\log_e 2) = 21$ तथा $\int_0^{\log_e 4} (f(x) - cx)\,dx = \frac{39}{2}$ हैं, तो $|a + b + c|$ का मान बराबर है

Options :

4058593267. 8

4058593268. 10

4058593269. 12

4058593270. 16

Question Number : 11 Question Id : 4058591025 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 $\alpha, \beta \in (0, \pi/2)$, let $3\sin(\alpha+\beta) = 2\sin(\alpha-\beta)$ and a real number k be such that $\tan\alpha = k\tan\beta$. Then, the value of k is equal to

Options :

4058593271. $2/3$

4058593272. $-2/3$

4058593273. -5

4058593274. 5

Question Number : 11 Question Id : 4058591025 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

$\alpha, \beta \in (0, \pi/2)$ के लिए माना $3\sin(\alpha+\beta) = 2\sin(\alpha-\beta)$ है। माना एक वास्तविक संख्या k के लिए $\tan\alpha = k\tan\beta$ है। तो k का मान बराबर है

Options :

4058593271. $2/3$

4058593272. $-2/3$

4058593273. -5

4058593274. 5

Question Number : 12 Question Id : 4058591026 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 $y = f(x)$ be a thrice differentiable function in $(-5, 5)$. Let the tangents to the curve $y = f(x)$ at $(1, f(1))$ and $(3, f(3))$ make angles $\pi/6$ and $\pi/4$, respectively with positive x-axis. If $27\int_1^3 \left(\left(f'(t)\right)^2 + 1\right) f''(t)\,dt = \alpha + \beta\sqrt{3}$ where α, β are integers, then the value of $\alpha + \beta$ equals

Options :

4058593275. 26

4058593276. 36

4058593277. -14

4058593278. -16

Question Number : 12 Question Id : 4058591026 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 फलन $y = f(x)$, अंतराल $(-5, 5)$ तीन बार अवकलनीय है। माना वक्र $y = f(x)$ के बिंदुओं $(1, f(1))$ तथा $(3, f(3))$ पर स्पर्श रेखाएँ घनात्मक x-अक्ष से $\pi/6$ तथा $\pi/4$ के कोण बनाती हैं। यदि $27\int_1^3 \left(\left(f'(t)\right)^2 + 1\right) f''(t)\,dt = \alpha + \beta\sqrt{3}$ है, जहाँ α, β पूर्णांक हैं, तो $\alpha + \beta$ का मान बराबर है

Options :

4058593275. 26

4058593276. 36

4058593277. -14

4058593278. -16

Question Number : 13 Question Id : 4058591027 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 $f: \mathbb{R} \to \mathbb{R}$ be a function defined by $f(x) = \dfrac{x}{\left(1+x^4\right)^{1/4}}$, and $g(x) = f(f(f(f(x))))$.

Then, $18 \displaystyle\int_0^{\sqrt{2\sqrt{5}}} x^2 g(x)\,dx$ is equal to

Options :

4058593279. 33

4058593280. 42

4058593281. 36

4058593282. 39

Question Number : 13 Question Id : 4058591027 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

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माना फलन $f: \mathbb{R} \to \mathbb{R}$, $f(x) = \frac{x}{(1+x^4)^{1/4}}$ द्वारा परिभाषित है तथा $g(x) = f(f(f(f(x))))$ है।

तो $18 \int_0^{\sqrt{2\sqrt{5}}} x^2 g(x) dx$ बराबर है

Options :

4058593279. 33

4058593280. 42

4058593281. 36

4058593282. 39

Question Number : 14 Question Id : 4058591028 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 $A(\alpha, 0)$ and $B(0, \beta)$ be the points on the line $5x + 7y = 50$. Let the point P divide the line segment AB internally in the ratio 7:3. Let $3x - 25 = 0$ be a directrix of the ellipse $E: \frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ and the corresponding focus be S. If from S, the perpendicular on the x-axis passes through P, then the length of the latus rectum of E is equal to,

Options :

4058593283. $\frac{25}{3}$

4058593284. $\frac{25}{9}$

4058593285. $\frac{32}{5}$

4058593286.

$\frac{32}{9}$

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Question Number : 14 Question Id : 4058591028 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 रेखा $5x + 7y = 50$ पर बिंदु $A(\alpha, 0)$ तथा $B(0, \beta)$ हैं। माना बिंदु P, रेखा खण्ड AB को अंतः 7:3 के अनुपात में बांटता है। माना दीर्घवृत्त $E : \frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ की एक नियता $3x - 25 = 0$ है तथा संगत नाभि S है। यदि बिंदु S से x-अक्ष पर लंब, बिंदु P से होकर जाता है, तो E की नाभिलंब जीवा की लंबाई है

Options :

4058593283. $\frac{25}{3}$

4058593284. $\frac{25}{9}$

4058593285. $\frac{32}{5}$

4058593286. $\frac{32}{9}$

Question Number : 15 Question Id : 4058591029 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 P be a point on the hyperbola $H : \frac{x^2}{9} - \frac{y^2}{4} = 1$, in the first quadrant such that the area of triangle formed by P and the two foci of H is $2\sqrt{13}$. Then, the square of the distance of P from the origin is

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Options :

4058593287. 18

4058593288. 20

4058593289. 22

4058593290. 26

Question Number : 15 Question Id : 4058591029 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 अतिपरवलय $H:\frac{x^2}{9}-\frac{y^2}{4}=1$ पर प्रथम चतुर्थांश में एक बिंदु P इस प्रकार है कि P तथा H की दो नाभियों से बने त्रिभुज का क्षेत्रफल $2\sqrt{13}$ है। तो P की मूल बिंदु से दूरी का वर्ग है

Options :

4058593287. 18

4058593288. 20

4058593289. 22

4058593290. 26

Question Number : 16 Question Id : 4058591030 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

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If $x^2 - y^2 + 2hxy + 2gx + 2fy + c = 0$ is the locus of a point, which moves such that it is always equidistant from the lines $x + 2y + 7 = 0$ and $2x - y + 8 = 0$, then the value of $g + c + h - f$ equals

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Options :

4058593291. 6

4058593292. 8

4058593293. 14

4058593294. 29

Question Number : 16 Question Id : 4058591030 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 बिंदु, जो इस प्रकार चलता है कि इसकी रेखाओं $x + 2y + 7 = 0$ तथा $2x - y + 8 = 0$ से दूरी बराबर रहती है, का बिंदुपथ $x^2 - y^2 + 2hxy + 2gx + 2fy + c = 0$ है, तो $g + c + h - f$ का मान बराबर है

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Options :

4058593291. 6

4058593292. 8

4058593293. 14

4058593294. 29

Question Number : 17 Question Id : 4058591031 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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Correct Marks : 4 Wrong Marks : 1

Let $L_1 : \vec{r} = (\hat{i} - \hat{j} + 2\hat{k}) + \lambda(\hat{i} - \hat{j} + 2\hat{k}), \lambda \in \mathbb{R}$,

$L_2 : \vec{r} = (\hat{j} - \hat{k}) + \mu(3\hat{i} + \hat{j} + p\hat{k}), \mu \in \mathbb{R}$, and $L_3 : \vec{r} = \delta(\ell\hat{i} + m\hat{j} + n\hat{k}), \delta \in \mathbb{R}$

be three lines such that L_1 is perpendicular to L_2 and L_3 is perpendicular to both L_1 and L_2. Then, the point which lies on L_3 is

Options :

4058593295. $(1, 7, -4)$

4058593296. $(-1, 7, 4)$

4058593297. $(1, -7, 4)$

4058593298. $(-, 1 -7, 4)$

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Question Number : 17 Question Id : 4058591031 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 रेखाएँ $L_1 : \vec{r} = (\hat{i} - \hat{j} + 2\hat{k}) + \lambda(\hat{i} - \hat{j} + 2\hat{k}), \lambda \in \mathbb{R}$,

$L_2 : \vec{r} = (\hat{j} - \hat{k}) + \mu(3\hat{i} + \hat{j} + p\hat{k}), \mu \in \mathbb{R}$, तथा $L_3 : \vec{r} = \delta(\ell\hat{i} + m\hat{j} + n\hat{k}), \delta \in \mathbb{R}$

इस प्रकार हैं कि L_1, रेखा L_2 के लंबवत है तथा L_3, दोनों रेखाओं L_1 तथा L_2 के लंबवत है।
तो निम्न में से कौन सा बिंदु L_3 पर है?

Options :

4058593295. $(1, 7, -4)$

4058593296. $(-1, 7, 4)$

4058593297. $(1, -7, 4)$

4058593298. $(-, 1 -7, 4)$

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Question Number : 18 Question Id : 4058591032 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 $\vec{a}$ and $\vec{b}$ be two vectors such that $|\vec{b}| = 1$ and $|\vec{b} \times \vec{a}| = 2$. Then

$|(\vec{b} \times \vec{a}) - \vec{b}|^2$ is equal to

Options :

4058593299. 1

4058593300. 3

4058593301. 4

4058593302. 5

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Question Number : 18 Question Id : 4058591032 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 दो सदिश $\vec{a}$ तथा $\vec{b}$ इस प्रकार हैं कि $|\vec{b}| = 1$ तथा $|\vec{b} \times \vec{a}| = 2$ हैं। तो

$|(\vec{b} \times \vec{a}) - \vec{b}|^2$ बराबर है

Options :

4058593299. 1

4058593300. 3

4058593301. 4

4058593302. 5

Question Number : 19 Question Id : 4058591033 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 $\vec{a} = \hat{i} + \alpha\,\hat{j} + \beta\,\hat{k}$, $\alpha, \beta \in \mathbb{R}$. Let a vector $\vec{b}$ be such that the angle between $\vec{a}$ and $\vec{b}$ is $\frac{\pi}{4}$ and $|\vec{b}|^2 = 6$. If $\vec{a} \cdot \vec{b} = 3\sqrt{2}$, then the value of $(\alpha^2 + \beta^2)|\vec{a} \times \vec{b}|^2$ is equal to

Options :

4058593303. 75

4058593304. 90

4058593305. 85

4058593306. 95

Question Number : 19 Question Id : 4058591033 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 $\vec{a} = \hat{i} + \alpha\,\hat{j} + \beta\,\hat{k}$, $\alpha, \beta \in \mathbb{R}$ है। माना एक सदिश $\vec{b}$ इस प्रकार है कि $\vec{a}$ तथा $\vec{b}$ के बीच कोण $\frac{\pi}{4}$ है तथा $|\vec{b}|^2 = 6$ है। यदि $\vec{a} \cdot \vec{b} = 3\sqrt{2}$ है, तो $(\alpha^2 + \beta^2)|\vec{a} \times \vec{b}|^2$ बराबर है

Options :

4058593303. 75

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4058593304. 90

4058593305. 85

4058593306. 95

Question Number : 20 Question Id : 4058591034 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

Bag A contains 3 white, 7 red balls and Bag B contains 3 white, 2 red balls. One bag is selected at random and a ball is drawn from it. The probability of drawing the ball from the bag A, if the ball drawn is white, is

Options :

4058593307. 1/4

4058593308. 1/3

4058593309. 1/9

4058593310. 3/10

Question Number : 20 Question Id : 4058591034 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

थैले A में 3 सफेद, 7 लाल गेंद तथा थैले B में 3 सफेद, 2 लाल गेंद हैं। एक थैला यादृच्छया चुना जाता है तथा इसमें से एक गेंद निकाली जाती है। यदि निकाली गई गेंद सफेद है, तो इस गेंद के थैले A से निकाले जाने की प्रायिकता है

Options :

4058593307. $1/4$

4058593308. $1/3$

4058593309. $1/9$

4058593310. $3/10$

Mathematics Section B

Section Id :	40585963
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 :	40585963
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 21 Question Id : 4058591035 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 symmetric relations defined on the set $\{1, 2, 3, 4\}$ which are not reflexive 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 : 4058591035 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

समुच्चय $\{1, 2, 3, 4\}$ पर परिभाषित ऐसे संबंधों, जो सममित हैं पर स्वतुल्य नहीं हैं, 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 : 22 Question Id : 4058591036 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 real solutions of the equation $x\left(x^2+3|x|+5|x-1|+6|x-2|\right)=0$ is ________.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

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Possible Answers :

1

Question Number : 22 Question Id : 4058591036 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

समीकरण $x\left(x^2+3|x|+5|x-1|+6|x-2|\right)=0$ के वास्तविक हलों की संख्या है ________.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

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Question Number : 23 Question Id : 4058591037 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

In an examination of Mathematics paper, there are 20 questions of equal marks and the question paper is divided into three sections : A, B and C. A student is required to attempt total 15 questions taking at least 4 questions from each section. If section A has 8 questions, section B has 6 questions and section C has 6 questions, then the total number of ways a student can select 15 questions is ______.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

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Question Number : 23 Question Id : 4058591037 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

एक परीक्षा में गणित के प्रश्नपत्र में बराबर अंकों के 20 प्रश्न हैं तथा प्रश्नपत्र में तीन खंड : A, B और C है। एक विद्यार्थी को कुल 15 प्रश्नों के उत्तर देने हैं, जिनमें प्रत्येक खंड से कम से कम 4 प्रश्न होने चाहिए। यदि खंड A में 8 प्रश्न, खंड B में 6 प्रश्न तथा खंड C में 6 प्रश्न हैं, तो एक विद्यार्थी द्वारा 15 प्रश्न चुनने के तरीकों 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 : 4058591038 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Let $\alpha = \sum_{k=0}^{n}\left(\frac{\left({}^{n}C_{k}\right)^{2}}{k+1}\right)$ and $\beta = \sum_{k=0}^{n-1}\left(\frac{{}^{n}C_{k}\,{}^{n}C_{k+1}}{k+2}\right)$. If $5\alpha = 6\beta$, then n equals ______.

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 : 4058591038 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

माना $\alpha = \sum_{k=0}^{n}\left(\frac{\left({}^{n}C_{k}\right)^{2}}{k+1}\right)$ तथा $\beta = \sum_{k=0}^{n-1}\left(\frac{{}^{n}C_{k}\,{}^{n}C_{k+1}}{k+2}\right)$ हैं। यदि $5\alpha = 6\beta$ हैं, 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 : 25 Question Id : 4058591039 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_n be the sum to n-terms of an arithmetic progression 3, 7, 11, ...

If $40 < \left(\frac{6}{n(n+1)}\sum_{k=1}^{n} S_k\right) < 42$, then n equals ______.

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 : 4058591039 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

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माना समांतर श्रेढी 3, 7, 11,..... के प्रथम n पदों का योग S_n है। यदि

$40 < \left(\frac{6}{n(n+1)}\sum_{k=1}^{n} S_k\right) < 42$ 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 : 26 Question Id : 4058591040 Question Type : SA 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 enclosed by the parabola $(y-2)^2 = x - 1$, the line $x - 2y + 4 = 0$ and the positive coordinate axes is ________.

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 : 4058591040 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

परवलय $(y-2)^2 = x - 1$, रेखा $x - 2y + 4 = 0$ तथा धनात्मक निर्देशांक अक्षों से घिरे क्षेत्र का क्षेत्रफल 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 : 4058591041 Question Type : SA 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 a curve lying in the first quadrant such that the area enclosed by the line $Y - y = Y'(x)(X - x)$ and the co-ordinate axes, where (x, y) is any point on the curve, is always $\frac{-y^2}{2Y'(x)} + 1, Y'(x) \neq 0$. If $Y(1) = 1$, then $12Y(2)$ equals ________.

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 : 4058591041 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

माना प्रथम चतुर्थांश में एक वक्र $Y = Y(X)$ इस प्रकार है कि रेखा $Y - y = Y'(x)(X - x)$ तथा निर्देशांक अक्षों से घिरे क्षेत्र का क्षेत्रफल $\frac{-y^2}{2Y'(x)} + 1, Y'(x) \neq 0$ है, जहाँ (x, y) वक्र पर कोई बिंदु है। यदि $Y(1) = 1$ है, तो $12Y(2)$ बराबर है ________.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

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Possible Answers :

1

Question Number : 28 Question Id : 4058591042 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Consider two circles $C_1 : x^2 + y^2 = 25$ and $C_2 : (x - \alpha)^2 + y^2 = 16$, where $\alpha \in (5, 9)$. Let the angle between the two radii (one to each circle) drawn from one of the intersection points of C_1 and C_2 be $\sin^{-1}\left(\frac{\sqrt{63}}{8}\right)$. If the length of common chord of C_1 and C_2 is β, then the value of $(\alpha\beta)^2$ equals ________.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

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Question Number : 28 Question Id : 4058591042 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

दो वृत्तों $C_1 : x^2 + y^2 = 25$ तथा $C_2 : (x - \alpha)^2 + y^2 = 16$, जहाँ $\alpha \in (5, 9)$ है, का विचार कीजिए। माना वृत्तों C_1 तथा C_2 के प्रतिच्छेदन बिंदुओं में से एक से खींची गई दो त्रिज्याओं (प्रत्येक वृत्त पर एक) के बीच कोण $\sin^{-1}\left(\frac{\sqrt{63}}{8}\right)$ है। यदि C_1 तथा C_2 की उभयनिष्ठ जीवा की लंबाई β है, तो $(\alpha\beta)^2$ का मान 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 : 4058591043 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 line passing through the point (–1, 2, 3) intersect the lines

$L_1: \frac{x-1}{3} = \frac{y-2}{2} = \frac{z+1}{-2}$ at $M(\alpha, \beta, \gamma)$ and $L_2: \frac{x+2}{-3} = \frac{y-2}{-2} = \frac{z-1}{4}$ at $N(a, b, c)$.

Then, the value of $\frac{(\alpha+\beta+\gamma)^2}{(a+b+c)^2}$ equals ________.

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 : 4058591043 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 (–1, 2, 3) से होकर जाने वाली एक रेखा, रेखा $L_1: \frac{x-1}{3} = \frac{y-2}{2} = \frac{z+1}{-2}$ को

$M(\alpha, \beta, \gamma)$ तथा रेखा $L_2: \frac{x+2}{-3} = \frac{y-2}{-2} = \frac{z-1}{4}$ को $N(a, b, c)$ पर काटती है। तो

$\frac{(\alpha+\beta+\gamma)^2}{(a+b+c)^2}$ बराबर है ________.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

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Possible Answers :

1

Question Number : 30 Question Id : 4058591044 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

The variance σ^2 of the data

x_i	0	1	5	6	10	12	17
f_i	3	2	3	2	6	3	3

is_______.

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 : 4058591044 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

आंकड़ों

x_i	0	1	5	6	10	12	17
f_i	3	2	3	2	6	3	3

का प्रसरण σ^2 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 :	40585964
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 Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	40585964
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 31 Question Id : 4058591045 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 mass is written as $m = k\, c^P\, G^{-1/2}\, h^{1/2}$ then the value of P will be : (Constants have their usual meaning with k a dimensionless constant)

Options :

4058593321. $1/3$

4058593322. 2

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4058593323. $-1/3$

4058593324. $1/2$

Question Number : 31 Question Id : 4058591045 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 द्रव्यमान को $m = k\,c^P\,G^{-1/2}\,h^{1/2}$ लिखा गया हो तो P मान होगा : (जब नियतांक अपना सामान्य अर्थ दर्शाते है तथा k एक विमाविहीन नियतांक है)

Options :

4058593321. $1/3$

4058593322. 2

4058593323. $-1/3$

4058593324. $1/2$

Question Number : 32 Question Id : 4058591046 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

Projectiles A and B are thrown at angles of 45° and 60° with vertical respectively from top of a 400 m high tower. If their ranges and times of flight are same, the ratio of their speeds of projection $v_A : v_B$ is :

[Take $g = 10\ ms^{-2}$]

Options :

4058593325. $1:2$

4058593326. $1:\sqrt{2}$

4058593327. $\sqrt{2}:1$

4058593328. $1:\sqrt{3}$

Question Number : 32 Question Id : 4058591046 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 प्रक्षेप्य A तथा B को 400 मी. ऊंचे टॉवर के शिखर से ऊर्ध्वाधर दिशा से क्रमशः 45°
तथा 60° कोण पर प्रक्षेपित किये गये है। यदि उनके परास तथा उड्डयन काल समान हों तब
उनके प्रक्षेपण वेगों का अनुपात $v_A : v_B$ है :

[दिया है, $g = 10$ मी/से$^{-2}$]

Options :

4058593325. $1:2$

4058593326. $1:\sqrt{2}$

4058593327. $\sqrt{2}:1$

4058593328. $1:\sqrt{3}$

Question Number : 33 Question Id : 4058591047 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

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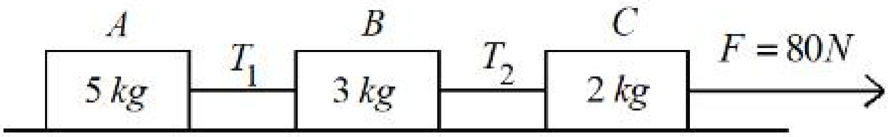
Three blocks A, B and C are pulled on a horizontal smooth surface by a force of $80N$ as shown in figure



The tensions T_1 and T_2 in the string are respectively:

Options :

4058593329. $40N,\ 64N$

4058593330. $60N,\ 80N$

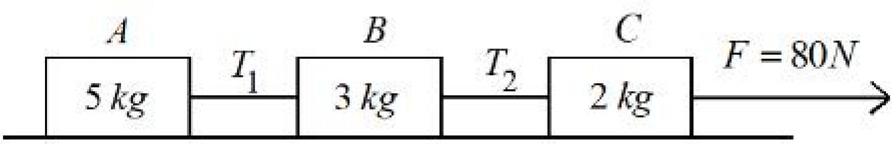
4058593331. $88N,\ 96N$

4058593332. $80N,\ 100N$

Question Number : 33 Question Id : 4058591047 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

प्रदर्शित चित्र के अनुसार, तीन गुटके A, B तथा C को $80N$ के एक बल द्वारा एक चिकने क्षैतिज तल पर खींचा जाता है।



डोरियों में तनाव क्रमशः T_1 तथा T_2 हैं:

Options :

4058593329. $40N,\ 64N$

4058593330. $60N,\ 80N$

4058593331. $88N,\ 96N$

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4058593332. $80N,\ 100N$

Question Number : 34 Question Id : 4058591048 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 block of mass m is placed on a surface having vertical crossection given by $y = x^2 / 4$. If coefficient of friction is 0.5, the maximum height above the ground at which block can be placed without slipping is:

Options :

4058593333. $1/4\ m$

4058593334. $1/6\ m$

4058593335. $1/2\ m$

4058593336. $1/3\ m$

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Question Number : 34 Question Id : 4058591048 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 गुटके को दिये गये ऊर्ध्वाधर परिच्छेद $y = x^2/4$ वाले एक तल पर रखा गया है। यदि घर्षण गुणांक 0.5 है। पृथ्वीतल के ऊपर वह अधिकतम ऊँचाई, जिस पर गुटका बिना फिसलन के रखा जा सके, है:

Options :

4058593333. $1/4\ m$

4058593334. $1/6\ m$

4058593335. 1/2 m

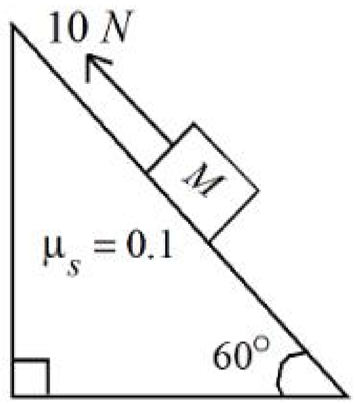
4058593336. 1/3 m

Question Number : 35 Question Id : 4058591049 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 block of mass 1 kg is pushed up a surface inclined to horizontal at an angle of 60° by a force of 10 N parallel to the inclined surface as shown in figure. When the block is pushed up by 10 m along inclined surface, the work done against frictional force is :

$[g = 10\ m/s^2]$



Options :

4058593337. $5\sqrt{3}\ J$

4058593338. $5\ J$

4058593339. $5 \times 10^3\ J$

4058593340. $10\ J$

Question Number : 35 Question Id : 4058591049 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

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Instruction Time : 0

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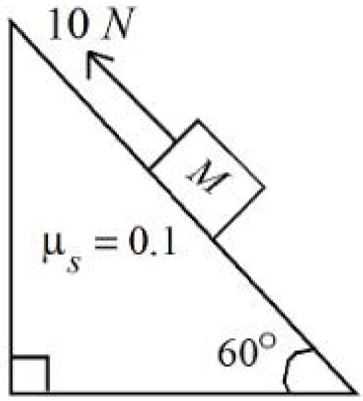
Correct Marks : 4 Wrong Marks : 1

प्रदर्शित चित्र के अनुसार 1 किग्रा द्रव्यमान के एक गुटके को क्षैतिज से 60° के कोण पर झुके एक नत समतल पर आनत सतह के समांतर एक 10 N के बल द्वारा उपर की ओर खींचा जाता है। जब गुटके को आनत तल पर 10मी उपर की ओर खींचा गया हो तो घर्षण बल के विरुद्ध किया गया कार्य है

[दिया है, गुरुत्वीय त्वरण $g = 10$ मी/से^{2}]



Options :

4058593337. $5\sqrt{3}\ J$

4058593338. $5\ J$

4058593339. $5 \times 10^3\ J$

4058593340. $10\ J$

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Question Number : 36 Question Id : 4058591050 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

Escape velocity of a body from earth is 11.2 km/s. If the radius of a planet be one-third the radius of earth and mass be one-sixth that of earth, the escape velocity from the planet is :

Options :

4058593341. 4.2 km/s

4058593342. 7.9 km/s

4058593343. 8.4 km/s

4058593344. 11.2 km/s

Question Number : 36 Question Id : 4058591050 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

पृथ्वी तल पर एक वस्तु का पलायन वेग 11.2 किमी/से. है। यदि किसी ग्रह की त्रिज्या पृथ्वी की त्रिज्या की एक तिहाई तथा द्रव्यमान पृथ्वी के द्रव्यमान का एक छटवाँ भाग हो तो ग्रह पर पलायन वेग है:

Options :

4058593341. 4.2 km/s

4058593342. 7.9 km/s

4058593343. 8.4 km/s

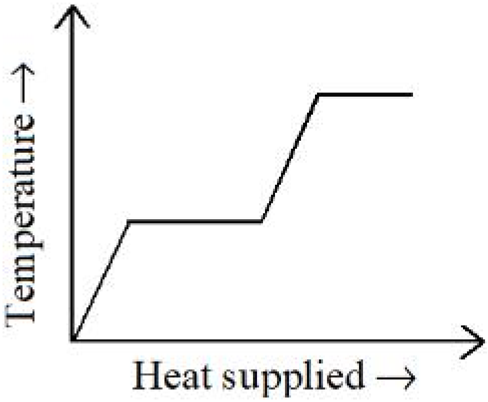
4058593344. 11.2 km/s

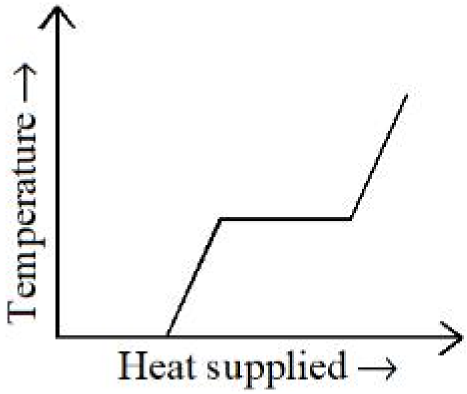
Question Number : 37 Question Id : 4058591051 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

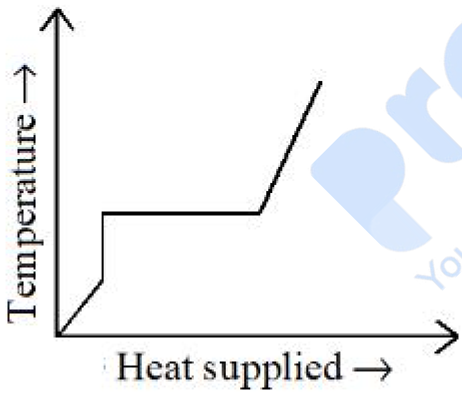
Correct Marks : 4 Wrong Marks : 1

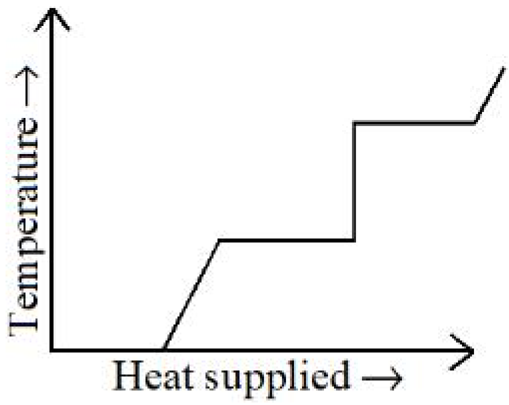
A block of ice at $-10°C$ is slowly heated and converted to steam at $100°C$. Which of the following curves represent the phenomenon qualitatively:

Options :

4058593345. 

4058593346. 

4058593347. 

4058593348. 

Question Number : 37 Question Id : 4058591051 Question Type : MCQ Option Shuffling : Yes Is

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

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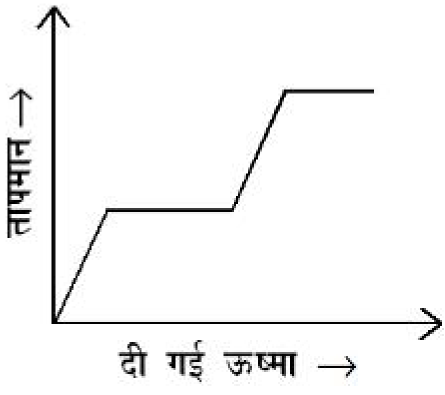
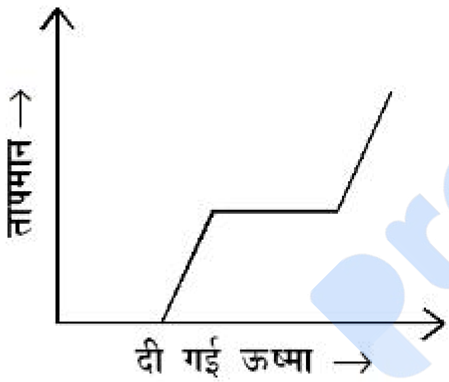
Instruction Time : 0

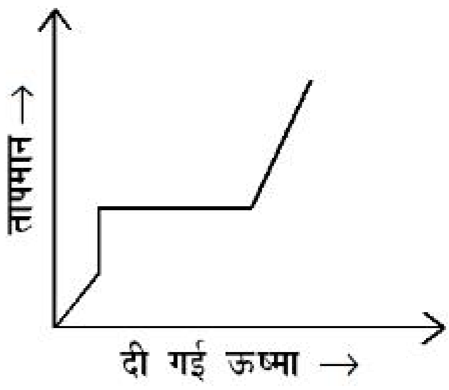
Correct Marks : 4 Wrong Marks : 1

$-10°C$ पर एक बर्फ का गुटका धीरे धीरे गर्म किया जाता है तथा $100°C$ पर भाव में परिवर्तित होता है। इस परिघटना को गुणात्मक ढंग से किस ग्राफ में प्रदर्शित किया गया है:

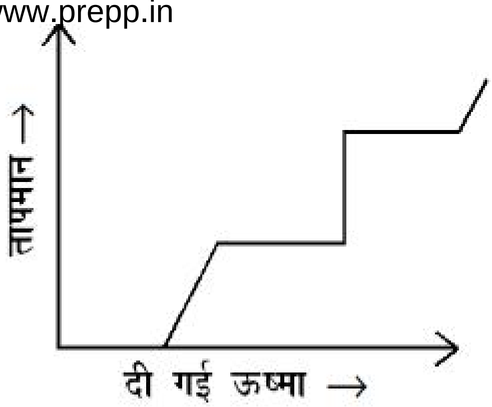
Options :

4058593345. 

4058593346. 

4058593347. 

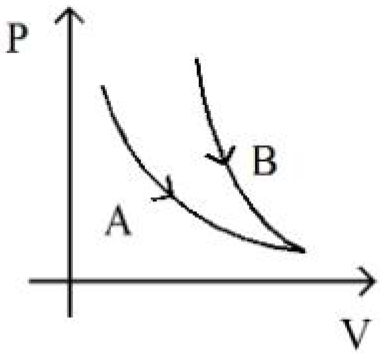
4058593348.



Question Number : 38 Question Id : 4058591052 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

Choose the correct statement for processes A & B shown in figure.



Options :

4058593349. $PV = k$ for process B and A.

4058593350. $PV^{\gamma} = k$ for process B and $PV = k$ for process A.

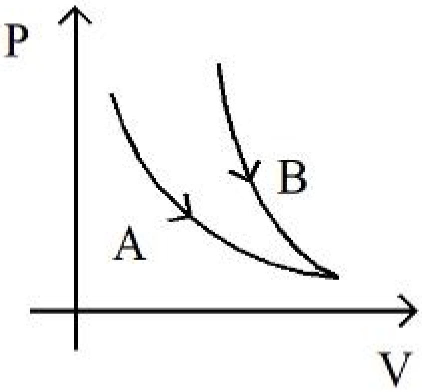
4058593351. $\frac{P^{\gamma-1}}{T^{\gamma}} = k$ for process B and $T = k$ for process A.

4058593352. $\frac{T^{\gamma}}{P^{\gamma-1}} = k$ for process A and $PV = k$ for process B.

Question Number : 38 Question Id : 4058591052 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

प्रदर्शित चित्र में प्रक्रम A व B के लिए सही कथन चुनिए।



Options :

4058593349. B तथा A प्रक्रम के लिए $PV = k$

4058593350. B प्रक्रम के लिए $PV^{\gamma} = k$ तथा A प्रक्रम के लिए $PV = k$

4058593351. B प्रक्रम के लिए $\frac{P^{\gamma-1}}{T^{\gamma}}k$ तथा प्रक्रम A के लिए $T = k$

4058593352. प्रक्रम A के लिए $\frac{T^{\gamma}}{P^{\gamma-1}}=k$ तथा प्रक्रम B के लिए $PV = k$

Question Number : 39 Question Id : 4058591053 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 three moles of monoatomic gas $\left(\gamma = \frac{5}{3}\right)$ is mixed with two moles of a diatomic gas $\left(\gamma = \frac{7}{5}\right)$, the value of adiabatic exponent γ for the mixture is

Options :

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4058593353. 1.40

4058593354. 1.52

4058593355. 1.75

4058593356. 1.35

Question Number : 39 Question Id : 4058591053 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 परमाणुक गैस $\left(\gamma=\frac{5}{3}\right)$ के तीन मोल को किसी द्विपरमाणुक गैस $\left(\gamma=\frac{7}{5}\right)$ के दो मोल के साथ मिश्रित किया जाता है तो मिश्रण के लिए रुद्धोष्म चरघातांक γ का मान हैः

Options :

4058593353. 1.40

4058593354. 1.52

4058593355. 1.75

4058593356. 1.35

Question Number : 40 Question Id : 4058591054 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

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A particle of charge '$-q$' and mass 'm' moves in a circle of radius 'r' around an infinitely long line charge of linear charge density '$+\lambda$'. Then time period will be given as :

(Consider k as Coulomb's constant)

Options :

4058593357. $T = 2\pi r\sqrt{\frac{m}{2k\lambda q}}$

4058593358. $T^2 = \frac{4\pi^2 m}{2k\lambda q} r^3$

4058593359. $T = \frac{1}{2\pi}\sqrt{\frac{2k\lambda q}{m}}$

4058593360. $T = \frac{1}{2\pi r}\sqrt{\frac{m}{2k\lambda q}}$

Question Number : 40 Question Id : 4058591054 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

'$-q$' आवेश तथा 'm' द्रव्यमान का एक कण '$+\lambda$' रेखीय आवेश घनत्व के एक अनंत लम्बे रेखीय आवेश के परितः 'r' त्रिज्या के एक वृत्त में गति करता है। तब इसका आवर्त काल होगाः

(k को कूलॉम नियतांक मानकर)

Options :

4058593357. $T = 2\pi r\sqrt{\frac{m}{2k\lambda q}}$

4058593358. $T^2 = \frac{4\pi^2 m}{2k\lambda q} r^3$

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4058593359. $T = \frac{1}{2\pi}\sqrt{\frac{2k\lambda q}{m}}$

4058593360. $T = \frac{1}{2\pi r}\sqrt{\frac{m}{2k\lambda q}}$

Question Number : 41 Question Id : 4058591055 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 potential difference V is applied across a wire of resistance R, it dissipates energy at a rate W. If the wire is cut into two halves and these halves are connected mutually parallel across the same supply, the energy dissipation rate will become:

Options :

4058593361. $2W$

4058593362. $1/2W$

4058593363. $4W$

4058593364. $1/4W$

Question Number : 41 Question Id : 4058591055 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 R प्रतिरोध के एक तार के परित: विभवान्तर V लगाया जाता है तो W दर से शक्तिक्षय होता है। अगर तार को दो अर्ध भागो में काटा जाए और उन अर्ध भागो को परस्पर समान्तर क्रम में लगा कर समान आपूर्ति के पारित: जोड़ा जाता है तो शक्तिक्षय होगा :

Options :

4058593361. $2W$

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4058593362. $1/2W$

4058593363. $4W$

4058593364. $1/4W$

Question Number : 42 Question Id : 4058591056 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.	Gauss's law of magnetostatics	I.	$\oint \vec{E}\cdot\vec{da} = \frac{1}{\varepsilon_o}\int \rho dV$
B.	Faraday's law of electro magnetic induction	II.	$\oint \vec{B}\cdot\vec{da} = 0$
C.	Ampere's law	III.	$\int \vec{E}\cdot\vec{dl} = \frac{-d}{dt}\int \vec{B}\cdot\vec{da}$
D.	Gauss's law of electrostatics	IV.	$\oint \vec{B}\cdot\vec{dl} = \mu_0 I$

Choose the correct answer from the options given below:

Options :

4058593365. A-IV, B-II, C-III, D-I

4058593366. A-II, B-III, C-IV, D-I

4058593367. A-I, B-III, C-IV, D-II

4058593368. A-III, B-IV, C-I, D-II

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Question Number : 42 Question Id : 4058591056 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 सूची II से मिलान कीजिए

सूची I		सूची II	
A.	चुंबकस्थैतिकी का गॉउस का नियम	I.	$\oint \vec{E} \cdot \vec{d}_a = \frac{1}{\epsilon_0} \int \rho dV$
B.	विद्युत चुम्बकीय प्रेरण का फैराडे नियम	II.	$\oint \vec{B} \cdot \vec{d}_a = 0$
C.	ऐम्पियर का नियम	III.	$\int \vec{E} \cdot \vec{dl} = \frac{-d}{dt} \int \vec{B} \cdot \vec{da}$
D.	स्थिरवैद्युतिक का गॉउस का नियम	IV.	$\oint \vec{B} \cdot \vec{dl} = \mu_0 I$

नीचे दिए गए विकल्पों में से सही उत्तर चुनेः

Options :

4058593365. A-IV, B-II, C-III, D-I

4058593366. A-II, B-III, C-IV, D-I

4058593367. A-I, B-III, C-IV, D-II

4058593368. A-III, B-IV, C-I, D-II

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Question Number : 43 Question Id : 4058591057 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 alternating voltage $V(t) = 220 \sin 100\, \pi t$ volt is applied to a purely resistive load of 50 Ω. The time taken for the current to rise from half of the peak value to the peak value is:

Options :

4058593369. 3.3 *ms*

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4058593370. $2.2\ ms$

4058593371. $7.2\ ms$

4058593372. $5\ ms$

Question Number : 43 Question Id : 4058591057 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 प्रत्यावर्ती वोल्टेज $V(t) = 220 \sin 100\ \pi t$ वोल्ट को $50\ \Omega$ के शुद्ध प्रतिरोधक लोड से जोड़ा गया है। धारा के अर्द्ध शिखर मान से शिखर मान तक बढ़ने में लगा समय है:

Options :

4058593369. $3.3\ ms$

4058593370. $2.2\ ms$

4058593371. $7.2\ ms$

4058593372. $5\ ms$

Question Number : 44 Question Id : 4058591058 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 total energy transferred to a surface in time t is $6.48\times10^{5} J$, then the magnitude of the total momentum delivered to this surface for complete absorption will be:

Options :

4058593373.

$2.16\times10^{-3}\ kg\ m/s$

4058593374. $4.32\times10^{-3}\ kg\ m/s$

4058593375. $1.58\times10^{-3}\ kg\ m/s$

4058593376. $2.46\times10^{-3}\ kg\ m/s$

Question Number : 44 Question Id : 4058591058 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 t समय में एक पृष्ठ को स्थानान्तरित कुल ऊर्जा 6.48×10^{5} जूल है तो पूर्ण अवशोषण के लिए इस पृष्ठ को दिया गया कुल संवेग होगा:

Options :

4058593373. $2.16\times10^{-3}\ kg\ m/s$

4058593374. $4.32\times10^{-3}\ kg\ m/s$

4058593375. $1.58\times10^{-3}\ kg\ m/s$

4058593376. $2.46\times10^{-3}\ kg\ m/s$

Question Number : 45 Question Id : 4058591059 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

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A beam of unpolarised light of intensity I_o is passed through a polaroid A and then through another polaroid B which is oriented so that its principal plane makes an angle of 45° relative to that of A. The intensity of emergent light is:

Options :

4058593377. I_o

4058593378. $I_o/2$

4058593379. $I_o/4$

4058593380. $I_o/8$

Question Number : 45 Question Id : 4058591059 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

I_o तीव्रता के एक अध्रुवित प्रकाश पुँज को एक पोलेराइड A से गुजारा जाता है तथा इसके बाद दूसरे पोलेराइड B से गुजारा जाता है जिसका मुख्य तल A के मुख्य तल के सापेक्ष 45° का कोण बनाता है। निष्कासित प्रकाश की तीव्रता है:

Options :

4058593377. I_o

4058593378. $I_o/2$

4058593379. $I_o/4$

4058593380. $I_o/8$

Question Number : 46 Question Id : 4058591060 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

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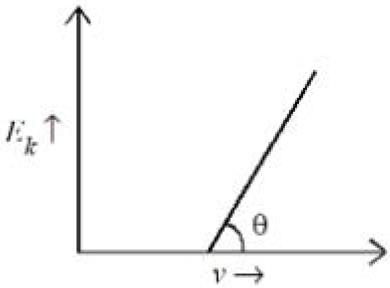
Correct Marks : 4 Wrong Marks : 1

For the photoelectric effect, the maximum kinetic energy (E_k) of the photoelectrons is plotted against the frequency (v) of the incident photons as shown in figure. The slope of the graph gives



Options :

4058593381. Planck's constant

4058593382. Charge of electron

4058593383. Work function of the metal

4058593384. Ratio of Planck's constant to electric charge

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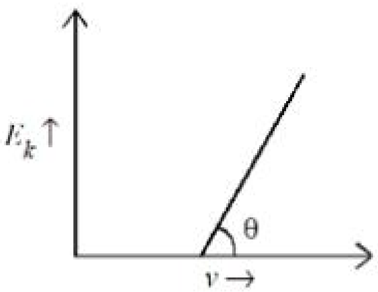
Question Number : 46 Question Id : 4058591060 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

प्रकाशवैद्युत प्रभाव के लिए प्रदर्शित चित्र में प्रकाश इलैक्ट्रानों की अधिकतम गतिज ऊर्जा (E_k) तथा आपतित फोटानों की आवृत्ति (v) के बीच वक्र खींचा गया है। वक्र की प्रवणता प्रदान करती है:



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Options :

4058593381. प्लांक नियतांक

4058593382. इलैक्ट्रान का आवेश

4058593383. धातु का कार्य फलन

4058593384. प्लांक नियतांक तथा वैद्युत आवेश का अनुपात

Question Number : 47 Question Id : 4058591061 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 nuclear fission reaction of an isotope of mass M, three similar daughter nuclei of same mass are formed. The speed of a daughter nuclei in terms of mass defect ΔM will be :

Options :

4058593385. $\frac{\Delta M c^2}{3}$

4058593386. $c\sqrt{\frac{2\Delta M}{M}}$

4058593387. $c\sqrt{\frac{3\Delta M}{M}}$

4058593388. $\sqrt{\frac{2c\Delta M}{M}}$

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Question Number : 47 Question Id : 4058591061 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 समस्थानिक (आइसोटोप) की नाभिकीय विखण्डन अभिक्रिया में तीन एक समान द्रव्यमान के तीन छोटे (संतति) नाभिक प्राप्त होते हैं। द्रव्यमान क्षति (ΔM) के पदों में एक छोटे (संतती) नाभिक की चाल होगी :

Options :

4058593385. $\frac{\Delta M c^2}{3}$

4058593386. $c\sqrt{\frac{2\Delta M}{M}}$

4058593387. $c\sqrt{\frac{3\Delta M}{M}}$

4058593388. $\sqrt{\frac{2c\Delta M}{M}}$

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Question Number : 48 Question Id : 4058591062 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 electron revolving in n^{th} Bohr orbit has magnetic moment μ_n. If $\mu_n \propto n^x$, the value of x is

Options :

4058593389. 0

4058593390. 1

4058593391. 2

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4058593392. 3

Question Number : 48 Question Id : 4058591062 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

nवीं बोहर कक्षा में घूमते हुए एक इलेक्ट्रान का चुंबकीय आधूर्ण μ_n है। यदि $\mu_n \alpha n^x$ तो x का मान है:

Options :

4058593389. 0

4058593390. 1

4058593391. 2

4058593392. 3

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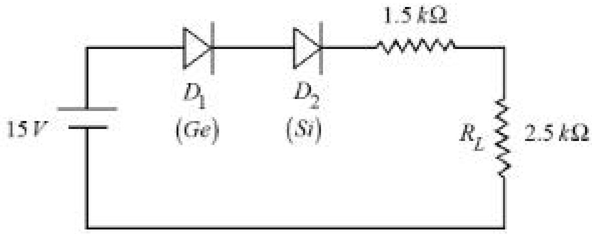
Question Number : 49 Question Id : 4058591063 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1



In the given circuit, the voltage across load resistance (R_L) is:

Options :

4058593393. $8.50\ V$

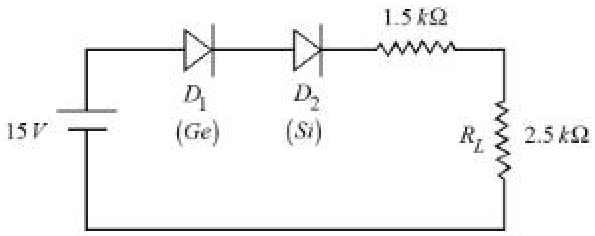
4058593394. $8.75\ V$

4058593395. $9.00\ V$

4058593396. $14.00\ V$

Question Number : 49 Question Id : 4058591063 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



लोड प्रतिरोध (R_L) के संगत वोल्टेज है:

Options :

4058593393. $8.50\ V$

4058593394. $8.75\ V$

4058593395. $9.00\ V$

4058593396. $14.00\ V$

Question Number : 50 Question Id : 4058591064 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

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If 50 Vernier divisions are equal to 49 main scale divisions of a traveling microscope and one smallest reading of main scale is 0.5 *mm*, the Vernier constant of traveling microscope is

Options :

4058593397. 0.1 *mm*

4058593398. 0.01 *cm*

4058593399. 0.01 *mm*

4058593400. 0.1 *cm*

Question Number : 50 Question Id : 4058591064 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 चलित सूक्ष्मदर्शी वर्नियर के 50 भागों का मान मुख्य पैमाने के 49 भागों के बराबर है तथा मुख्य पैमाने का सूक्ष्मतम पाठयांक 0.5 मिमी है। चल सूक्ष्मदर्शी का वर्नियर नियतांक है:

Options :

4058593397. 0.1 *mm*

4058593398. 0.01 *cm*

4058593399. 0.01 *mm*

4058593400. 0.1 *cm*

Physics Section B

Section Id : 40585965

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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 :	40585965
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 51 Question Id : 4058591065 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

A vector has magnitude same as that of $\vec{A} = 3\hat{i} + 4\hat{j}$ and is parallel to $\vec{B} = 4\hat{i} + 3\hat{j}$. The x and y components of this vector in first quadrant are x and 3 respectively 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 : 51 Question Id : 4058591065 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

एक सदिश का परिमाण $\vec{A} = 3\hat{i} + 4\hat{j}$ के परिमाण के समान है और वह $\vec{B} = 4\hat{i} + 3\hat{j}$ के समान्तर है। इस सदिश के प्रथम चतुर्थांश में x तथा y घटक क्रमशः x तथा 3 हैं जहाँ $x =$ _________.

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 : 4058591066 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Two discs of moment of inertia $I_1 = 4\ kg\ m^2$ and $I_2 = 2\ kg\ m^2$, about their central axes & normal to their planes, rotating with angular speeds 10 rad/s & 4 rad/s respectively are brought into contact face to face with their axes of rotation coincident. The loss in kinetic energy of the system in the process 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 : 4058591066 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

अपने अक्षों के परित: तथा अपने तलों के लम्बवत जड़त्व आघूर्ण $I_1 = 4$ किग्रा मी^{2} व $I_2 =$ 2 किग्रा मी^{2} वाली दो चकतिया क्रमशः 10 rad/s तथा 4 rad/s की कोणीय चाल से घूम रही हैं। इन्हें इनकी अक्षों को उभयनिष्ठ रखकर एक दूसरे के संपर्क में लाया जाता है। इस प्रक्रम में निकाय की गतिज ऊर्जा में क्षय _________ J है।

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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 : 4058591067 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

A big drop is formed by coalescing 1000 small identical drops of water. If E_1 be the total surface energy of 1000 small drops of water and E_2 be the surface energy of single big drop of water, then $E_1 : E_2$ is $x : 1$ 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 : 53 Question Id : 4058591067 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

पानी की एक समान 1000 बूँदों को मिलाकर एक बड़ी बूँद बनाई जाती है। यदि 1000 छोटी पानी की बूँदों की कुल पृष्ठ ऊर्जा E_1 तथा पानी की बड़ी बूँद की कुल पृष्ठ ऊर्जा E_2 हो तब $E_1 : E_2$ का मान $x : 1$ है। जहाँ $x =$ ________.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

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Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 54 Question Id : 4058591068 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

A point source is emitting sound waves of intensity $16\times10^{-8}\ Wm^{-2}$ at the origin. The difference in intensity (magnitude only) at two points located at a distances of $2m$ and $4m$ from the origin respectively will be _______ $\times 10^{-8}\ Wm^{-2}$.

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 : 4058591068 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

मूल बिन्दु पर एक बिन्दु स्रोत $16\times10^{-8}\ Wm^{-2}$ तीव्रता की ध्वनि तरंगें उत्पन्न करता है। मूल बिन्दु से क्रमशः $2m$ तथा $4m$ की दूरी पर स्थित बिन्दुओं पर उत्पन्न तीव्रताओं के अन्तर का परिमाण _______ $\times 10^{-8}\ Wm^{-2}$ होगा।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

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Question Number : 55 Question Id : 4058591069 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Two identical charged spheres are suspended by strings of equal lengths. The strings make an angle of 37° with each other. When suspended in a liquid of density 0.7 g/cm^3, the angle remains same. If density of material of the sphere is 1.4 g/cm^3, the dielectric constant of the liquid is _______ $\left(\tan 37^\circ = \frac{3}{4}\right)$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

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Question Number : 55 Question Id : 4058591069 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

दो एक समान आवेशित गोलों को समान लम्बाई की डोरियों से लटकाया गया है। डोरियाँ एक दूसरे से 37° का कोण बनाती हैं। जब इन्हें 0.7 ग्राम/सेमी^{3} घनत्व के किसी द्रव में डुबाया जाता है तो उनके बीच बना कोण वही रहता है। यदि गोले के पदार्थ का घनत्व 1.4 ग्राम/सेमी^{3} हो तो द्रव का परावैधुतांक _______ होगा। $\left(\text{यदि, } \tan 37^o = \frac{3}{4}\right)$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

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Question Number : 56 Question Id : 4058591070 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Two resistance of 100 Ω and 200 Ω are connected in series with a battery of 4 V and negligible internal resistance . A voltmeter is used to measure voltage across 100 Ω resistance, which gives reading as 1 V. The resistance of voltmeter must be ________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 : 4058591070 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

100 Ω व 200 Ω के दो प्रतिरोधों को नगण्य आन्तरिक प्रतिरोध व 4 V की बैटरी के साथ श्रेणीक्रम में जोड़ा जाता है। 100 Ω के संगत वोल्टेज मापन के लिए एक वोल्टमीटर का उपयोग किया गया है। जिसका पाठ्यांक 1 V वोल्टमीटर का प्रतिरोध ________ Ω होना चाहिए।

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 : 4058591071 Question Type : SA Calculator : None

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

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Correct Marks : 4 Wrong Marks : 1

The current of 5A flows in a square loop of sides 1 m is placed in air. The magnetic field at the centre of the loop is $X\sqrt{2}\times10^{-7}T$. 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 : 57 Question Id : 4058591071 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

वायु में रखे 1 मी भुजा के एक वर्गाकार लूप में प्रवाहित धारा 5A है। लूप के केन्द्र पर चुंबकीय क्षेत्र $X\sqrt{2}\times10^{-7}T$ 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 : 58 Question Id : 4058591072 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

A power transmission line feeds input power at 2.3kV to a step down transformer with its primary winding having 3000 turns. The output power is delivered at 230V by the transformer. The current in the primary of the transformer is 5A and its efficiency is 90%. The winding of transformer is made of copper. The output current of transformer is ________ A.

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 : 4058591072 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

एक पॉवर ट्रान्समीशन लाइन 3000 फेरों की प्राथमिक कुंडली के अपचायी ट्रांसफार्मर को 2.3*kV* पर शक्ति निवेश करती है। ट्रांसफार्मर द्वारा 230*V* पर निर्गत शक्ति प्राप्त होती है। ट्रांसफार्मर की प्राथमिक कुंडली में प्रवाहित धारा 5*A* तथा इसकी दक्षता 90%. है। ट्रांसफार्मर की कुंडली ताँबे की बनी है। ट्रांसफार्मर की निर्गत धारा ________ *A* है।

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 : 4058591073 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

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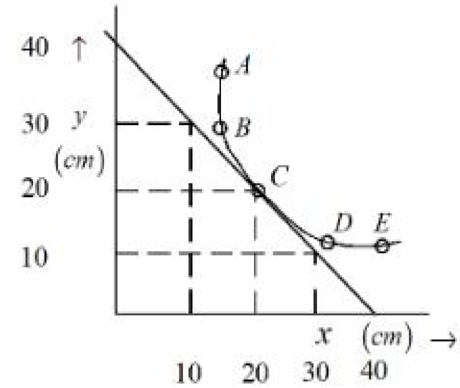
In an experiment to measure the focal length (f) of a convex lens, the magnitude of object distance (x) and the image distance (y) are measured with reference to the focal point of the lens. The y-x plot is shown in figure.

The focal length of the lens is _______ cm.



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

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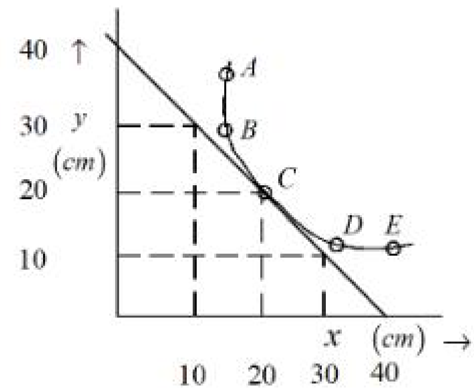
Question Number : 59 Question Id : 4058591073 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

एक प्रयोग द्वारा किसी उत्तल लैंस की फोकस दूरी (f) ज्ञात करने के लिए लैंस के फोकस बिन्दु के संदर्भ में वस्तु की दूरी का परिमाण (x) तथा प्रतिबिम्ब की दूरी (y) प्राप्त होती है। चित्र में y-x ग्राफ प्रदर्शित है।

लैंस की फोकस दूरी _______ सेमी है।



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 : 4058591074 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

A simple pendulum is placed at a place where its distance from the earth's surface is equal to the radius of the earth. If the length of the string is $4m$, then the time period of small oscillations will be ________ s. [take $g = \pi^2\ ms^{-2}$]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 60 Question Id : 4058591074 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

एक सरल लोलक को एक ऐसे स्थान पर रखा गया है कि इसकी पृथ्वी तल से दूरी पृथ्वी की त्रिज्या के समान है। यदि डोरी की लम्बाई y मी हो तो सूक्ष्म दोलन का आवर्त काल ________ से होगा। [दिया है, $g = \pi^2$ मी/से^{2}]

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 :	40585966
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 :	40585966
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 61 Question Id : 4058591075 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 a substance 'A' dissolves in solution of a mixture of 'B' and 'C' with their respective number of moles as n_A, n_B and n_C, Mole fraction of C in the solution is :

Options :

4058593411. $\frac{n_B}{n_A + n_B}$

4058593412. $\frac{n_C}{n_A \times n_B \times n_C}$

4058593413. $\frac{n_C}{n_A + n_B + n_C}$

4058593414. $\frac{n_C}{n_A - n_B - n_C}$

Question Number : 61 Question Id : 4058591075 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 कोई पदार्थ 'A', 'B' और 'C' के मिश्रण के विलयन में घुलता है और उनको मोलों की संख्या क्रमशः n_A, n_B और n_C हो, तो विलयन में C का मोल अंश है :

Options :

4058593411. $\frac{n_B}{n_A + n_B}$

4058593412. $\frac{n_C}{n_A \times n_B \times n_C}$

4058593413. $\frac{n_C}{n_A + n_B + n_C}$

4058593414. $\frac{n_C}{n_A - n_B - n_C}$

Question Number : 62 Question Id : 4058591076 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

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Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Given below are two statements:

Statement - I: Since Fluorine is more electronegative than nitrogen, the net dipole moment of NF_3 is greater than NH_3.

Statement - II: In NH_3, the orbital dipole due to lone pair and the dipole moment of NH bonds are in opposite direction, but in NF_3 the orbital dipole due to lone pair and dipole moments of N-F bonds are in same direction.

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

Options :

4058593415. Both Statement I and Statement II are true.

4058593416. Both Statement I and Statement II are false.

4058593417. Statement I is true but Statement II is false.

4058593418. Statement I is false but Statement II is true.

Question Number : 62 Question Id : 4058591076 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 है:

कथन - I: चूंकि फ्लुओरीन, नाइट्रोजन से अधिक विद्युत-ऋणात्मक होती है, NF_3 का नेट द्वि-ध्रुव आघूर्ण, NH_3 के द्वि ध्रुव से अधिक होता है।

कथन - II: NH_3 में, एकाकी युग्म के कारण कक्षीय द्वि-ध्रुव और NH आबंधों का द्वि-ध्रुव आघूर्ण विपरीत दिशा में होते हैं, परंतु NF_3 में एकाकी युगल का कक्षीय द्वि-ध्रुव और N-F आबंधों के द्वि-ध्रुव आघूर्ण समान दिशा में होते है।

ऊपर दिए गए कथनों के संदर्भ में, नीचे दिए विकल्पों में से सही उत्तर चुनिए।

Options :

4058593415. कथन I और कथन II दोनों सत्य है।

4058593416. कथन I और कथन II दोनों असत्य है।

4058593417. कथन I सत्य है परन्तु कथन II असत्य है।

4058593418. कथन I असत्य है परन्तु कथन II सत्य है।

Question Number : 63 Question Id : 4058591077 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 molecule / ion with square pyramidal shape is

Options :

4058593419. PF_5

4058593420. BrF_5

4058593421. PCl_5

4058593422. $[Ni(CN)_4]^{2-}$

Question Number : 63 Question Id : 4058591077 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

वर्ग पिरैमिडी आकार वाला अणु / आयन है:

Options :

4058593419. PF_5

4058593420. BrF_5

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4058593421. PCl_5

4058593422. $[Ni(CN)_4]^{2-}$

Question Number : 64 Question Id : 4058591078 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 from the following with highest depression in freezing point/lowest freezing point is

Options :

4058593423. 180 g of acetic acid dissolved in water

4058593424. 180 g of glucose dissolved in water

4058593425. 180 g of benzoic acid dissolved in benzene

4058593426. 180 g of acetic acid dissolved in benzene

Question Number : 64 Question Id : 4058591078 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

निम्नलिखित में से उच्चतम हिमांक अवनमन/निम्नतम हिमांक वाला विलयन है:

Options :

4058593423. जल में घुले ऐसीटिक अम्ल के 180 g वाला

4058593424.

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जल में घुले ग्लूकोस के 180 g वाला

4058593425. बेन्जीन में घुले बेन्जोइक अम्ल के 180 g वाला

4058593426. बेन्जीन में घुले ऐसीटिक अम्ल के 180 g वाला

Question Number : 65 Question Id : 4058591079 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

Reduction potential of ions are given below:

ClO_4^-	IO_4^-	BrO_4^-
$E° = 1.19$ V	$E° = 1.65$ V	$E° = 1.74$ V

The correct order of their oxidising power is :

Options :

4058593427. $ClO_4^- > IO_4^- > BrO_4^-$

4058593428. $IO_4^- > BrO_4^- > ClO_4^-$

4058593429. $BrO_4^- > IO_4^- > ClO_4^-$

4058593430. $BrO_4^- > ClO_4^- > IO_4^-$

Question Number : 65 Question Id : 4058591079 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

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आयनों के अपचयन विभव नीचे दिए गए हैं:

ClO_4^- $E^\circ = 1.19\ V$ IO_4^- $E^\circ = 1.65\ V$ BrO_4^- $E^\circ = 1.74\ V$

उनकी उपचायक क्षमताओं का सही क्रम है:

Options :

4058593427. $ClO_4^- > IO_4^- > BrO_4^-$

4058593428. $IO_4^- > BrO_4^- > ClO_4^-$

4058593429. $BrO_4^- > IO_4^- > ClO_4^-$

4058593430. $BrO_4^- > ClO_4^- > IO_4^-$

Question Number : 66 Question Id : 4058591080 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: Along the period, the chemical reactivity of the elements gradually increases from group 1 to group 18.
Statement - II: The nature of oxides formed by group 1 elements is basic while that of group 17 elements is acidic.
In the light of the above statements, choose the ***most appropriate*** from the options given below:

Options :

4058593431. Both Statement I and Statement II are True

4058593432. Both Statement I and Statement II are False

4058593433. Statement I is True But Statement II is False

4058593434. Statement I is False but statement I is true

Question Number : 66 Question Id : 4058591080 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:** किसी आवर्त में, तत्वों की रासायनिक अभिक्रियाशीलता धीरे-धीरे समूह 1 से समूह 18 में बढ़ती है।

कथन - **II:** समूह 1 तत्वों से बने ऑक्साइडों की प्रकृति क्षारीय होती है जबकि समूह 17 तत्वों के ऑक्साइडों की प्रकृति अम्लीय होती है।

ऊपर दिए गए कथनों के संदर्भ में, नीचे दिए विकल्पों में से सही उत्तर चुनिए।

Options :

4058593431. कथन I और कथन II दोनों सत्य है।

4058593432. कथन I और कथन II दोनों असत्य है।

4058593433. कथन I सत्य है परन्तु कथन II असत्य है।

4058593434. कथन I असत्य है परन्तु कथन II सत्य है।

Question Number : 67 Question Id : 4058591081 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

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Choose the correct statements about the hydrides of group 15 elements.

A. The stability of the hydrides decreases in the order $NH_3 > PH_3 > AsH_3 > SbH_3 > BiH_3$.
B. The reducing ability of the hydride increases in the order $NH_3 < PH_3 < AsH_3 < SbH_3 < BiH_3$.
C. Among the hydrides, NH_3 is strong reducing agent while BiH_3 is mild reducing agent.
D. The basicity of the hydrides increases in the order $NH_3 < PH_3 < AsH_3 < SbH_3 < BiH_3$.

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

Options :

4058593435. A and B only

4058593436. B and C only

4058593437. C and D only

4058593438. A and D only

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Question Number : 67 Question Id : 4058591081 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 15 तत्वों के हाइड्राइडों के बारे में सही कथन चुनिए:

A. हाइड्राइडों का स्थायित्व निम्नलिखित क्रम में घटता है: $NH_3 > PH_3 > AsH_3 > SbH_3 > BiH_3$.
B. हाइड्राइडों की अपचायक क्षमता निम्नलिखित क्रम में बढ़ती है: $NH_3 < PH_3 < AsH_3 < SbH_3 < BiH_3$.
C. हाइड्राइडों में, NH_3 एक प्रबल अपचायक है जबकि BiH_3 एक मृदु अपचायक है।
D. हाइड्राइडों की क्षमता निम्नलिखित क्रम में बढ़ती है: $NH_3 < PH_3 < AsH_3 < SbH_3 < BiH_3$.

नीचे दिए गए विकल्पों से सही उत्तर चुनिए:

Options :

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4058593435. केवल A और B

4058593436. केवल B और C

4058593437. केवल C और D

4058593438. केवल A और D

Question Number : 68 Question Id : 4058591082 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: H_2Te is more acidic than H_2S.

Reason R: Bond dissociation enthalpy of H_2Te is lower than H_2S.

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

Options :

4058593439. Both A and R are true and R is the correct explanation of A.

4058593440. Both A and R are true but R is NOT the correct explanation of A.

4058593441. A is true but R is false.

4058593442. A is false but R is true.

Question Number : 68 Question Id : 4058591082 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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Correct Marks : 4 Wrong Marks : 1

नीचे दो कथन दिए गए है। एक को अभिकथन A और दूसरे को कारण R द्वारा दर्शाया गया है:

अभिकथन A: H_2Te, H_2S से अधिक अम्लीय है।

कारण R: H_2Te की आबंध वियोजन एन्थैल्पी H_2S से कम है।

उपर दिए गए कथनों के संदर्भ में निम्नलिखित विकल्पों में से सही उत्तर चुनिए:

Options :

4058593439. A और R दोनों सत्य हैं और R, A की सही व्याख्या है।

4058593440. A और R दोनों सत्य हैं और R, A की सही व्याख्या नहीं है।

4058593441. A सत्य है परन्तु R असत्य है।

4058593442. A असत्य है परन्तु R सत्य है।

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Question Number : 69 Question Id : 4058591083 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

Alkaline oxidative fusion of MnO_2 gives "A" which on electrolytic oxidation in alkaline solution produces B. A and B respectively are

Options :

4058593443. Mn_2O_3 and MnO_4^{2-}

4058593444. MnO_4^{2-} and Mn_2O_7

4058593445. MnO_4^{2-} and MnO_4^-

4058593446. Mn_2O_7 and MnO_4^-

Question Number : 69 Question Id : 4058591083 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

MnO_2 का क्षारकीय उपचायी गलन "A" देता है जो क्षारकीय विलयन में वैधुत-अपघटनी उपचयन से B देता है। A और B क्रमशः हैः

Options :

4058593443. Mn_2O_3 और MnO_4^{2-}

4058593444. MnO_4^{2-} और Mn_2O_7

4058593445. MnO_4^{2-} और MnO_4^-

4058593446. Mn_2O_7 और MnO_4^-

Question Number : 70 Question Id : 4058591084 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 orange colour of $K_2Cr_2O_7$ and purple colour of $KMnO_4$ is due to

Options :

4058593447. $d \rightarrow d$ transitions in both

4058593448. $d \rightarrow d$ transitions in $K_2Cr_2O_7$ and charge transfer transitions in $KMnO_4$.

4058593449. $d \rightarrow d$ transitions in $KMnO_4$ and charge transfer transitions in $K_2Cr_2O_7$.

4058593450. Charge transfer transition in both.

Question Number : 70 Question Id : 4058591084 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

$K_2Cr_2O_7$ का नारंगी रंग और $KMnO_4$ का जामुनी रंग होता है:

Options :

4058593447. दोनों में $d \rightarrow d$ संक्रमणों के कारण

4058593448. $K_2Cr_2O_7$ में $d \rightarrow d$ संक्रमणों के कारण और $KMnO_4$ में आवेश स्थानांतरण संक्रमणों के कारण

4058593449. $KMnO_4$ में $d \rightarrow d$ संक्रमणों के कारण और $K_2Cr_2O_7$ में आवेश स्थानांतरण संक्रमणों के कारण

4058593450. दोनों में आवेश स्थानांतरण संक्रमण के कारण

Question Number : 71 Question Id : 4058591085 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 coordination geometry around the manganese in decacarbonyldimanganese (0) is

Options :

4058593451. Octahedral

4058593452. Square pyramidal

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4058593453. Trigonal bipyramidal

4058593454. Square planar

Question Number : 71 Question Id : 4058591085 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

डेकाकार्बोनिल डाइमैंगनीज़ (0) में मैंगनीज़ के चारों ओर उपसहसंयोजन ज्यामिति होती है:

Options :

4058593451. अष्टफलकीय

4058593452. वर्ग पिरैमिडी

4058593453. त्रिकोणीय द्वि-पिरैमिडी

4058593454. वर्ग समतली

Question Number : 72 Question Id : 4058591086 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

Which among the following purification methods is based on the principle of "Solubility" in two different solvents?

Options :

4058593455. Sublimation

4058593456. Distillation

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4058593457. Differential Extraction

4058593458. Column Chromatography

Question Number : 72 Question Id : 4058591086 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

निम्नलिखित शोधन विधियों में से कौन-सी दो भिन्न विलायकों में विलेयता के सिद्धांत पर आधारित है?

Options :

4058593455. ऊर्ध्वपातन

4058593456. आसवन

4058593457. विभेदी निष्कर्षण

4058593458. वर्णलेखिकी

Question Number : 73 Question Id : 4058591087 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 stability order of carbocations is

Options :

4058593459. $\overset{+}{C}H_3 > CH_3-\overset{+}{C}H_2 > CH_3-\overset{+}{C}H(CH_3) > (CH_3)_3C^+$

4058593460.

$\overset{+}{C}H_3 > (CH_3)_2\overset{+}{C}H > CH_3-\overset{+}{C}H_2 > (CH_3)_3\overset{+}{C}$

4058593461. $(CH_3)_3\overset{+}{C} > (CH_3)_2\overset{+}{C}H > CH_3-\overset{+}{C}H_2 > \overset{+}{C}H_3$

4058593462. $(CH_3)_3C^+ > CH_3-\overset{+}{C}H_2 > (CH_3)_2\overset{+}{C}H > \overset{+}{C}H_3$

Question Number : 73 Question Id : 4058591087 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

कार्बधनायनों के स्थायित्व का सही क्रम है:

Options :

4058593459. $\overset{+}{C}H_3 > CH_3-\overset{+}{C}H_2 > CH_3-\overset{+}{C}H(CH_3) > (CH_3)_3C^+$

4058593460. $\overset{+}{C}H_3 > (CH_3)_2\overset{+}{C}H > CH_3-\overset{+}{C}H_2 > (CH_3)_3\overset{+}{C}$

4058593461. $(CH_3)_3\overset{+}{C} > (CH_3)_2\overset{+}{C}H > CH_3-\overset{+}{C}H_2 > \overset{+}{C}H_3$

4058593462. $(CH_3)_3C^+ > CH_3-\overset{+}{C}H_2 > (CH_3)_2\overset{+}{C}H > \overset{+}{C}H_3$

Question Number : 74 Question Id : 4058591088 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

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IUPAC name of following compound is :

$$CH_3-\underset{\underset{NH_2}{|}}{CH}-CH_2-CN$$

Options :

4058593463. 3-Aminopropanenitrile

4058593464. 3-Aminobutanenitrile

4058593465. 2-Aminobutanenitrile

4058593466. 2-Aminopentanenitrile

Question Number : 74 Question Id : 4058591088 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

निम्नलिखित यौगिक का आई.यू.पी.ए.सी. नाम है:

$$CH_3-\underset{\underset{NH_2}{|}}{CH}-CH_2-CN$$

Options :

4058593463. 3-ऐमीनोप्रोपेननाइट्राइल

4058593464. 3-ऐमीनोब्यूटेननाइट्राइल

4058593465. 2-ऐमीनोब्यूटेननाइट्राइल

4058593466. 2-ऐमीनोपेन्टेननाइट्राइल

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Question Number : 75 Question Id : 4058591089 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: High concentration of strong nucleophilic reagent with secondary alkyl halides which do not have bulky substituents will follow $S_N{}^2$ mechanism.

Statement - II: A secondary alkyl halide when treated with a large excess of ethanol follows $S_N{}^1$ mechanism.

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

Options :

4058593467. Both Statement I and Statement II are true.

4058593468. Both Statement I and Statement II are false.

4058593469. Statement I is true but Statement II is false.

4058593470. Statement I is false but Statement II is true.

Question Number : 75 Question Id : 4058591089 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 है:

कथन - I: द्वितीयक ऐल्किल हैलाइडों जिनमें स्थूल प्रतिस्थापी नहीं होते हैं, के साथ प्रबल नामिकस्नेही अभिकर्मक की उच्च सांद्रता $S_N{}^2$ क्रियाविधि का पालन करती है।

कथन - II: किसी द्वितीयक ऐल्किल हैलाइड को जब एथेनॉल के आधिक्य के साथ उपचारित किया जाता है, तब $S_N{}^1$ क्रियाविधि हो सकती है।

उपर दिए गए कथनों के संदर्भ में, नीचे दिए विकल्पों में से सही उत्तर चुनिए।

Options :

4058593467. कथन I और कथन II दोनों सत्य है।

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4058593468. कथन I और कथन II दोनों असत्य है।

4058593469. कथन I सत्य है परन्तु कथन II असत्य है।

4058593470. कथन I असत्य है परन्तु कथन II सत्य है।

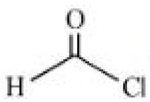
Question Number : 76 Question Id : 4058591090 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Salicylaldehyde is synthesized from phenol, when reacted with

Options :

4058593471. CO_2, NaOH

4058593472.  , NaOH

4058593473. $HCCl_3$, NaOH

4058593474. CCl_4, NaOH

Question Number : 76 Question Id : 4058591090 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

सैलिसिलैल्डिहाइड को फ़ीनॉल से संश्लेषित किया जाता है, जब निम्नलिखित के साथ अभिक्रिया की जाती है:

Options :

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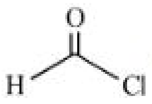
4058593471. CO_2, NaOH

4058593472.  , NaOH

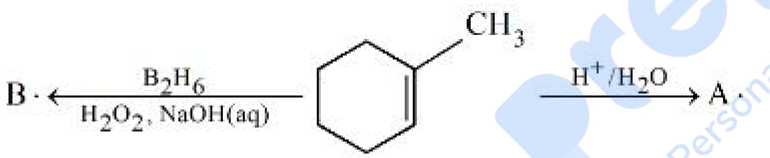
4058593473. $HCCl_3$, NaOH

4058593474. CCl_4, NaOH

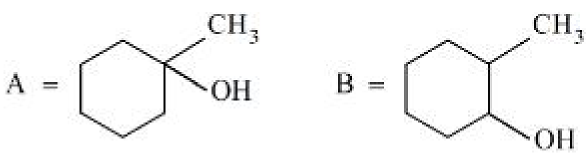
Question Number : 77 Question Id : 4058591091 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

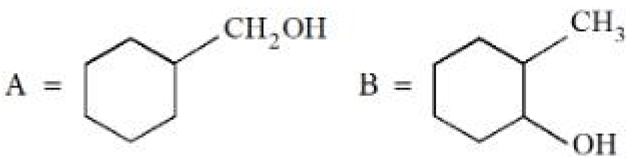
Correct Marks : 4 Wrong Marks : 1

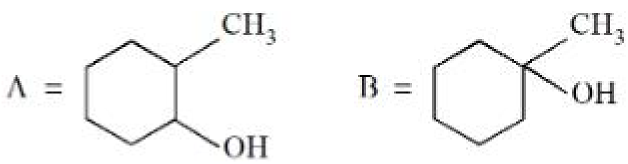
Products A and B formed in the following set of reactions are



Options :

4058593475. 

4058593476. 

4058593477. 

4058593478.

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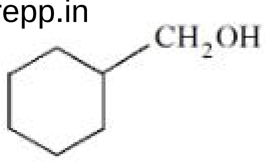
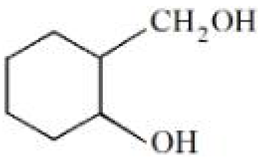
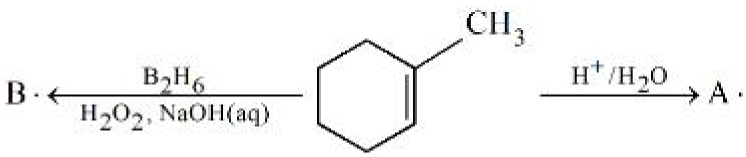
A =  B = 

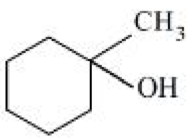
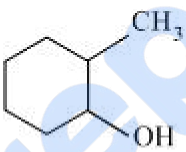
Question Number : 77 Question Id : 4058591091 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

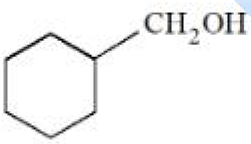
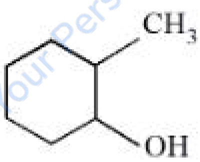
Correct Marks : 4 Wrong Marks : 1

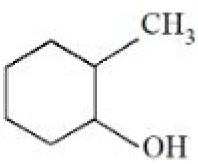
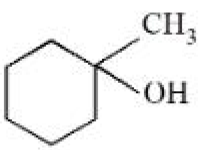
अभिक्रियाओं के निम्नलिखित समुच्चय में बने उत्पाद A और B हैः

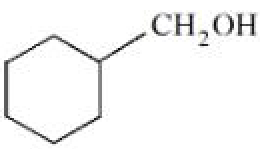
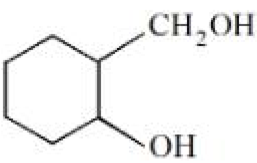


Options :

4058593475. A =  B = 

4058593476. A =  B = 

4058593477. A =  B = 

4058593478. A =  B = 

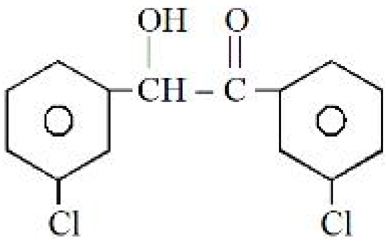
Question Number : 78 Question Id : 4058591092 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

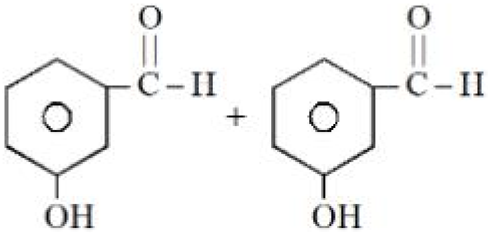
Instruction Time : 0

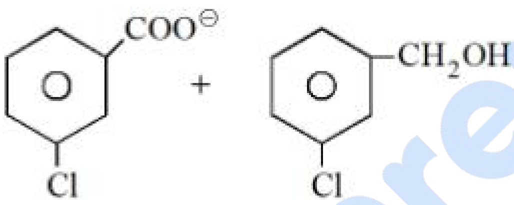
Correct Marks : 4 Wrong Marks : 1

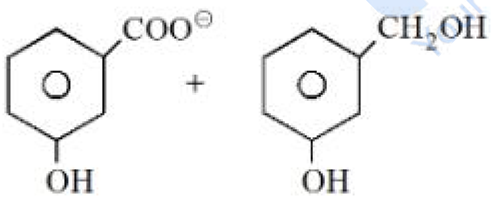
m-chlorobenzaldehyde on treatment with 50% KOH solution yields

Options :

4058593479. 

4058593480. 

4058593481. 

4058593482. 

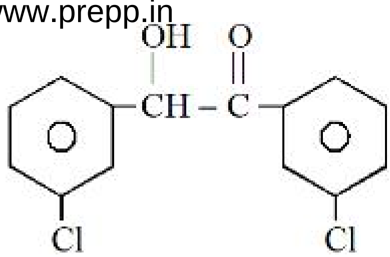
Question Number : 78 Question Id : 4058591092 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

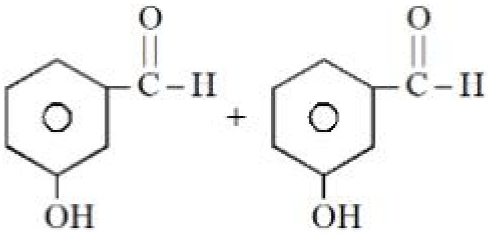
Correct Marks : 4 Wrong Marks : 1

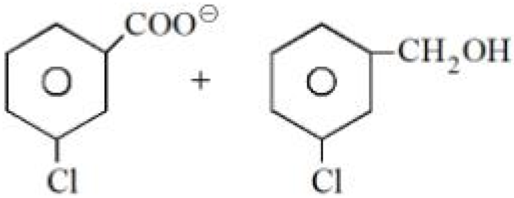
मेटा-क्लोरोबेन्जैल्डिहाइड 50% KOH विलयन के साथ उपचार से देता है:

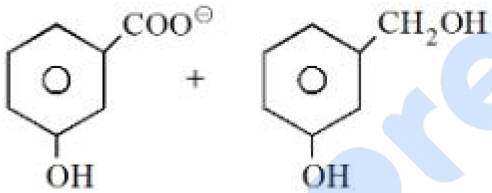
Options :

4058593479.



4058593480. 

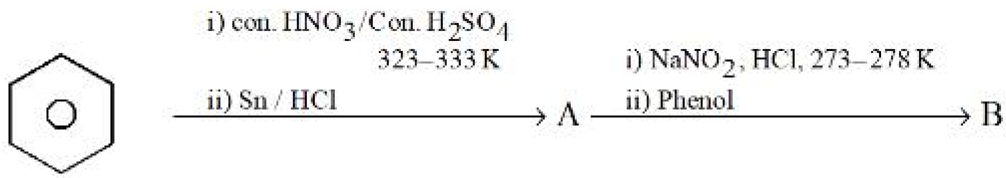
4058593481. 

4058593482. 

Question Number : 79 Question Id : 4058591093 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 products A and B formed in the following reaction scheme are respectively



Options :

4058593483.

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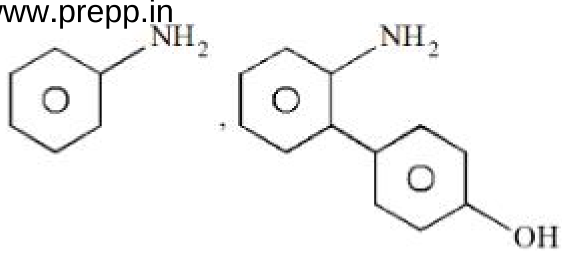
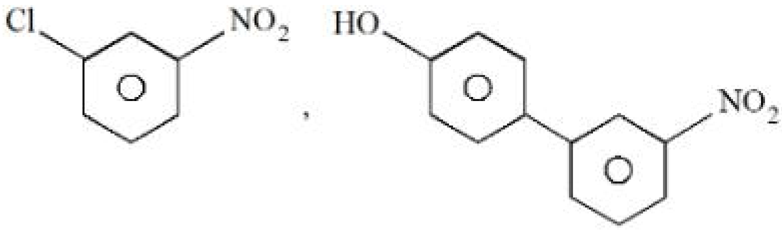
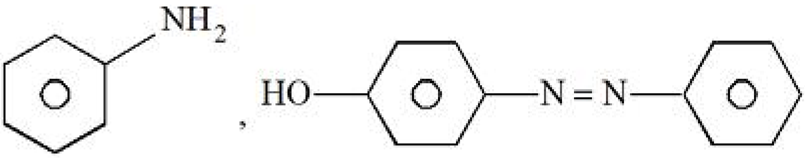
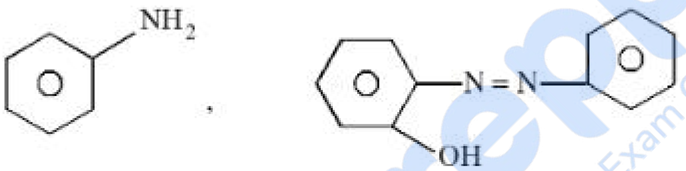


4058593484. 

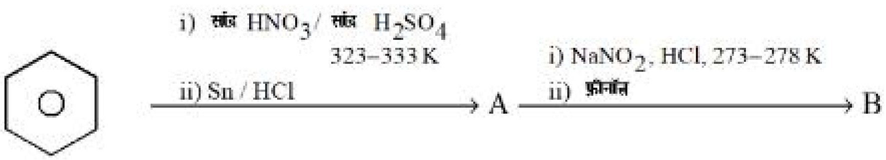
4058593485. 

4058593486. 

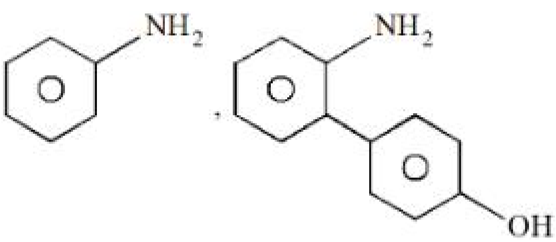
Question Number : 79 Question Id : 4058591093 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

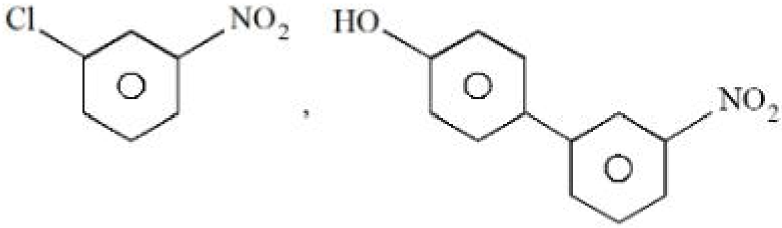
Correct Marks : 4 Wrong Marks : 1

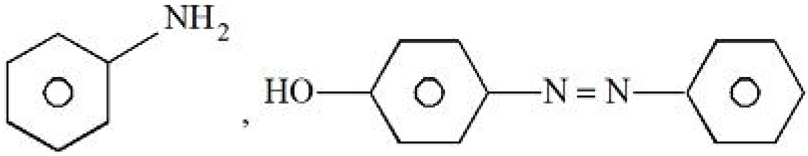
निम्नलिखित अभिक्रिया क्रम में बने उत्पाद A और B क्रमशः हैः

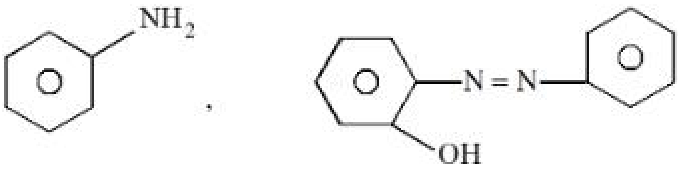


Options :

4058593483. 

4058593484. 

4058593485. 

4058593486. 

Question Number : 80 Question Id : 4058591094 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 and B formed in the following reactions are:

$$CrO_2Cl_2 + 4NaOH \rightarrow A + 2NaCl + 2H_2O$$
$$A + 2HCl + 2H_2O_2 \rightarrow B + 3H_2O$$,

Options :

4058593487. $A = Na_2Cr_2O_7, B = CrO_3$

4058593488. $A = Na_2Cr_2O_4, B = CrO_4$

4058593489. $A = Na_2Cr_2O_7, B = CrO_5$

4058593490. $A = Na_2CrO_4, B = CrO_5$

Question Number : 80 Question Id : 4058591094 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

निम्नलिखित अभिक्रियाओं में बने A और B हैं:

$$CrO_2Cl_2 + 4NaOH \rightarrow A + 2NaCl + 2H_2O$$
$$A + 2HCl + 2H_2O_2 \rightarrow B + 3H_2O$$

Options :

4058593487. $A = Na_2Cr_2O_7, B = CrO_3$

4058593488. $A = Na_2Cr_2O_4, B = CrO_4$

4058593489. $A = Na_2Cr_2O_7, B = CrO_5$

4058593490. $A = Na_2CrO_4, B = CrO_5$

Chemistry Section B

Section Id :	40585967
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

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Sub-Section Number : 1

Sub-Section Id : 40585967

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 81 Question Id : 4058591095 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 spectral lines obtained in He^+ spectra, when an electron makes transition from fifth excited state to first excited state will be

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

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Question Number : 81 Question Id : 4058591095 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

He^+ के स्पेक्ट्रम में, जब एक इलेक्ट्रॉन पाँचवी उत्तेजित अवस्था से प्रथम उत्तेजित अवस्था में संक्रमण करता है, तब प्राप्त स्पेक्ट्रमी रेखाओं की संख्या _________ होगी।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

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Question Number : 82 Question Id : 4058591096 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Two reactions are given below:

$$2Fe_{(s)} + \frac{3}{2}O_{2(g)} \rightarrow Fe_2O_{3(s)}, \ \Delta H^\circ = -822 \text{ kJ/mol}$$

$$C_{(s)} + \frac{1}{2}O_{2(g)} \rightarrow CO_{(g)}, \ \Delta H^\circ = -110 \text{ kJ/mol}$$

Then enthalpy change for following reaction $3C_{(s)} + Fe_2O_{3(s)} \rightarrow 2Fe_{(s)} + 3CO_{(g)}$ is __________ kJ/mol.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

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Question Number : 82 Question Id : 4058591096 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

नीचे दो अभिक्रियाएँ दी गई हैः

$$2Fe_{(s)} + \frac{3}{2}O_{2(g)} \rightarrow Fe_2O_{3(s)}, \ \Delta H^\circ = -822 \text{ kJ/mol}$$

$$C_{(s)} + \frac{1}{2}O_{2(g)} \rightarrow CO_{(g)}, \ \Delta H^\circ = -110 \text{ kJ/mol}$$

तब निम्नलिखित अभिक्रिया के लिए $3C_{(s)} + Fe_2O_{3(s)} \rightarrow 2Fe_{(s)} + 3CO_{(g)}$ एन्थैल्पी परिवर्तन __________ kJ/mol होता 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 : 4058591097 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

The pH of an aqueous solution containing 1M benzoic acid ($pK_a = 4.20$) and 1M sodium benzoate is 4.5. The volume of benzoic acid solution in 300 mL of this buffer solution is __________ mL. (given : log 2 = 0.3)

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 : 4058591097 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

एक जलीय विलयन जिसें 1M बेन्ज़ोइक अम्ल ($pK_a = 4.20$) और 1M सोडियम बेन्ज़ोऐट है, का pH 4.5 है। इस बफर विलयन के 300 mL में बेन्ज़ोइक अम्ल विलयन का आयतन __________ mL है। (दिया गया है : log 2 = 0.3)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

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Question Number : 84 Question Id : 4058591098 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Total number of species from the following which can undergo disproportionation reaction is _________.

$H_2O_2, ClO_3^-, P_4, Cl_2, Ag, Cu^{+1}, F_2, NO_2, K^+$

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 : 4058591098 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित में से उन स्पीशीज़ की संख्या जिनकी असमानुपातन अभिक्रिया हो सकती है, _________ है।

$H_2O_2, ClO_3^-, P_4, Cl_2, Ag, Cu^{+1}, F_2, NO_2, K^+$

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 : 4058591099 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

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NO_2 required for a reaction is produced by decomposition of N_2O_5 in CCl_4 as by equation

$2N_2O_{5(g)} \rightarrow 4NO_{2(g)} + O_{2(g)}$

The initial concetration. of N_2O_5 is 3 mol L^{-1} and it is 2.75 mol L^{-1} after 30 minutes.

The rate of formation of NO_2 is $x \times 10^{-3}$ mol L^{-1} min^{-1}, value of x is _______. (nearest integer)

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 : 4058591099 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित अभिक्रिया के अनुसार, CCl_4 में N_2O_5 के विघटन से किसी अभिक्रिया के लिए आवश्यक NO_2 को प्राप्त किया जाता है:

$2N_2O_{5(g)} \rightarrow 4NO_{2(g)} + O_{2(g)}$

N_2O_5 को आरंभिक सांद्रता 3 mol L^{-1} है और 30 मिनट के बाद 2.75 mol L^{-1} है। NO_2 के बनने (संभवन) का वेग $x \times 10^{-3}$ mol L^{-1} min^{-1} है। x का मान _______ है।
(निकटतम पूर्णांक)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

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Question Number : 86 Question Id : 4058591100 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 complexes which show optical isomerism among the following is ________.

cis–$[Cr(ox)_2Cl_2]^{3-}$, $[Co(en)_3]^{3+}$, cis–$[Pt(en)_2Cl_2]^{2+}$, cis–$[Co(en)_2Cl_2]^{+}$,

trans–$[Pt(en)_2Cl_2]^{2+}$, trans–$[Cr(ox)_2Cl_2]^{3-}$

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 : 4058591100 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित में से प्रकाशिक समावयवता दर्शाने वाले संकुलों की संख्या ________ है।

सिस – $[Cr(ox)_2Cl_2]^{3-}$, $[Co(en)_3]^{3+}$, सिस – $[Pt(en)_2Cl_2]^{2+}$, सिस – $[Co(en)_2Cl_2]^{+}$,

ट्रांस – $[Pt(en)_2Cl_2]^{2+}$, ट्रांस – $[Cr(ox)_2Cl_2]^{3-}$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

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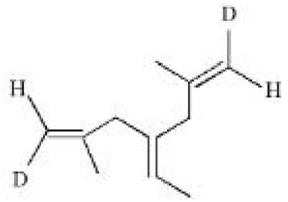
Question Number : 87 Question Id : 4058591101 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Number. of geometrical isomers possible for the given structure is/are __________.



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

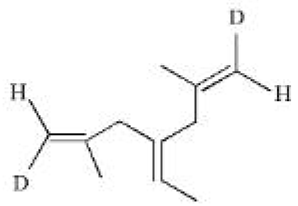
1

Question Number : 87 Question Id : 4058591101 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

नीचे दी गई संरचना के लिए संभव ज्यामितीय समावयवों की संख्या __________ है।



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

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Question Number : 88 Question Id : 4058591102 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

2-chlorobutane + $Cl_2 \rightarrow C_4H_8Cl_2$ (isomers)

Total number of optically active isomers shown by $C_4H_8Cl_2$, obtained in the above reaction 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 : 4058591102 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

2-क्लोरोब्यूटेन + $Cl_2 \rightarrow C_4H_8Cl_2$ (समावयव)

उपर दी गई अभिक्रिया में बने $C_4H_8Cl_2$, द्वारा ध्रुवण धूर्णक समावयवों 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 : 89 Question Id : 4058591103 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

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The total number of correct statements, regarding the nucleic acids is _______

A. RNA is regarded as the reserve of genetic information
B. DNA molecule self-duplicates during cell division
C. DNA synthesizes proteins in the cell
D. The message for the synthesis of particular proteins is present in DNA
E. Identical DNA strands are transferred to daughter cells.

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 : 4058591103 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

न्यूक्लीक अम्लों के संदर्भ में, सही कथनों की कुल संख्या _______ है।

A. RNA को आनुवांशिक सूचनाओं के संग्राहक की तरह जाना जाता है।
B. कोशिका विभाजन के दौरान DNA अणु का स्वप्रतिकरण होता है।
C. DNA कोशिका में प्रोटीन संश्लेषण करता है।
D. किसी विशेष प्रोटीन के संश्लेषण का संदेश DNA में उपस्थित होता है।
1. पुत्री कोशिका को समान DNA रज्जुक स्थानांतरित होते हैं।

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 : 4058591104 Question Type : SA Calculator : None

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

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Correct Marks : 4 Wrong Marks : 1

Number of metal ions characterized by flame test among the following is ______.

Sr^{2+}, Ba^{2+}, Ca^{2+}, Cu^{2+}, Zn^{2+}, Co^{2+}, Fe^{2+}

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 : 4058591104 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित में से ज्वाला परीक्षण द्वारा अभिनिर्धारित धातु आयनों की संख्या ______ है।

Sr^{2+}, Ba^{2+}, Ca^{2+}, Cu^{2+}, Zn^{2+}, Co^{2+}, Fe^{2+}

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

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