

National Testing Agency

Question Paper Name :	B Tech 8th April 2024 Shift 1
Subject Name :	B. Tech
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B. Tech

Group Number :	1
Group Id :	680191187
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 :	680191257
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 :	680191347
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 1 Question Id : 68019114334 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 $[t]$ be the greatest integer less than or equal to t . Let A be the set of all prime factors of 2310 and $f : A \rightarrow \mathbb{Z}$ be the function $f(x) = \left\lceil \log_2 \left(x^2 + \left\lceil \frac{x^3}{5} \right\rceil \right) \right\rceil$. The number of one-to-one functions from A to the range of f is

Options :

68019155991. 20

68019155992. 24

68019155993. 120

68019155994. 25

Question Number : 1 Question Id : 68019114334 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 $[t]$ महत्तम पूर्णांक फलन है। माना 2310 के सभी अभाज्य गुणनखंडों का समुच्चय A है

तथा $f : A \rightarrow \mathbb{Z}$, $f(x) = \left\lfloor \log_2 \left(x^2 + \left\lfloor \frac{x^3}{5} \right\rfloor \right) \right\rfloor$ है। A से f के परिसर में एकैकी फलनों की संख्या है

Options :

68019155991. 20

68019155992. 24

68019155993. 120

68019155994. 25

Question Number : 2 Question Id : 68019114335 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 z be a complex number such that $|z + 2| = 1$ and $\operatorname{Im}\left(\frac{z+1}{z+2}\right) = \frac{1}{5}$. Then the value of $\left| \operatorname{Re}(\overline{z+2}) \right|$ is

Options :

68019155995. $\frac{2\sqrt{6}}{5}$

68019155996. $\frac{24}{5}$

68019155997. $\frac{\sqrt{6}}{5}$

68019155998. $\frac{1+\sqrt{6}}{5}$

Question Number : 2 Question Id : 68019114335 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 सम्मिश्र संख्या z के लिए $|z + 2| = 1$ तथा $\operatorname{Im}\left(\frac{z+1}{z+2}\right) = \frac{1}{5}$ हैं। तो $\left|\operatorname{Re}\left(\overline{z+2}\right)\right|$ का मान है

Options :

68019155995. $\frac{2\sqrt{6}}{5}$

68019155996. $\frac{24}{5}$

68019155997. $\frac{\sqrt{6}}{5}$

68019155998. $\frac{1+\sqrt{6}}{5}$

Question Number : 3 Question Id : 68019114336 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The sum of all the solutions of the equation $(8)^{2x} - 16 \cdot (8)^x + 48 = 0$ is :

Options :

68019155999. $\log_8(4)$

68019156000. $\log_8(6)$

68019156001. $1 + \log_6(8)$

68019156002. $1 + \log_8(6)$

Question Number : 3 Question Id : 68019114336 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

समीकरण $(8)^{2x} - 16 \cdot (8)^x + 48 = 0$ के सभी हलों का योग है :

Options :

68019155999. $\log_8(4)$

68019156000. $\log_8(6)$

68019156001. $1 + \log_6(8)$

68019156002. $1 + \log_8(6)$

Question Number : 4 Question Id : 68019114337 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 $A = \begin{bmatrix} 2 & a & 0 \\ 1 & 3 & 1 \\ 0 & 5 & b \end{bmatrix}$. If $A^3 = 4A^2 - A - 21I$, where I is the identity matrix of order 3×3 , then $2a + 3b$ is equal to

Options :

68019156003. -9

68019156004. -13

68019156005. -12

68019156006. -10

Question Number : 4 Question Id : 68019114337 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 $A = \begin{bmatrix} 2 & a & 0 \\ 1 & 3 & 1 \\ 0 & 5 & b \end{bmatrix}$ यदि $A^3 = 4A^2 - A - 21I$, जहाँ I कोटि 3×3 की तत्समक आव्यूह है, तो $2a + 3b$ बराबर है

Options :

68019156003. -9

68019156004. -13

68019156005. -12

68019156006. -10

Question Number : 5 Question Id : 68019114338 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 equations of two sides AB and AC of a triangle ABC are $4x + y = 14$ and $3x - 2y = 5$, respectively. The point $\left(2, -\frac{4}{3}\right)$ divides the third side BC internally in the ratio 2:1. the equation of the side BC is

Options :

68019156007. $x + 3y + 2 = 0$

68019156008. $x - 3y - 6 = 0$

68019156009. $x + 6y + 6 = 0$

68019156010. $x - 6y - 10 = 0$

Question Number : 5 Question Id : 68019114338 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

किसी त्रिभुज ABC की दो भुजाओं AB तथा AC की समीकरण क्रमशः $4x + y = 14$ तथा $3x - 2y = 5$ है। बिन्दु $\left(2, -\frac{4}{3}\right)$ तीसरी भुजा BC को 2:1 में अंतः विभाजित करता है। तो भुजा BC की समीकरण है -

Options :

68019156007. $x + 3y + 2 = 0$

68019156008. $x - 3y - 6 = 0$

68019156009. $x + 6y + 6 = 0$

68019156010. $x - 6y - 10 = 0$

Question Number : 6 Question Id : 68019114339 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 set $R = \{(a, b) : a + 5b = 42, a, b \in \mathbb{N}\}$ has m elements and

$\sum_{n=1}^m (1 - i^{n!}) = x + iy$, where $i = \sqrt{-1}$, then the value of $m + x + y$ is

Options :

68019156011. 12

68019156012. 8

68019156013. 5

68019156014. 4

Question Number : 6 Question Id : 68019114339 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 समुच्चय $R = \{(a, b) : a + 5b = 42, a, b \in \mathbb{N}\}$ में m अवयव हैं तथा $\sum_{n=1}^m (1 - i^{n!}) = x + iy$,

जहाँ $i = \sqrt{-1}$, तो $m + x + y$ का मान है -

Options :

68019156011. 12

68019156012. 8

68019156013. 5

68019156014. 4

Question Number : 7 Question Id : 68019114340 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

For the function $f(x) = (\cos x) - x + 1$, $x \in \mathbb{R}$, between the following two statements

(S1) $f(x) = 0$ for only one value of x in $[0, \pi]$.

(S2) $f(x)$ is decreasing in $\left[0, \frac{\pi}{2}\right]$ and increasing in $\left[\frac{\pi}{2}, \pi\right]$.

Options :

68019156015. Both (S1) and (S2) are correct.

68019156016. Only (S1) is correct.

68019156017. Only (S2) is correct.

68019156018. Both (S1) and (S2) are incorrect.

Question Number : 7 Question Id : 68019114340 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

फलन $f(x) = (\cos x) - x + 1$, $x \in \mathbb{R}$ के लिए, निम्नलिखित दो कथनों

(S1) $[0, \pi]$ में x के केवल एक मान के लिए $f(x) = 0$ है।

(S2) $\left[0, \frac{\pi}{2}\right]$ में $f(x)$ हासमान है तथा $\left[\frac{\pi}{2}, \pi\right]$ में वर्धमान है।

में से

Options :

68019156015. (S1) तथा (S2) दोनों सही हैं।

68019156016. केवल (S1) सही है।

68019156017. केवल (S2) सही है।

68019156018. (S1) तथा (S2) दोनों गलत हैं।

Question Number : 8 Question Id : 68019114341 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 number of critical points of the function $f(x) = (x - 2)^{2/3} (2x + 1)$ is

Options :

68019156019. 0

68019156020. 1

68019156021. 2

68019156022. 3

Question Number : 8 Question Id : 68019114341 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

फलन $f(x) = (x - 2)^{2/3} (2x + 1)$ के क्रांतिक बिंदुओं की संख्या है

Options :

68019156019. 0

68019156020. 1

68019156021. 2

68019156022. 3

Question Number : 9 Question Id : 68019114342 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 $f(x) = 4\cos^3 x + 3\sqrt{3}\cos^2 x - 10$. The number of points of local maxima of f in interval $(0, 2\pi)$ is

Options :

68019156023. 1

68019156024. 2

68019156025. 3

68019156026. 4

Question Number : 9 Question Id : 68019114342 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 $f(x) = 4\cos^3 x + 3\sqrt{3}\cos^2 x - 10$ है। अंतराल $(0, 2\pi)$ में f के स्थानीय उच्चतम मान के बिंदुओं की संख्या है

Options :

68019156023. 1

68019156024. 2

68019156025. 3

68019156026. 4

Question Number : 10 Question Id : 68019114343 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 $I(x) = \int \frac{6}{\sin^2 x (1 - \cot x)^2} dx$. If $I(0) = 3$, then $I\left(\frac{\pi}{12}\right)$ is equal to

Options :

68019156027. $2\sqrt{3}$

68019156028. $3\sqrt{3}$

68019156029. $6\sqrt{3}$

68019156030. $\sqrt{3}$

Question Number : 10 Question Id : 68019114343 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 $I(x) = \int \frac{6}{\sin^2 x (1 - \cot x)^2} dx$ है। यदि $I(0) = 3$ है, तो $I\left(\frac{\pi}{12}\right)$ बराबर है

Options :

68019156027. $2\sqrt{3}$

68019156028. $3\sqrt{3}$

68019156029. $6\sqrt{3}$

68019156030. $\sqrt{3}$

Question Number : 11 Question Id : 68019114344 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 value of $k \in \mathbb{N}$ for which the integral $I_n = \int_0^1 (1-x^k)^n dx$, $n \in \mathbb{N}$, satisfies

$147 I_{20} = 148 I_{21}$ is

Options :

68019156031. 8

68019156032. 10

68019156033. 14

68019156034. 7

Question Number : 11 Question Id : 68019114344 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

$k \in \mathbb{N}$ का वह मान, जिसके लिए समाकलन $I_n = \int_0^1 (1-x^k)^n dx$, $n \in \mathbb{N}$, समीकरण

$147 I_{20} = 148 I_{21}$ को संतुष्ट करता है, है

Options :

68019156031. 8

68019156032. 10

68019156033. 14

68019156034. 7

Question Number : 12 Question Id : 68019114345 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 $f(x)$ be a positive function such that the area bounded by $y = f(x)$, $y = 0$ from $x = 0$ to $x = a > 0$ is $e^{-a} + 4a^2 + a - 1$. Then the differential equation, whose general solution is $y = c_1 f(x) + c_2$, where c_1 and c_2 are arbitrary constants, is

Options :

68019156035. $(8e^x - 1) \frac{d^2 y}{dx^2} - \frac{dy}{dx} = 0$

68019156036. $(8e^x - 1) \frac{d^2 y}{dx^2} + \frac{dy}{dx} = 0$

68019156037. $(8e^x + 1) \frac{d^2 y}{dx^2} + \frac{dy}{dx} = 0$

68019156038. $(8e^x + 1) \frac{d^2 y}{dx^2} - \frac{dy}{dx} = 0$

Question Number : 12 Question Id : 68019114345 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 धनात्मक फलन $f(x)$ के लिए $x = 0$ से $x = a > 0$ तक $y = f(x)$, $y = 0$ से परिबद्ध क्षेत्र का क्षेत्रफल $e^{-a} + 4a^2 + a - 1$ है। तो वह अवकल समीकरण, जिसका व्यापक हल $y = c_1 f(x) + c_2$ है, जहाँ c_1 तथा c_2 स्वेच्छ अचर हैं, है

Options :

68019156035. $(8e^x - 1) \frac{d^2 y}{dx^2} - \frac{dy}{dx} = 0$

68019156036. $(8e^x - 1) \frac{d^2 y}{dx^2} + \frac{dy}{dx} = 0$

68019156037. $(8e^x + 1) \frac{d^2 y}{dx^2} + \frac{dy}{dx} = 0$

68019156038. $(8e^x + 1) \frac{d^2 y}{dx^2} - \frac{dy}{dx} = 0$

Question Number : 13 Question Id : 68019114346 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

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

$(1+y^2)e^{\tan x} dx + \cos^2 x (1 + e^{2\tan x}) dy = 0$, $y(0) = 1$. Then $y\left(\frac{\pi}{4}\right)$ is equal to

Options :

68019156039. $\frac{1}{e^2}$

68019156040. $\frac{1}{e}$

68019156041. $\frac{2}{e}$

68019156042. $\frac{2}{e^2}$

Question Number : 13 Question Id : 68019114346 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

माना अवकल समीकरण $(1+y^2)e^{\tan x} dx + \cos^2 x (1 + e^{2\tan x}) dy = 0, y(0) = 1$ का
हल $y = y(x)$ है। तो $y\left(\frac{\pi}{4}\right)$ बराबर है

Options :

68019156039. $\frac{1}{e^2}$

68019156040. $\frac{1}{e}$

68019156041. $\frac{2}{e}$

68019156042. $\frac{2}{e^2}$

Question Number : 14 Question Id : 68019114347 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 shortest distance between the lines

$$L_1 : \vec{r} = (2 + \lambda)\hat{i} + (1 - 3\lambda)\hat{j} + (3 + 4\lambda)\hat{k}, \quad \lambda \in \mathbb{R}$$

$$L_2 : \vec{r} = 2(1 + \mu)\hat{i} + 3(1 + \mu)\hat{j} + (5 + \mu)\hat{k}, \quad \mu \in \mathbb{R}$$

is $\frac{m}{\sqrt{n}}$, where $\gcd(m, n) = 1$, then the value of $m + n$ equals

Options :

68019156043. 377

68019156044. 384

68019156045. 390

68019156046. 387

Question Number : 14 Question Id : 68019114347 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 रेखाओं

$$L_1 : \vec{r} = (2 + \lambda)\hat{i} + (1 - 3\lambda)\hat{j} + (3 + 4\lambda)\hat{k}, \quad \lambda \in \mathbb{R}$$

$$L_2 : \vec{r} = 2(1 + \mu)\hat{i} + 3(1 + \mu)\hat{j} + (5 + \mu)\hat{k}, \quad \mu \in \mathbb{R}$$

के बीच न्यूनतम दूरी $\frac{m}{\sqrt{n}}$ है, जहाँ $\gcd(m, n) = 1$ है, तो $m + n$ का मान बराबर है

Options :

68019156043. 377

68019156044. 384

68019156045. 390

68019156046. 387

Question Number : 15 Question Id : 68019114348 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 the circles $C_1 : (x - \alpha)^2 + (y - \beta)^2 = r_1^2$ and $C_2 : (x - 8)^2 + \left(y - \frac{15}{2}\right)^2 = r_2^2$ touch each other externally at the point (6, 6). If the point (6, 6) divides the line segment joining the centres of the circles C_1 and C_2 internally in the ratio 2:1, then $(\alpha + \beta) + 4(r_1^2 + r_2^2)$ equals

Options :

68019156047. 110

68019156048. 125

68019156049. 130

68019156050. 145

Question Number : 15 Question Id : 68019114348 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 वृत्त $C_1 : (x - \alpha)^2 + (y - \beta)^2 = r_1^2$ तथा $C_2 : (x - 8)^2 + \left(y - \frac{15}{2}\right)^2 = r_2^2$, एक दूसरे को बाह्यतः बिन्दु (6, 6) पर स्पर्श करते हैं। यदि बिंदु (6, 6) वृत्तों C_1 तथा C_2 के केन्द्रों को मिलाने वाले रेखाखंड को अंतः 2:1 के अनुपात में बाँटता है, तो $(\alpha + \beta) + 4(r_1^2 + r_2^2)$ बराबर है

Options :

68019156047. 110

68019156048. 125

68019156049. 130

68019156050. 145

Question Number : 16 Question Id : 68019114349 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 $H: \frac{-x^2}{a^2} + \frac{y^2}{b^2} = 1$ be the hyperbola, whose eccentricity is $\sqrt{3}$ and the length of the latus rectum is $4\sqrt{3}$. Suppose the point $(\alpha, 6)$, $\alpha > 0$ lies on H . If β is the product of the focal distances of the point $(\alpha, 6)$, then $\alpha^2 + \beta$ is equal to

Options :

68019156051. 169

68019156052. 170

68019156053. 171

68019156054. 172

Question Number : 16 Question Id : 68019114349 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 $H: \frac{-x^2}{a^2} + \frac{y^2}{b^2} = 1$ अतिपरवलय है, जिसकी उत्केंद्रता $\sqrt{3}$ है तथा नाभिलंब की लम्बाई $4\sqrt{3}$ है। माना $(\alpha, 6)$, $\alpha > 0$, H पर स्थित है। यदि बिन्दु $(\alpha, 6)$ की नाभीय दूरियों का गुणनफल β है, तो $\alpha^2 + \beta$ बराबर है

Options :

68019156051. 169

68019156052. 170

68019156053. 171

68019156054. 172

Question Number : 17 Question Id : 68019114350 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 $P(x, y, z)$ be a point in the first octant, whose projection in the xy -plane is the point Q . Let $OP = \gamma$; the angle between OQ and the positive x -axis be θ ; and the angle between OP and the positive z -axis be ϕ , where O is the origin. Then the distance of P from the x -axis is

Options :

68019156055. $\gamma\sqrt{1 - \sin^2 \phi \cos^2 \theta}$

68019156056. $\gamma\sqrt{1 - \sin^2 \theta \cos^2 \phi}$

68019156057. $\gamma\sqrt{1 + \cos^2 \theta \sin^2 \phi}$

68019156058. $\gamma\sqrt{1 + \cos^2 \phi \sin^2 \theta}$

Question Number : 17 Question Id : 68019114350 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 $P(x, y, z)$ प्रथम अष्टांश में बिन्दु है जिसका xy -समतल में प्रक्षेप बिन्दु Q है। माना $OP = \gamma$; OQ और धनात्मक x -अक्ष के मध्य कोण θ है; OP और धनात्मक z -अक्ष के मध्य कोण ϕ है, जहाँ O मूलबिन्दु है, तो x -अक्ष से P की दूरी है -

Options :

68019156055. $\gamma\sqrt{1 - \sin^2 \phi \cos^2 \theta}$

68019156056. $\gamma\sqrt{1 - \sin^2 \theta \cos^2 \phi}$

68019156057. $\gamma\sqrt{1 + \cos^2 \theta \sin^2 \phi}$

68019156058. $\gamma\sqrt{1 + \cos^2 \phi \sin^2 \theta}$

Question Number : 18 Question Id : 68019114351 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 set of all α , for which the vectors $\vec{a} = \alpha t \hat{i} + 6\hat{j} - 3\hat{k}$ and $\vec{b} = t\hat{i} - 2\hat{j} - 2\alpha t\hat{k}$ are inclined at an obtuse angle for all $t \in \mathbb{R}$, is

Options :

68019156059. $[0, 1)$

68019156060. $(-2, 0]$

68019156061. $\left(-\frac{4}{3}, 0\right]$

68019156062. $\left(-\frac{4}{3}, 1\right)$

Question Number : 18 Question Id : 68019114351 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

$t \in \mathbb{R}$ के सभी मानों के लिए सदिश $\vec{a} = \alpha t \hat{i} + 6\hat{j} - 3\hat{k}$ तथा $\vec{b} = t\hat{i} - 2\hat{j} - 2\alpha t\hat{k}$ अधिककोण पर झुके हुए हैं, तो सभी α का समुच्चय है -

Options :

68019156059. $[0, 1)$

68019156060. $(-2, 0]$

68019156061. $\left(-\frac{4}{3}, 0\right]$

68019156062. $\left(-\frac{4}{3}, 1\right)$

Question Number : 19 Question Id : 68019114352 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 the sum of two positive integers be 24. If the probability, that their product is not less than $\frac{3}{4}$ times their greatest possible product, is $\frac{m}{n}$, where $\gcd(m, n) = 1$, then $n - m$ equals

Options :

68019156063. 11

68019156064. 8

68019156065. 9

68019156066. 10

Question Number : 19 Question Id : 68019114352 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 धनात्मक पूर्णांकों का योग 24 है। यदि उनके गुणनफल की उनके महत्तम संभावित गुणनफल के $\frac{3}{4}$ गुने से कम न होने की प्रायिकता, $\frac{m}{n}$ है, जहाँ $\gcd(m, n) = 1$ है, तो $n - m$ बराबर है

Options :

68019156063. 11

68019156064. 8

68019156065. 9

68019156066. 10

Question Number : 20 Question Id : 68019114353 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 $\sin x = -\frac{3}{5}$, where $\pi < x < \frac{3\pi}{2}$, then $80(\tan^2 x - \cos x)$ is equal to

Options :

68019156067. 109

68019156068. 108

68019156069. 19

68019156070. 18

Question Number : 20 Question Id : 68019114353 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 $\sin x = -\frac{3}{5}$ है, जहाँ $\pi < x < \frac{3\pi}{2}$ है, तो $80(\tan^2 x - \cos x)$ बराबर है

Options :

68019156067. 109

68019156068. 108

68019156069. 19

68019156070. 18

Mathematics Section B

Section Id :

680191258

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 :	680191348
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 21 Question Id : 68019114354 Question Type : SA Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 4 Wrong Marks : 1

If the range of $f(\theta) = \frac{\sin^4 \theta + 3 \cos^2 \theta}{\sin^4 \theta + \cos^2 \theta}$, $\theta \in \mathbb{R}$ is $[\alpha, \beta]$, then the sum of the infinite G.P., whose first term is 64 and the common ratio is $\frac{\alpha}{\beta}$, is equal to _____.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :

1

Question Number : 21 Question Id : 68019114354 Question Type : SA Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 4 Wrong Marks : 1

यदि $f(\theta) = \frac{\sin^4 \theta + 3\cos^2 \theta}{\sin^4 \theta + \cos^2 \theta}$, $\theta \in \mathbb{R}$ का परिसर $[\alpha, \beta]$ है, तो अपरिमित गुणोत्तर श्रेणी का योग, जिसका प्रथम पद 64 है तथा अनुपात $\frac{\alpha}{\beta}$ है, 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 : 22 **Question Id :** 68019114355 **Question Type :** SA **Calculator :** None

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

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

Let $A = \begin{bmatrix} 2 & -1 \\ 1 & 1 \end{bmatrix}$. If the sum of the diagonal elements of A^{13} is 3^n , then n is equal to _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 22 **Question Id :** 68019114355 **Question Type :** SA **Calculator :** None

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

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

माना $A = \begin{bmatrix} 2 & -1 \\ 1 & 1 \end{bmatrix}$ है। यदि A^{13} के विकर्ण के अवयवों का योग 3^n 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 : 23 **Question Id :** 68019114356 **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 3-digit numbers, formed using the digits 2, 3, 4, 5 and 7, when the repetition of digits is not allowed, and which are not divisible by 3, is equal to _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 23 **Question Id :** 68019114356 **Question Type :** SA **Calculator :** None

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

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

अंकों 2, 3, 4, 5 तथा 7 के उपयोग द्वारा 3-अंकीय संख्याओं की संख्या, जब किसी भी अंक को दोहराया नहीं गया है तथा जो 3 से विभाजित नहीं होती हैं, 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 : 68019114357 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Let $\alpha = \sum_{r=0}^n (4r^2 + 2r + 1) {}^nC_r$ and $\beta = \left(\sum_{r=0}^n \frac{{}^nC_r}{r+1} \right) + \frac{1}{n+1}$. If $140 < \frac{2\alpha}{\beta} < 281$, then the value of n is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 24 Question Id : 68019114357 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

माना $\alpha = \sum_{r=0}^n (4r^2 + 2r + 1) {}^nC_r$ तथा $\beta = \left(\sum_{r=0}^n \frac{{}^nC_r}{r+1} \right) + \frac{1}{n+1}$ है। यदि $140 < \frac{2\alpha}{\beta} < 281$, तो n का मान है _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

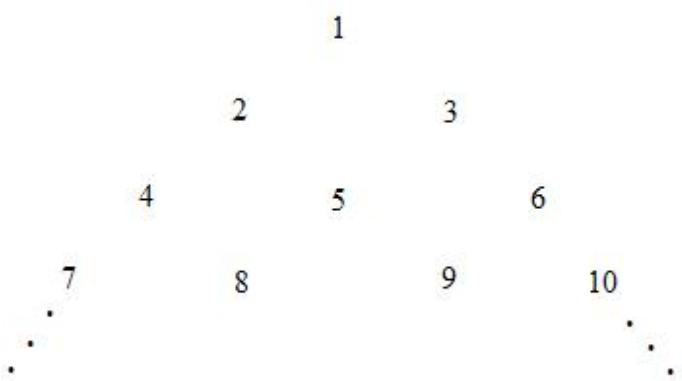
1

Question Number : 25 Question Id : 68019114358 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Let the positive integers be written in the form :



If the k^{th} row contains exactly k numbers for every natural number k , then the row in which the number 5310 will be, is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

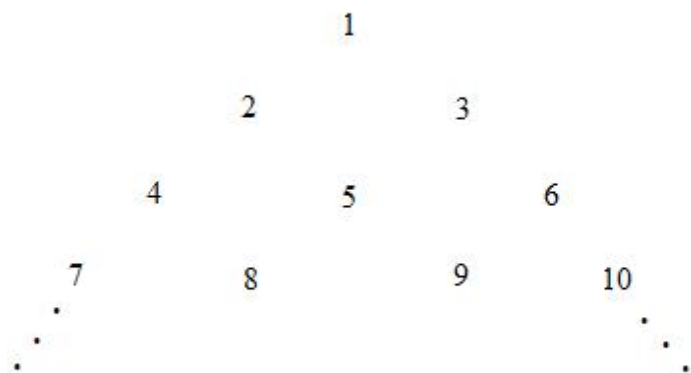
1

Question Number : 25 Question Id : 68019114358 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

माना धनात्मक पूर्णांक को इस रूप में लिख गया है :



यदि उपरोक्त रूप की k -वीं पंक्ति प्रत्येक प्राकृतिक संख्या k के लिए ठीक k संख्या रखती है, तो वह पंक्ति, जिसमें संख्या 5310 होगी, 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 :** 68019114359 **Question Type :** SA **Calculator :** None

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

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

The value of $\lim_{x \rightarrow 0} 2 \left(\frac{1 - \cos x \sqrt{\cos 2x} \sqrt[3]{\cos 3x} \dots \sqrt[10]{\cos 10x}}{x^2} \right)$ 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 : 68019114359 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

$\lim_{x \rightarrow 0} 2 \left(\frac{1 - \cos x \sqrt{\cos 2x} \sqrt[3]{\cos 3x} \dots \sqrt[10]{\cos 10x}}{x^2} \right)$ 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 : 27 Question Id : 68019114360 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Let the area of the region enclosed by the curve $y = \min\{\sin x, \cos x\}$ and the x -axis between $x = -\pi$ to $x = \pi$ be A . Then A^2 is equal to _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 27 Question Id : 68019114360 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

माना कि $x = -\pi$ से $x = \pi$ के मध्य वक्र $y = \min\{\sin x, \cos x\}$ तथा x -अक्ष से घिरे क्षेत्र का क्षेत्रफल A है, तो A^2 बराबर है _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 28 Question Id : 68019114361 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Let $\vec{a} = 9\hat{i} - 13\hat{j} + 25\hat{k}$, $\vec{b} = 3\hat{i} + 7\hat{j} - 13\hat{k}$ and $\vec{c} = 17\hat{i} - 2\hat{j} + \hat{k}$ be three given vectors. If $\vec{r}$ is a vector such that $\vec{r} \times \vec{a} = (\vec{b} + \vec{c}) \times \vec{a}$ and

$\vec{r} \cdot (\vec{b} - \vec{c}) = 0$, then $\frac{|593\vec{r} + 67\vec{a}|^2}{(593)^2}$ is equal to _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 28 Question Id : 68019114361 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

माना $\vec{a} = 9\hat{i} - 13\hat{j} + 25\hat{k}$, $\vec{b} = 3\hat{i} + 7\hat{j} - 13\hat{k}$ तथा $\vec{c} = 17\hat{i} - 2\hat{j} + \hat{k}$ तीन सदिश है। यदि $\vec{r}$ एक सदिश इस प्रकार है कि $\vec{r} \times \vec{a} = (\vec{b} + \vec{c}) \times \vec{a}$ तथा

$\vec{r} \cdot (\vec{b} - \vec{c}) = 0$ है, तो $\frac{|593\vec{r} + 67\vec{a}|^2}{(593)^2}$ बराबर है _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 29 **Question Id :** 68019114362 **Question Type :** SA **Calculator :** None

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

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

If the orthocentre of the triangle formed by the lines $2x + 3y - 1 = 0$, $x + 2y - 1 = 0$ and $ax + by - 1 = 0$, is the centroid of another triangle, whose circumcentre and orthocentre respectively are $(3, 4)$ and $(-6, -8)$, then the value of $|a - b|$ is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 29 **Question Id :** 68019114362 **Question Type :** SA **Calculator :** None

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

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

यदि रेखाओं $2x + 3y - 1 = 0$, $x + 2y - 1 = 0$ तथा $ax + by - 1 = 0$ द्वारा बने त्रिभुज का लंब केन्द्र किसी दूसरे त्रिभुज का केन्द्रक है, जिसके परिकेन्द्र तथा लंब केन्द्र क्रमशः $(3, 4)$ तथा $(-6, -8)$ है, तो $|a - b|$ 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 : 30 **Question Id :** 68019114363 **Question Type :** SA **Calculator :** None

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

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

Three balls are drawn at random from a bag containing 5 blue and 4 yellow balls. Let the random variables X and Y respectively denote the number of blue and yellow balls. If $\bar{X}$ and $\bar{Y}$ are the means of X and Y respectively, then $7\bar{X} + 4\bar{Y}$ is equal to _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 30 **Question Id :** 68019114363 **Question Type :** SA **Calculator :** None

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

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

किसी थैले से, जिसमें 5 नीली तथा 4 पीली गेंदें हैं, यादृच्छ्या तीन गेंदें निकाली गई हैं। माना यादृच्छिक चर X तथा Y क्रमशः नीली तथा पीली गेंदों की संख्या को दर्शाता है। यदि $\bar{X}$ तथा $\bar{Y}$ क्रमशः X तथा Y का माध्य है, तो $7\bar{X} + 4\bar{Y}$ 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 :	680191259
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 :	680191349
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 31 Question Id : 68019114364 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 an expression $a \times 10^b$:

Options :

68019156081. a is order of magnitude for $b \leq 5$

68019156082. b is order of magnitude for $5 < a \leq 10$

68019156083. b is order of magnitude for $a \leq 5$

68019156084. b is order of magnitude for $a \geq 5$

Question Number : 31 Question Id : 68019114364 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

यहाँ एक व्यंजक $a \times 10^b$ में :

Options :

68019156081. $b \leq 5$ के लिए परिमाण की कोटि a है।

68019156082. $5 < a \leq 10$ के लिए परिमाण की कोटि b है।

68019156083. $a \leq 5$ के लिए परिमाण की कोटि b है।

68019156084. $a \geq 5$ के लिए परिमाण की कोटि b है।

Question Number : 32 Question Id : 68019114365 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 clock has 75 cm, 60 cm long second hand and minute hand respectively. In 30 minutes duration the tip of second hand will travel x distance more than the tip of minute hand. The value of x in meter is nearly (Take $\pi = 3.14$) :

Options :

68019156085. 118.9

68019156086. 139.4

68019156087. 140.5

68019156088. 220.0

Question Number : 32 Question Id : 68019114365 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 घड़ी की सेकंड तथा मिनट वाली सुई क्रमशः 75 cm, 60 cm लम्बी हैं। घड़ी के 30 मिनट के अन्तराल में सेकंड वाली सुई की नोक, मिनट सुई की नोक की अपेक्षा x दूरी अधिक चलती है। यहां x का मान मीटर में लगभग है (यदि $\pi = 3.14$) :

Options :

68019156085. 118.9

68019156086. 139.4

68019156087. 140.5

68019156088. 220.0

Question Number : 33 Question Id : 68019114366 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 stationary particle breaks into two parts of masses m_A and m_B which move with velocities v_A and v_B respectively. The ratio of their kinetic energies ($K_B : K_A$) is :

Options :

68019156089. $v_B : v_A$

68019156090. $m_B : m_A$

68019156091. $m_B v_B : m_A v_A$

68019156092. 1 : 1

Question Number : 33 Question Id : 68019114366 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 स्थिर कण दो भागों में टूट जाता है जिनका द्रव्यमान m_A एवं m_B है तथा यह क्रमशः v_A तथा v_B की गति से चलते हैं। इनकी गतिज ऊर्जाओं का अनुपात ($K_B : K_A$) है :

Options :

68019156089. $v_B : v_A$

68019156090. $m_B : m_A$

68019156091. $m_B v_B : m_A v_A$

68019156092. 1 : 1

Question Number : 34 Question Id : 68019114367 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 player caught a cricket ball of mass 150 g moving at a speed of 20 m/s. If the catching process is completed in 0.1 s, the magnitude of force exerted by the ball on the hand of the player is:

Options :

68019156093. 150 N

68019156094. 3 N

68019156095. 30 N

68019156096. 300 N

Question Number : 34 Question Id : 68019114367 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

20 मी / से की चाल से गतिमान 150 ग्राम द्रव्यमान की एक गेंद को एक खिलाड़ी पकड़ता है। यदि पकड़ने में 0.1 सेकंड का समय लगा तब खिलाड़ी के हाथ पर गेंद द्वारा लगाये गये बल का परिमाण है :

Options :

68019156093. 150 N

68019156094. 3 N

68019156095. 30 N

68019156096. 300 N

Question Number : 35 Question Id : 68019114368 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Three bodies A, B and C have equal kinetic energies and their masses are 400 g, 1.2 kg and 1.6 kg respectively. The ratio of their linear momenta is :

Options :

68019156097. $1:\sqrt{3}:2$

68019156098. $1:\sqrt{3}:\sqrt{2}$

68019156099. $\sqrt{3}:\sqrt{2}:1$

68019156100. $\sqrt{2}:\sqrt{3}:1$

Question Number : 35 Question Id : 68019114368 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

400 ग्राम, 1.2 किग्रा व 1.6 किग्रा द्रव्यमान के क्रमशः तीन पिण्डों की गतिज ऊर्जाएँ समान है। इनके रेखीय संवेगों का अनुपात है :

Options :

68019156097. $1:\sqrt{3}:2$

68019156098. $1:\sqrt{3}:\sqrt{2}$

68019156099. $\sqrt{3}:\sqrt{2}:1$

68019156100. $\sqrt{2}:\sqrt{3}:1$

Question Number : 36 Question Id : 68019114369 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

Correct Bernoulli's equation is (symbols have their usual meaning) :

Options :

68019156101. $P + mgh + \frac{1}{2}mv^2 = \text{constant}$

68019156102. $P + \frac{1}{2} \rho gh + \frac{1}{2} \rho v^2 = \text{constant}$

68019156103. $P + \rho gh + \frac{1}{2} \rho v^2 = \text{constant}$

68019156104. $P + \rho gh + \rho v^2 = \text{constant}$

Question Number : 36 Question Id : 68019114369 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

सही बरनौली समीकरण है (संकेत सामान्य अर्थ में व्यक्त किये गये हैं) :

Options :

68019156101. $P + mgh + \frac{1}{2} mv^2 = \text{नियतांक}$

68019156102. $P + \frac{1}{2} \rho gh + \frac{1}{2} \rho v^2 = \text{नियतांक}$

68019156103. $P + \rho gh + \frac{1}{2} \rho v^2 = \text{नियतांक}$

68019156104. $P + \rho gh + \rho v^2 = \text{नियतांक}$

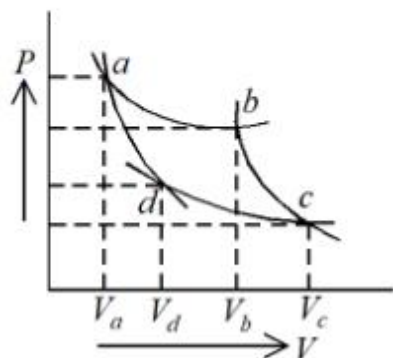
Question Number : 37 Question Id : 68019114370 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Two different adiabatic paths for the same gas intersect two isothermal curves as shown in P-V diagram. The relation between the ratio $\frac{V_a}{V_d}$ and the ratio $\frac{V_b}{V_c}$ is:



Options :

68019156105. $\frac{V_a}{V_d} = \frac{V_b}{V_c}$

68019156106. $\frac{V_a}{V_d} \neq \frac{V_b}{V_c}$

68019156107. $\frac{V_a}{V_d} = \left(\frac{V_b}{V_c}\right)^{-1}$

68019156108. $\frac{V_a}{V_d} = \left(\frac{V_b}{V_c}\right)^2$

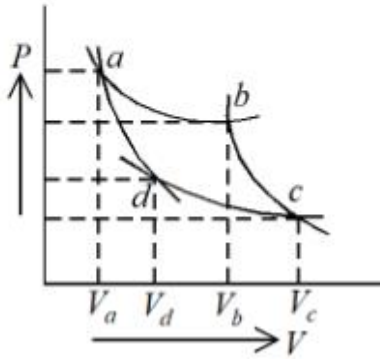
Question Number : 37 Question Id : 68019114370 Question Type : MCQ Option Shuffling : Yes

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 P-V आरेख में एक गैस के दो रुद्धोष्म वक्र, दो समतापी वक्रों को प्रतिछेदित करते हैं। तब $\frac{V_a}{V_d}$ तथा $\frac{V_b}{V_c}$ में सम्बन्ध है :



Options :

68019156105. $\frac{V_a}{V_d} = \frac{V_b}{V_c}$

68019156106. $\frac{V_a}{V_d} \neq \frac{V_b}{V_c}$

68019156107. $\frac{V_a}{V_d} = \left(\frac{V_b}{V_c}\right)^{-1}$

68019156108. $\frac{V_a}{V_d} = \left(\frac{V_b}{V_c}\right)^2$

Question Number : 38 Question Id : 68019114371 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Two planets A and B having masses m_1 and m_2 move around the sun in circular orbits of r_1 and r_2 radii respectively. If angular momentum of A is L and that of B is $3L$, the ratio of time period $\left(\frac{T_A}{T_B}\right)$ is:

Options :

68019156109.

$$\frac{1}{27} \left(\frac{m_2}{m_1} \right)^3$$

$$68019156110. \quad 27 \left(\frac{m_1}{m_2} \right)^3$$

$$68019156111. \quad \left(\frac{r_1}{r_2} \right)^3$$

$$68019156112. \quad \left(\frac{r_2}{r_1} \right)^{\frac{3}{2}}$$

Question Number : 38 Question Id : 68019114371 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

m_1 व m_2 द्रव्यमानों के दो ग्रह सूर्य के परितः क्रमशः r_1 व r_2 त्रिज्याओं की वृताकार कक्षाओं में गति करते हैं। यदि A का कोणीय संवेग L तथा B का कोणीय संवेग $3L$ है, तब उनके आवर्तकालों का अनुपात $\left(\frac{T_A}{T_B} \right)$ है:

Options :

$$68019156109. \quad \frac{1}{27} \left(\frac{m_2}{m_1} \right)^3$$

$$68019156110. \quad 27 \left(\frac{m_1}{m_2} \right)^3$$

$$68019156111. \quad \left(\frac{r_1}{r_2} \right)^3$$

$$68019156112.$$

$$\left(\frac{P_2}{P_1}\right)^{\frac{3}{2}}$$

Question Number : 39 Question Id : 68019114372 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 mixture of one mole of monoatomic gas and one mole of a diatomic gas (rigid) are kept at room temperature (27°C). The ratio of specific heat of gases at constant volume respectively is:

Options :

68019156113. $\frac{3}{2}$

68019156114. $\frac{3}{5}$

68019156115. $\frac{7}{5}$

68019156116. $\frac{5}{3}$

Question Number : 39 Question Id : 68019114372 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 मोल एकल-परमाणु गैस तथा एक मोल द्वि-परमाणु गैस का मिश्रण कमरे के ताप (27°C) पर लिया गया है। स्थिर आयतन पर क्रमशः उनकी विशिष्ट ऊष्माओं का अनुपात है :

Options :

68019156113. $\frac{3}{2}$

68019156114. $\frac{3}{5}$

68019156115. $\frac{7}{5}$

68019156116. $\frac{5}{3}$

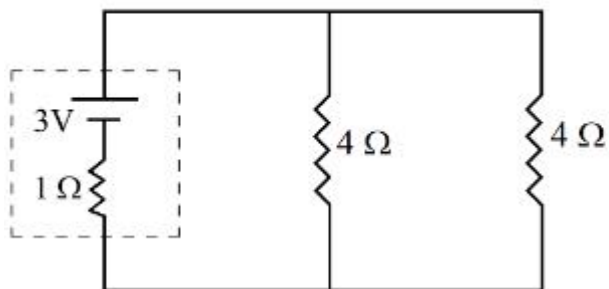
Question Number : 40 Question Id : 68019114373 Question Type : MCQ Option Shuffling : Yes

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 terminal potential difference of the cell is :



Options :

68019156117. 2 V

68019156118. 3 V

68019156119. 4 V

68019156120. 1.5 V

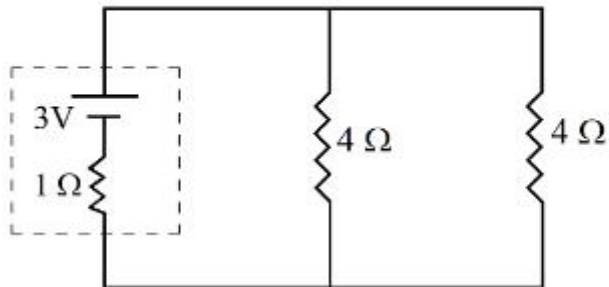
Question Number : 40 Question Id : 68019114373 Question Type : MCQ Option Shuffling : Yes

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 दिये परिपथ में सेल का टर्मिनल विभवान्तर है :



Options :

68019156117. 2 V

68019156118. 3 V

68019156119. 4 V

68019156120. 1.5 V

Question Number : 41 Question Id : 68019114374 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

Paramagnetic substances:

- A. align themselves along the directions of external magnetic field.
- B. attract strongly towards external magnetic field.
- C. has susceptibility little more than zero.
- D. move from a region of strong magnetic field to weak magnetic field.

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

Options :

68019156121. A, B, C Only

68019156122. A, C Only

68019156123. B, D Only

68019156124. A, B, C, D

Question Number : 41 Question Id : 68019114374 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

अनुचुम्बकीय पदार्थ :

- A. अपने को बाह्य चुम्बकीय क्षेत्र की दिशा में व्यवस्थित रखते हैं।
- B. बाह्य चुम्बकीय क्षेत्र की ओर तेजी से आकर्षित होते हैं।
- C. उनकी चुंबकीय प्रवृत्ति, शून्य से कुछ ही ज्यादा होती है।
- D. किसी शक्तिशाली चुम्बकीय क्षेत्र से कमजोर चुम्बकीय क्षेत्र की ओर गति करते हैं।

नीचे दिये गये विकल्पों में से सबसे उचित उत्तर चुनिए :

Options :

68019156121. केवल A, B, C

68019156122. केवल A, C

68019156123. केवल B, D

68019156124. केवल A, B, C, D

Question Number : 42 Question Id : 68019114375 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

Average force exerted on a non-reflecting surface at normal incidence is 2.4×10^{-4} N. If 360 W/cm^2 is the light energy flux during span of 1 hour 30 minutes, Then the area of the surface is:

Options :

68019156125. 0.2 m^2

68019156126. 0.1 m^2

68019156127. 0.02 m^2

68019156128. 20 m^2

Question Number : 42 Question Id : 68019114375 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 अपरावर्तित सतह के लम्बवत् औसत लगाया बल 2.4×10^{-4} N है। यदि एक घंटा 30 मिनट की अवधि में 360 W/cm^2 का प्रकाश ऊर्जा फ्लक्स है, तब सतह का क्षेत्रफल है :

Options :

68019156125. 0.2 m^2

68019156126. 0.1 m^2

68019156127. 0.02 m^2

68019156128. 20 m^2

Question Number : 43 Question Id : 68019114376 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

Critical angle of incidence for a pair of optical media is 45° . The refractive indices of first and second media are in the ratio:

Options :

68019156129. 2 : 1

68019156130. $1:\sqrt{2}$

68019156131. $\sqrt{2}:1$

68019156132. 1 : 2

Question Number : 43 Question Id : 68019114376 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 प्रकाशीय माध्यमों के युग्म का आपतन क्रांतिक कोण 45° है। तब प्रथम व द्वितीय माध्यम के अपवर्तनांकों का अनुपात है :

Options :

68019156129. 2 : 1

68019156130. $1:\sqrt{2}$

68019156131. $\sqrt{2}:1$

68019156132. 1 : 2

Question Number : 44 Question Id : 68019114377 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 proton and an electron are associated with same de-Broglie wavelength. The ratio of their kinetic energies is:

(Assume $h=6.63 \times 10^{-34}$ J s, $m_e = 9.0 \times 10^{-31}$ kg and $m_p = 1836$ times m_e)

Options :

68019156133. 1: 1836

68019156134. 1: $\sqrt{1836}$

68019156135. 1: $\frac{1}{1836}$

68019156136. 1: $\frac{1}{\sqrt{1836}}$

Question Number : 44 Question Id : 68019114377 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 प्रोटॉन तथा एक इलेक्ट्रॉन से संबद्ध डी-ब्रागली तरंगदैर्घ्य समान हैं। तब उनकी गतिज ऊर्जाओं का अनुपात होगा:

(दिया है: $h=6.63 \times 10^{-34}$ J s, $m_e = 9.0 \times 10^{-31}$ kg तथा $m_p = 1836 m_e$)

Options :

68019156133. 1: 1836

68019156134. 1: $\sqrt{1836}$

68019156135.

$$1: \frac{1}{1836}$$

$$68019156136. 1: \frac{1}{\sqrt{1836}}$$

Question Number : 45 Question Id : 68019114378 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Two charged conducting spheres of radii a and b are connected to each other by a conducting wire. The ratio of charges of the two spheres respectively is:

Options :

$$68019156137. \frac{a}{b}$$

$$68019156138. \frac{b}{a}$$

$$68019156139. ab$$

$$68019156140. \sqrt{ab}$$

Question Number : 45 Question Id : 68019114378 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 तथा b त्रिज्या के दो आवेशित सुचालक गोले, आपस में एक चालक तार से जोड़े गये हैं। उनके क्रमशः आवेशों का अनुपात है :

Options :

$$68019156137. \frac{a}{b}$$

68019156138. $\frac{b}{a}$

68019156139. ab

68019156140. $\sqrt{ab}$

Question Number : 46 Question Id : 68019114379 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

Binding energy of a certain nucleus is 18×10^8 J. How much is the difference between total mass of all the nucleons and nuclear mass of the given nucleus:

Options :

68019156141. $2 \mu\text{g}$

68019156142. $20 \mu\text{g}$

68019156143. $10 \mu\text{g}$

68019156144. $0.2 \mu\text{g}$

Question Number : 46 Question Id : 68019114379 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 नाभिक की बन्धन ऊर्जा 18×10^8 J है। तब नाभिक के सभी न्युक्लियानों का कुल द्रव्यमान तथा उस नाभिक के द्रव्यमान में कितना अन्तर है :

Options :

68019156141. 2 μg

68019156142. 20 μg

68019156143. 10 μg

68019156144. 0.2 μg

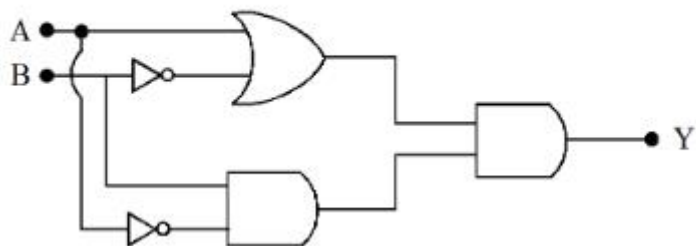
Question Number : 47 Question Id : 68019114380 Question Type : MCQ Option Shuffling : Yes

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 output Y of following circuit for given inputs is :



Options :

68019156145. 0

68019156146. $A \cdot B$

68019156147. $\bar{A} \cdot B$

68019156148. $A \cdot B(A + B)$

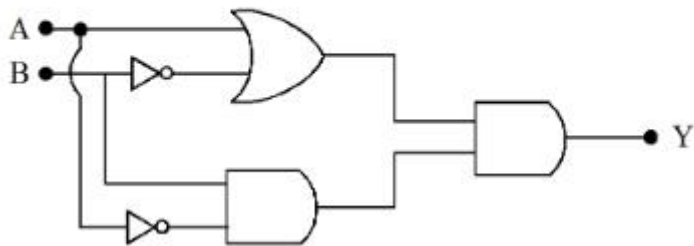
Question Number : 47 Question Id : 68019114380 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

दिये गये निवेशों के लिए निम्नलिखित परिपथ का निर्गत है :



Options :

68019156145. 0

68019156146. $A \cdot B$

68019156147. $\bar{A} \cdot B$

68019156148. $A \cdot B(A + B)$

Question Number : 48 Question Id : 68019114381 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

Young's modulus is determined by the equation given by $Y = 49000 \frac{m \text{ dyne}}{l \text{ cm}^2}$ where M is the mass and l is the extension of wire used in the experiment. Now error in Young modulus (Y) is estimated by taking data from M - l plot in graph paper. The smallest scale divisions are 5 g and 0.02 cm along load axis and extension axis respectively. If the value of M and l are 500 g and 2 cm respectively then percentage error of Y is :

Options :

68019156149. 0.02 %

68019156150. 0.2 %

68019156151. 2 %

68019156152. 0.5 %

Question Number : 48 Question Id : 68019114381 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

यंग प्रत्यास्थता गुणांक को समीकरण $Y = 49000 \frac{m \text{ dyne}}{l \text{ cm}^2}$ से ज्ञात किया गया है। यहाँ M द्रव्यमान तथा l तार का खिंचाव है। एक ग्राफ पेपर पर $M-l$ ग्राफ से प्रेक्षण लेकर यंग प्रत्यास्थता गुणांक में त्रुटि ज्ञात की जाती है। खिंचाव-अक्ष तथा भार अक्ष पर क्रमशः 0.02 cm तथा 5 g सूक्ष्मतम माप के भाग हैं। यदि M तथा l के मान क्रमशः 500 g एवं 2 cm हैं। तब Y में प्रतिशत त्रुटि है :

Options :

68019156149. 0.02 %

68019156150. 0.2 %

68019156151. 2 %

68019156152. 0.5 %

Question Number : 49 Question Id : 68019114382 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 diameter of a sphere is measured using a vernier caliper whose 9 divisions of main scale are equal to 10 divisions of vernier scale. The shortest division on the main scale is equal to 1mm. The main scale reading is 2 cm and second division of vernier scale coincides with a division on main scale. If mass of the sphere is 8.635 g, the density of the sphere is:

Options :

68019156153. 2.0 g/cm^3

68019156154. 1.7 g/cm^3

68019156155. 2.5 g/cm^3

68019156156. 2.2 g/cm^3

Question Number : 49 Question Id : 68019114382 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

वर्निमर पैमाने के उपयोग से एक गोले का व्यास नापा जाता है। यहां मुख्य पैमाने के 9 भाग, वर्निमर पैमाने के 10 भाग के बराबर हैं। मुख्य पैमाने का सबसे छोटा भाग 1mm है। मुख्य पैमाने का पाठ्यांक 2 सेमी है। मुख्य पैमाने के किसी चिन्ह के साथ वर्नियर पैमाने का दूसरा खाना मिलता है। यदि गोले का द्रव्यमान 8.635 g है तो गोले का घनत्व है :

Options :

68019156153. 2.0 g/cm^3

68019156154. 1.7 g/cm^3

68019156155. 2.5 g/cm^3

68019156156. 2.2 g/cm^3

Question Number : 50 Question Id : 68019114383 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 LCR circuit is at resonance for a capacitor C , inductance L and resistance R . Now the value of resistance is halved keeping all other parameters same. The current amplitude at resonance will be now:

Options :

68019156157. same

68019156158. double

68019156159. halved

68019156160. Zero

Question Number : 50 Question Id : 68019114383 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 LCR परिपथ धारिता C , प्रेरक L तथा प्रतिरोध R के लिए अनुनादित है। यदि सभी मान स्थिर रखकर केवल प्रतिरोध को आधा कर दें तो अब अनुनाद पर धारा का आयाम होगा :

Options :

68019156157. समान

68019156158. दोगुना

68019156159. आधा

68019156160. शून्य

Section Id :	680191260
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 :	680191350
Question Shuffling Allowed :	Yes
Is Section Default? :	null

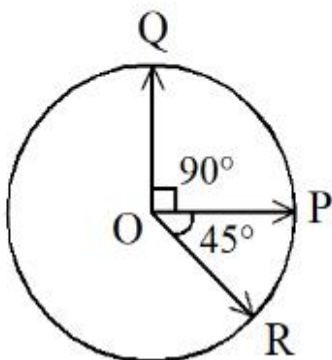
Question Number : 51 Question Id : 68019114384 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Three vectors $\vec{OP}$, $\vec{OQ}$ and $\vec{OR}$ each of magnitude A are acting as shown in figure.

The resultant of the three vectors is $A\sqrt{x}$. 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 :

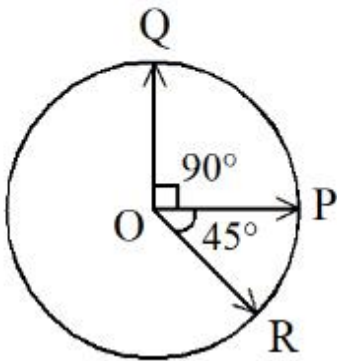
1

Question Number : 51 Question Id : 68019114384 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

तीन सदिश $\vec{OP}$, $\vec{OQ}$ और $\vec{OR}$, प्रत्येक का परिमाण A है जो चित्र के अनुसार कार्यरत हैं।
तीनों सदिशों का परिणामी $A\sqrt{x}$ 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 :

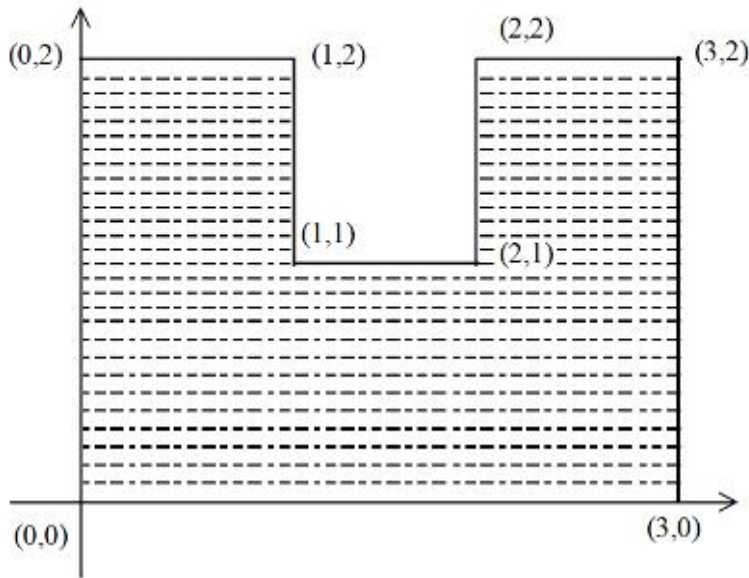
1

Question Number : 52 Question Id : 68019114385 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

A uniform thin metal plate of mass 10 kg with dimensions is shown. The ratio of x and y coordinates of center of mass of plate in $\frac{n}{9}$. The value of n is _____.



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

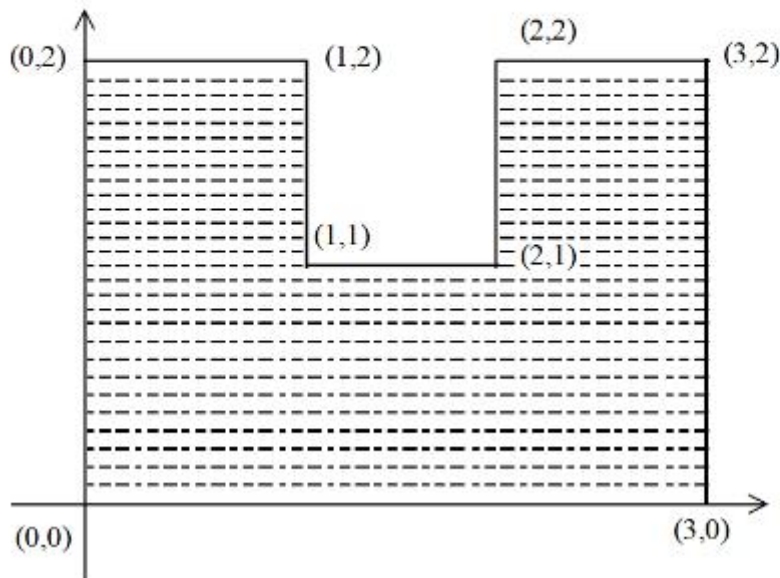
1

Question Number : 52 **Question Id :** 68019114385 **Question Type :** SA **Calculator :** None

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

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

10 किग्रा द्रव्यमान की एक एकसमान पतली धातु की प्लेट दिखायी गयी है। प्लेट के द्रव्यमान केंद्र के x तथा y निर्देशांकों का अनुपात $\frac{n}{9}$ है तब n का मान _____ है।



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 53 **Question Id :** 68019114386 **Question Type :** SA **Calculator :** None

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

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

A liquid column of height 0.04 cm balances excess pressure of a soap bubble of certain radius. If density of liquid is $8 \times 10^3 \text{ kg m}^{-3}$ and surface tension of soap solution is 0.28 Nm^{-1} , then diameter of the soap bubble is _____ cm.
(if $g = 10 \text{ m s}^{-2}$)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 53 Question Id : 68019114386 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

किसी द्रव के स्तम्भ की ऊँचाई 0.04 cm किसी साबुन के बुलबुले के दाब आधिक्य को संतुलित करती है। यदि द्रव का घनत्व $8 \times 10^3 \text{ kg m}^{-3}$ है तथा साबुन का पृष्ठ तनाव 0.28 N m^{-1} है, तब बुलबुले का व्यास _____ cm है।

(दिया है- $g = 10 \text{ m s}^{-2}$)

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 : 68019114387 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

A closed and an open organ pipe have same lengths. If the ratio of frequencies of their seventh overtones is $\left(\frac{a-1}{a}\right)$ then the value of a is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 54 Question Id : 68019114387 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

एक बन्द तथा एक खुले ऑर्गेन पाइप की लम्बाई समान है। उनके सातवें गुणवृत्तियों (overtones) की आवृत्तियों का अनुपात $\left(\frac{a-1}{a}\right)$ है तब a का मान _____ है।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 55 Question Id : 68019114388 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

An electric field, $\vec{E} = \frac{2\hat{i} + 6\hat{j} + 8\hat{k}}{\sqrt{6}}$ passes through the surface of 4 m^2 area having unit vector $\hat{n} = \left(\frac{2\hat{i} + \hat{j} + \hat{k}}{\sqrt{6}}\right)$. The electric flux for that surface is _____ V m.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 55 Question Id : 68019114388 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

एक वैद्युत क्षेत्र $\vec{E} = \frac{2\hat{i} + 6\hat{j} + 8\hat{k}}{\sqrt{6}}$, किसी 4 m^2 क्षेत्रफल के प्रष्ठ जिसका इकाई सदिश

$\hat{n} = \left(\frac{2\hat{i} + \hat{j} + \hat{k}}{\sqrt{6}} \right)$ है, से गुजरता है। इस प्रष्ठ के लिए वैद्युत फ्लक्स _____ V m है।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 56 Question Id : 68019114389 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Resistance of a wire at 0°C , 100°C and $t^\circ\text{C}$ is found to be 10Ω , 10.2Ω and 10.95Ω respectively. The temperature t in Kelvin scale is _____.

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 : 68019114389 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

एक तार का 0°C , 100°C तथा $t^\circ\text{C}$ ताप पर प्रतिरोध क्रमशः 10Ω , 10.2Ω तथा 10.95Ω हैं। तब केल्विन पैमाने पर ताप t 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 : 57 **Question Id :** 68019114390 **Question Type :** SA **Calculator :** None

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

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

An electron with kinetic energy 5 eV enters a region of uniform magnetic field of 3 μT perpendicular to its direction. An electric field E is applied perpendicular to the direction of velocity and magnetic field. The value of E, so that electron moves along the same path, is _____ NC^{-1} .

(Given, mass of electron = $9 \times 10^{-31} \text{ kg}$, electric charge = $1.6 \times 10^{-19} \text{ C}$)

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 :** 68019114390 **Question Type :** SA **Calculator :** None

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

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

3 μT के एकसमान चुम्बकीय क्षेत्र के लम्बवत् 5 eV उर्जा का एक इलेक्ट्रॉन प्रवेश करता है। एक वैद्युत क्षेत्र E इसकी गति तथा चुम्बकीय क्षेत्र, दोनों के लम्बवत् लगाया जाता है। वैद्युत क्षेत्र E जिससे इलेक्ट्रॉन उसी दिशा में पथ पर गति कर सके, लगाया जाए तब E= _____ NC^{-1} है।

(दिया है- इलेक्ट्रॉन का द्रव्यमान = $9 \times 10^{-31} \text{ kg}$, इलेक्ट्रॉन आवेश = $1.6 \times 10^{-19} \text{ C}$)

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 :** 68019114391 **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 alpha particle scattering experiment distance of closest approach for the α particle is 4.5×10^{-14} m. If target nucleus has atomic number 80, then maximum velocity of α - particle is _____ $\times 10^5$ m/s approximately.

($\frac{1}{4\pi\epsilon_0} = 9 \times 10^9$ SI unit, mass of α particle = 6.72×10^{-27} kg)

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 :** 68019114391 **Question Type :** SA **Calculator :** None

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

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

एक α - कण के प्रकीर्णन प्रयोग में, α - कण की सबसे निकटतम दूरी 4.5×10^{-14} m है। यदि लक्ष्य नाभिक की परमाणु संख्या 80 हो तो α - कण का लगभग अधिकतम वेग _____ $\times 10^5$ m/s है।

(दिया है- $\frac{1}{4\pi\epsilon_0} = 9 \times 10^9$ SI मात्रक, α - कण का द्रव्यमान = 6.72×10^{-27} kg)

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 :** 68019114392 **Question Type :** SA **Calculator :** None

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

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

A parallel beam of monochromatic light of wavelength 600 nm passes through single slit of 0.4 mm width. Angular divergence corresponding to second order minima would be _____ $\times 10^{-3}$ rad.

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 :** 68019114392 **Question Type :** SA **Calculator :** None

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

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

एक वर्णीय प्रकाश की समान्तर किरण-पुन्ज की तरंग दैर्घ्य 600 nm है जो एक 0.4 mm चौड़ाई की झिर्री से गुजरती है। इसकी द्वितीय श्रेणी के निम्निष्ठ का कोणीय फैलाव _____ $\times 10^{-3}$ रेडियन होगा।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

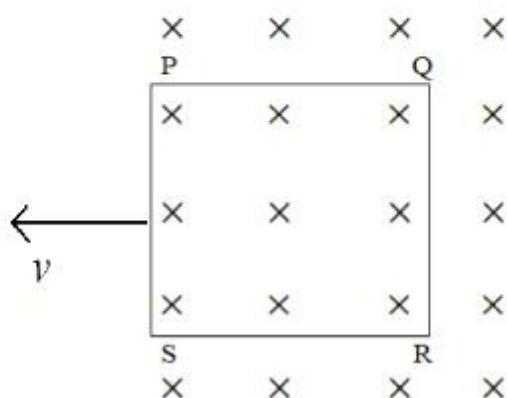
1

Question Number : 60 Question Id : 68019114393 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

A square loop PQRS having 10 turns, area $3.6 \times 10^{-3} \text{ m}^2$ and resistance 100Ω is slowly and uniformly being pulled out of a uniform magnetic field of magnitude $B=0.5 \text{ T}$ as shown. Work done in pulling the loop out of the field in 1.0 s is _____ $\times 10^{-6} \text{ J}$.



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

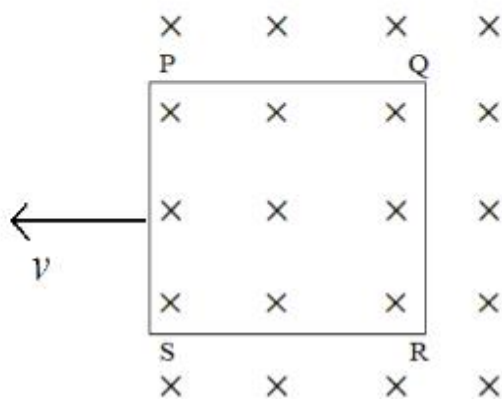
1

Question Number : 60 Question Id : 68019114393 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

10 फेरों, तल क्षेत्रफल $3.6 \times 10^{-3} \text{ m}^2$, प्रतिरोध $100 \, \Omega$ के एक वर्गाकार लूप PQRS, को $B=0.5 \text{ T}$ के एकसमान चुम्बकीय क्षेत्र से धीरे-धीरे बाहर खींचा जाता है जैसा कि चित्र में दर्शाया गया है। इसे 1.0 s में क्षेत्र के बाहर खींचने में किया गया कार्य $\text{_____} \times 10^{-6} \text{ J}$ है।



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 : 680191261

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 : 680191351

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 61 Question Id : 68019114394 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

Combustion of glucose ($\text{C}_6\text{H}_{12}\text{O}_6$) produces CO_2 and water. The amount of oxygen (in g) required for the complete combustion of 900 g of glucose is :

[Molar mass of glucose in $\text{g mol}^{-1} = 180$]

Options :

68019156171. 32

68019156172. 800

68019156173. 960

68019156174. 480

Question Number : 61 Question Id : 68019114394 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

ग्लूकोस ($\text{C}_6\text{H}_{12}\text{O}_6$) के दहन से CO_2 एवं जल उत्पादित होता है। 900 g ग्लूकोस के पूर्ण दहन के लिए आवश्यक ऑक्सीजन की मात्रा (g में) है:

[ग्लूकोस का मोलर द्रव्यमान $\text{g mol}^{-1} = 180$]

Options :

68019156171. 32

68019156172. 800

68019156173. 960

68019156174. 480

Question Number : 62 Question Id : 68019114395 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 (Molecule)		LIST II (Shape)	
A.	NH ₃	I.	Square pyramid
B.	BrF ₅	II.	Tetrahedral
C.	PCl ₅	III.	Trigonal pyramidal
D.	CH ₄	IV.	Trigonal bipyramidal

Choose the correct answer from the options given below:

Options :

68019156175. A-II, B-IV, C-I, D-III

68019156176. A-III, B-IV, C-I, D-II

68019156177. A-III, B-I, C-IV, D-II

68019156178. A-IV, B-III, C-I, D-II

Question Number : 62 Question Id : 68019114395 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

सूची I का मिलान सूची II से करें:

सूची I (अणु)		सूची II (संरचना)	
A.	NH ₃	I.	वर्ग पिरैमिडी
B.	BrF ₅	II.	चतुष्फलकीय
C.	PCl ₅	III.	त्रिकोणीय पिरैमिडी
D.	CH ₄	IV.	त्रिकोणीय द्विपिरैमिडी

नीचे दिए गए विकल्पों में से सही उत्तर चुनें:

Options :

68019156175. A-II, B-IV, C-I, D-III

68019156176. A-III, B-IV, C-I, D-II

68019156177. A-III, B-I, C-IV, D-II

68019156178. A-IV, B-III, C-I, D-II

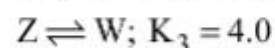
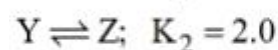
Question Number : 63 Question Id : 68019114396 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

For the given hypothetical reactions, the equilibrium constants are as follows :



The equilibrium constant for the reaction $X \rightleftharpoons W$ is

Options :

68019156179. 7.0

68019156180. 8.0

68019156181. 12.0

68019156182. 6.0

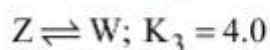
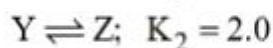
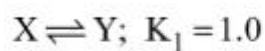
Question Number : 63 Question Id : 68019114396 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

दिए गए काल्पनिक अभिक्रियाओं के लिए, साम्य स्थिरांक निम्नलिखित हैं:



अभिक्रिया $X \rightleftharpoons W$ के लिए साम्य स्थिरांक है:

Options :

68019156179. 7.0

68019156180. 8.0

68019156181. 12.0

68019156182. 6.0

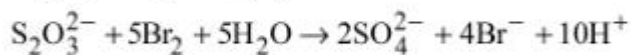
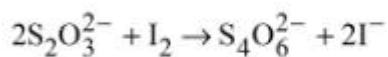
Question Number : 64 Question Id : 68019114397 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Thiosulphate reacts differently with iodine and bromine in the reactions given below:



Which of the following statement justifies the above dual behaviour of thiosulphate?

Options :

68019156183. Bromine is a stronger oxidant than iodine

68019156184. Bromine is a weaker oxidant than iodine

68019156185. Thiosulphate undergoes oxidation by bromine and reduction by iodine in these reactions

68019156186. Bromine undergoes oxidation and iodine undergoes reduction in these reactions

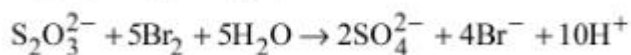
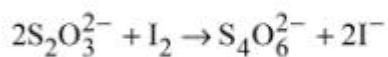
Question Number : 64 Question Id : 68019114397 Question Type : MCQ Option Shuffling : Yes

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 दी गई अभिक्रियाओं में आयोडीन एवं ब्रोमीन के साथ थायोसल्फेट भिन्न प्रकार से अभिक्रिया करता है:



निम्न में से कौन सा कथन थायोसल्फेट के उपरोक्त द्वैती व्यवहार का समर्थन करता है?

Options :

68019156183. आयोडीन की तुलना में ब्रोमीन प्रबल ऑक्सीकारक है।

68019156184. आयोडीन की तुलना में ब्रोमीन दुर्बल ऑक्सीकारक है।

इन अभिक्रियाओं में थायोसल्फेट का ब्रोमीन द्वारा ऑक्सीकरण एवं आयोडीन द्वारा अपचयन होता है।

इन अभिक्रियाओं में ब्रोमीन का ऑक्सीकरण एवं आयोडीन का अपचयन होता है।

Question Number : 65 Question Id : 68019114398 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

Among the following halogens

F_2 , Cl_2 , Br_2 and I_2

Which can undergo disproportionation reactions?

Options :

Only I_2

F_2 and Cl_2

Cl_2 , Br_2 and I_2

F_2 , Cl_2 and Br_2

Question Number : 65 Question Id : 68019114398 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

निम्न हैलोजनों में से कौन असमानुपात अभिक्रियाएँ कर सकता है:

F_2 , Cl_2 , Br_2 एवं I_2

Options :

68019156187. केवल I_2

68019156188. F_2 एवं Cl_2

68019156189. Cl_2 , Br_2 एवं I_2

68019156190. F_2 , Cl_2 एवं Br_2

Question Number : 66 Question Id : 68019114399 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

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

Assertion A: The stability order of +1 oxidation state of Ga, In and Tl is $Ga < In < Tl$.

Reason R: The inert pair effect stabilizes the lower oxidation state down the group.

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

Options :

68019156191. Both **A** and **R** are true and **R** is the correct explanation of **A**.

68019156192. Both **A** and **R** are true but **R** is NOT the correct explanation of **A**.

68019156193. **A** is true but **R** is false.

68019156194. **A** is false but **R** is true.

Question Number : 66 Question Id : 68019114399 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। इनमें से एक को अभिकथन A एवं दूसरे को कारण R के रूप में दर्शाया गया है:

अभिकथन A: Ga, In एवं Tl के +1 ऑक्सीकरण अवस्था के स्थायित्व का क्रम है: $Ga < In < Tl$

कारण R: समूह में नीचे जाने पर अक्रिय युग्म प्रभाव निम्न ऑक्सीकरण अवस्था को स्थायित्व प्रदान करता है।

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

Options :

68019156191. दोनों कथन A एवं R सही हैं तथा R, कथन A की सही व्याख्या है

68019156192. दोनों कथन A एवं R सही हैं परन्तु R, कथन A की सही व्याख्या नहीं है

68019156193. A सही है, परन्तु R गलत है

68019156194. A गलत है, परन्तु R सही है

Question Number : 67 Question Id : 68019114400 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: $N(CH_3)_3$ and $P(CH_3)_3$ can act as ligands to form transition metal complexes.

Statement II: As N and P are from same group, the nature of bonding of $N(CH_3)_3$ and $P(CH_3)_3$ is always same with transition metals.

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

Options :

68019156195. Both Statement I and Statement II are correct.

68019156196. Both Statement I and Statement II are incorrect.

68019156197. Statement I is correct but Statement II is incorrect.

68019156198. Statement I is incorrect but Statement II is correct.

Question Number : 67 Question Id : 68019114400 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 : $N(CH_3)_3$ एवं $P(CH_3)_3$ संक्रमण धातु संकुलों के निर्माण के लिए लिगण्ड के रूप में कार्य कर सकते हैं।

कथन II : चूँकि N एवं P दोनों समान समूह के हैं अतः संक्रमण तत्वों के साथ $N(CH_3)_3$ एवं $P(CH_3)_3$ के आबन्धन की प्रकृति सदैव एक समान रहती है।

उपर्युक्त कथनों के सन्दर्भ में नीचे दिए गए विकल्पों में से सर्वाधिक उपयुक्त उत्तर चुनें:

Options :

68019156195. दोनों कथन I एवं कथन II सही हैं

68019156196. दोनों कथन I एवं कथन II गलत हैं

68019156197. कथन I सही है परन्तु कथन II गलत है

68019156198. कथन I गलत है परन्तु कथन II सही है

Question Number : 68 Question Id : 68019114401 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 (Elements)		LIST II (Properties in their respective groups)	
A.	Cl, S	I.	Elements with highest electronegativity
B.	Ge, As	II.	Elements with largest atomic size
C.	Fr, Ra	III.	Elements which show properties of both metals and non-metal
D.	F, O	IV.	Elements with highest negative electron gain enthalpy

Choose the correct answer from the options given below:

Options :

68019156199. A-III, B-II, C-I, D-IV

68019156200. A-II, B-I, C-IV, D-III

68019156201. A-II, B-III, C-IV, D-I

68019156202. A-IV, B-III, C-II, D-I

Question Number : 68 Question Id : 68019114401 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

सूची I का मिलान सूची II से करें:

सूची I (तत्व)		सूची II (संगत समूहों में उनके गुण)	
A.	Cl, S	I.	उच्चतम विद्युत ऋणात्मक वाले तत्व
B.	Ge, As	II.	अधिकतम परमाणु त्रिज्या वाले तत्व
C.	Fr, Ra	III.	धातु एवं अधातु तत्वों के गुणधर्मों वाले तत्व
D.	F, O	IV.	सर्वाधिक ऋणात्मक इलेक्ट्रॉन लब्धि एन्थैल्पी वाले तत्व

नीचे दिए गए विकल्पों में से सही उत्तर चुनें:

Options :

68019156199. A-III, B-II, C-I, D-IV

68019156200. A-II, B-I, C-IV, D-III

68019156201. A-II, B-III, C-IV, D-I

68019156202. A-IV, B-III, C-II, D-I

Question Number : 69 Question Id : 68019114402 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

Iron (III) catalyses the reaction between iodide and persulphate ions, in which

- A. Fe^{3+} oxidises the iodide ion
- B. Fe^{3+} oxidises the persulphate ion
- C. Fe^{2+} reduces the iodide ion
- D. Fe^{2+} reduces the persulphate ion

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

Options :

68019156203. A only

68019156204. B only

68019156205. A and D only

68019156206. B and C only

Question Number : 69 Question Id : 68019114402 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

आयरन (III) आयोडाइड एवं परसल्फेट आयनों के मध्य अभिक्रिया को उत्प्रेरित करता है जिसमें:

- A. Fe^{3+} आयोडाइड आयन को ऑक्सीकृत करता है
- B. Fe^{3+} परसल्फेट आयन को ऑक्सीकृत करता है
- C. Fe^{2+} आयोडाइड आयन को अपचयित करता है
- D. Fe^{2+} परसल्फेट आयन को अपचयित करता है

नीचे दिए गए विकल्पों में से सर्वाधिक उपयुक्त उत्तर चुनें:

Options :

68019156203. केवल A

68019156204. केवल B

68019156205. केवल A एवं D

68019156206. केवल B एवं C

Question Number : 70 Question Id : 68019114403 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 octahedral complex with the formula $\text{CoCl}_3 \cdot n\text{NH}_3$ upon reaction with excess of AgNO_3 solution gives 2 moles of AgCl . Consider the oxidation state of Co in the complex is 'x'. The value of " $x + n$ " is _____.

Options :

68019156207. 3

68019156208. 6

68019156209. 5

68019156210. 8

Question Number : 70 Question Id : 68019114403 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

$\text{CoCl}_3 \cdot n\text{NH}_3$ सूत्र वाले एक अष्टफलकीय संकुल की अभिक्रिया AgNO_3 विलयन के आधिक्य के साथ कराने पर AgCl के 2 मोल प्राप्त होते हैं। इस संकुल में Co की ऑक्सीकरण अवस्था को x माना गया है। " $x + n$ " का मान है _____

Options :

68019156207. 3

68019156208. 6

68019156209. 5

68019156210. 8

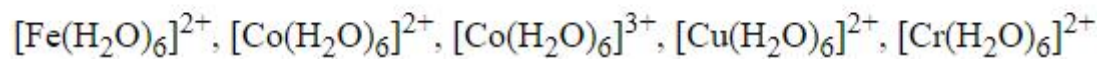
Question Number : 71 Question Id : 68019114404 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Number of Complexes with even number of electrons in t_{2g} orbitals is -



Options :

68019156211. 2

68019156212. 5

68019156213. 3

68019156214. 1

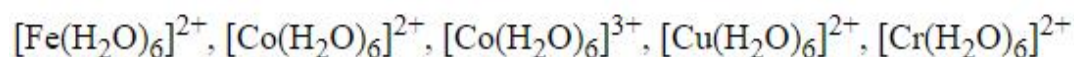
Question Number : 71 Question Id : 68019114404 Question Type : MCQ Option Shuffling : Yes

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 उन संकुलों की संख्या जिनके पास t_{2g} कक्षक में सम संख्या में इलेक्ट्रॉन हैं:



Options :

68019156211. 2

68019156212. 5

68019156213. 3

68019156214. 1

Question Number : 72 Question Id : 68019114405 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 (Name of the test)		LIST II (Reaction sequence involved)[M is metal]	
A.	Borax bead test	I.	$MCO_3 \rightarrow MO \xrightarrow[+\Delta]{Co(NO_3)_2} CoO \cdot MO$
B.	Charcoal cavity test	II.	$MCO_3 \rightarrow MCl_2 \rightarrow M^{2+}$
C.	Cobalt nitrate test	III.	$MSO_4 \xrightarrow[\Delta]{Na_2B_4O_7} M(BO_2)_2 \rightarrow MBO_2 \rightarrow M$
D.	Flame test	IV.	$MSO_4 \xrightarrow[\Delta]{Na_2CO_3} MCO_3 \rightarrow MO \rightarrow M$

Choose the **correct** answer from the options given below:

Options :

68019156215. A-III, B-I, C-II, D-IV

68019156216. A-III, B-II, C-IV, D-I

68019156217. A-III, B-I, C-IV, D-II

68019156218. A-III, B-IV, C-I, D-II

Question Number : 72 Question Id : 68019114405 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

सूची I का मिलान सूची II से करें:

सूची I (परीक्षण का नाम)		सूची II (भाग लेने वाला अभिक्रिया क्रम) (M धातु है)	
A.	बोरेक्स मणिका परीक्षण	I.	$MCO_3 \rightarrow MO \xrightarrow[+\Delta]{Co(NO_3)_2} CoO \cdot MO$
B.	चारकोल कैविटी परीक्षण	II.	$MCO_3 \rightarrow MCl_2 \rightarrow M^{2+}$
C.	कोबाल्ट नाइट्रेट परीक्षण	III.	$MSO_4 \xrightarrow[\Delta]{Na_2B_4O_7} M(BO_2)_2 \rightarrow MBO_2 \rightarrow M$
D.	ज्वाला परीक्षण	IV.	$MSO_4 \xrightarrow[\Delta]{Na_2CO_3} MCO_3 \rightarrow MO \rightarrow M$

नीचे दिए गए विकल्पों में से सही उत्तर चुनें:

Options :

68019156215. A-III, B-I, C-II, D-IV

68019156216. A-III, B-II, C-IV, D-I

68019156217. A-III, B-I, C-IV, D-II

68019156218. A-III, B-IV, C-I, D-II

Question Number : 73 Question Id : 68019114406 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 (Compound)		LIST II (Colour)	
A.	$Fe_4[Fe(CN)_6]_3 \cdot xH_2O$	I.	Violet
B.	$[Fe(CN)_5NOS]^{4-}$	II.	Blood Red
C.	$[Fe(SCN)]^{2+}$	III.	Prussian Blue
D.	$(NH_4)_3PO_4 \cdot 12MoO_3$	IV.	Yellow

Choose the **correct** answer from the options given below:

Options :

68019156219. A-I, B-II, C-III, D-IV

68019156220. A-III, B-I, C-II, D-IV

68019156221. A-II, B-III, C-IV, D-I

68019156222. A-IV, B-I, C-II, D-III

Question Number : 73 Question Id : 68019114406 Question Type : MCQ Option Shuffling : Yes**Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A****Minimum Instruction Time : 0****Correct Marks : 4 Wrong Marks : 1****सूची I का मिलान सूची II से करें:**

सूची I (यौगिक)		सूची II (रंग)	
A.	$\text{Fe}_4[\text{Fe}(\text{CN})_6]_3 \cdot x\text{H}_2\text{O}$	I.	बैंगनी
B.	$[\text{Fe}(\text{CN})_5\text{NOS}]^{4-}$	II.	रक्त जैसा लाल
C.	$[\text{Fe}(\text{SCN})]^{2+}$	III.	प्रुशियन ब्लू
D.	$(\text{NH}_4)_3\text{PO}_4 \cdot 12\text{MoO}_3$	IV.	पीला

नीचे दिए गए विकल्पों में से सही उत्तर चुनें:**Options :**

68019156219. A-I, B-II, C-III, D-IV

68019156220. A-III, B-I, C-II, D-IV

68019156221. A-II, B-III, C-IV, D-I

68019156222. A-IV, B-I, C-II, D-III

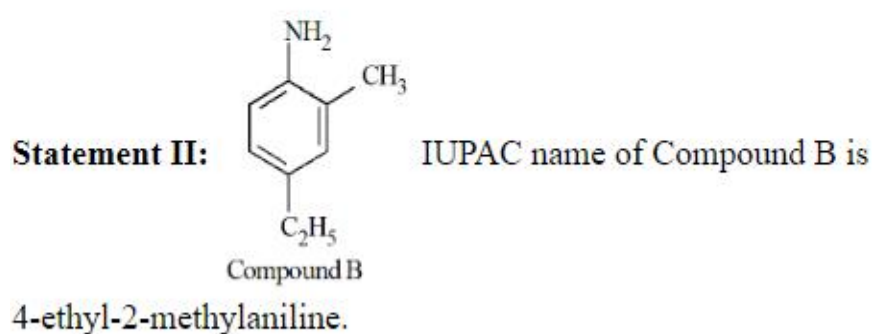
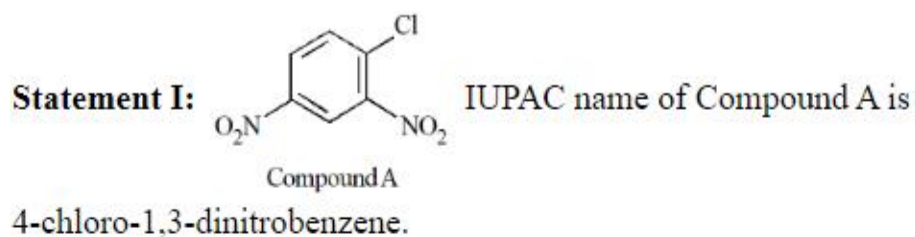
Question Number : 74 Question Id : 68019114407 Question Type : MCQ Option Shuffling : Yes

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:



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

Options :

68019156223. Both Statement I and Statement II are correct.

68019156224. Both Statement I and Statement II are incorrect.

68019156225. Statement I is correct but Statement II is incorrect.

68019156226. Statement I is incorrect but Statement II is correct.

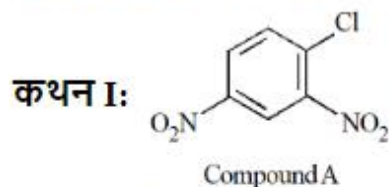
Question Number : 74 Question Id : 68019114407 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

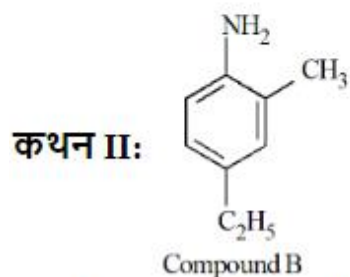
Correct Marks : 4 Wrong Marks : 1

नीचे दो कथन दिए गए हैं:



यौगिक A का IUPAC नाम है: 4-क्लोरो-1,3-

डाइनाइट्रोबेन्जीन.



यौगिक B का IUPAC नाम है: 4-एथिल-2-मेथिलऐनिलीन.

उपर्युक्त कथनों के सन्दर्भ में नीचे दिए गए विकल्पों में से सर्वाधिक उपयुक्त उत्तर चुनें:

Options :

68019156223. दोनों कथन I एवं कथन II सही हैं

68019156224. दोनों कथन I एवं कथन II गलत हैं

68019156225. कथन I सही है परन्तु कथन II गलत है

68019156226. कथन I गलत है परन्तु कथन II सही है

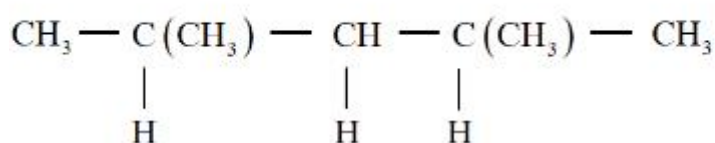
Question Number : 75 Question Id : 68019114408 Question Type : MCQ Option Shuffling : Yes

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 compound, the number of 2° carbon atom/s is _____.



Options :

68019156227. Four

68019156228. Three

68019156229. Two

68019156230. One

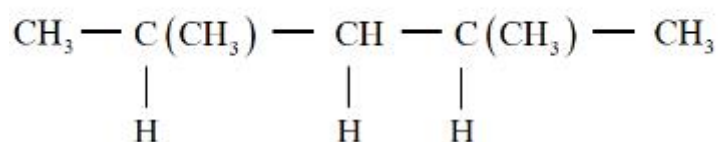
Question Number : 75 Question Id : 68019114408 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

दिए गए यौगिक में 2° कार्बन परमाणु(ओं) की संख्या है/हैं:



Options :

68019156227. चार

68019156228. तीन

68019156229. दो

68019156230. एक

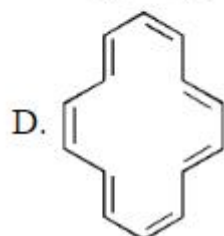
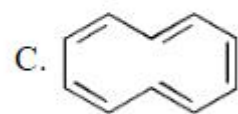
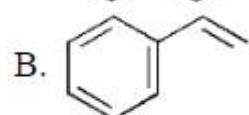
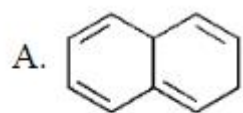
Question Number : 76 Question Id : 68019114409 Question Type : MCQ Option Shuffling : Yes

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 of the following are aromatic?



Options :

68019156231. A and B only

68019156232. C and D only

68019156233. A and C only

68019156234. B and D only

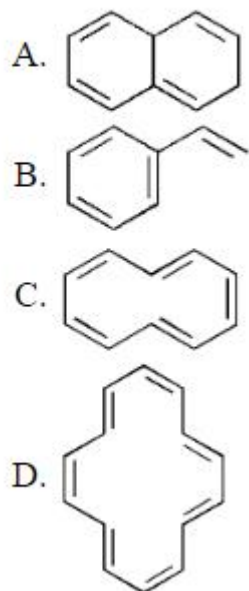
Question Number : 76 Question Id : 68019114409 Question Type : MCQ Option Shuffling : Yes

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 कौन ऐरोमैटिक है?



Options :

68019156231. केवल A एवं B

68019156232. केवल C एवं D

68019156233. केवल A एवं C

68019156234. केवल B एवं D

Question Number : 77 Question Id : 68019114410 Question Type : MCQ Option Shuffling : Yes

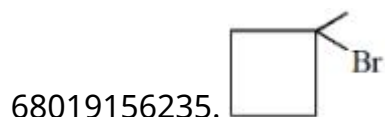
Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A

Minimum Instruction Time : 0

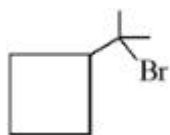
Correct Marks : 4 Wrong Marks : 1

Which among the following compounds will undergo fastest S_N2 reaction.

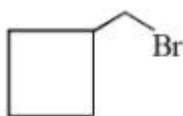
Options :



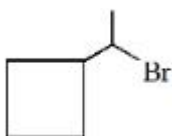
68019156236.



68019156237.



68019156238.



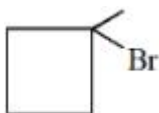
Question Number : 77 Question Id : 68019114410 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A
Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

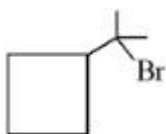
निम्नलिखित में से कौन सा यौगिक तीव्रतम S_N2 अभिक्रिया करेगा?

Options :

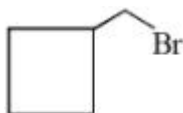
68019156235.



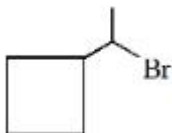
68019156236.



68019156237.



68019156238.



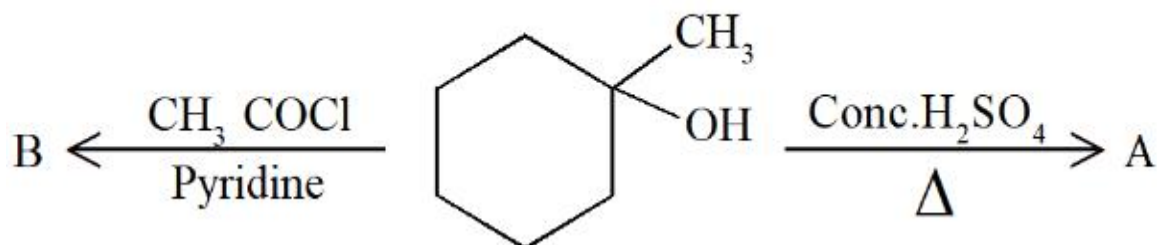
Question Number : 78 Question Id : 68019114411 Question Type : MCQ Option Shuffling : Yes

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

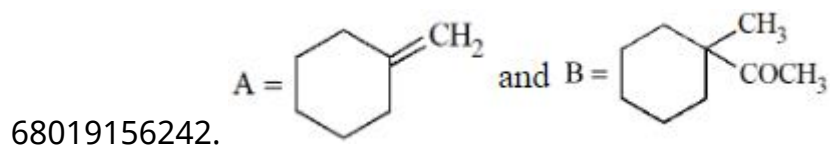
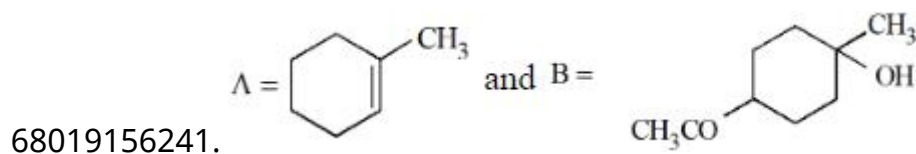
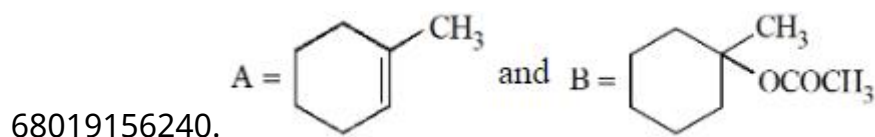
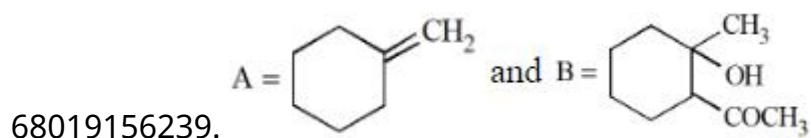
Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Identify the major products A and B respectively in the following set of reactions.



Options :



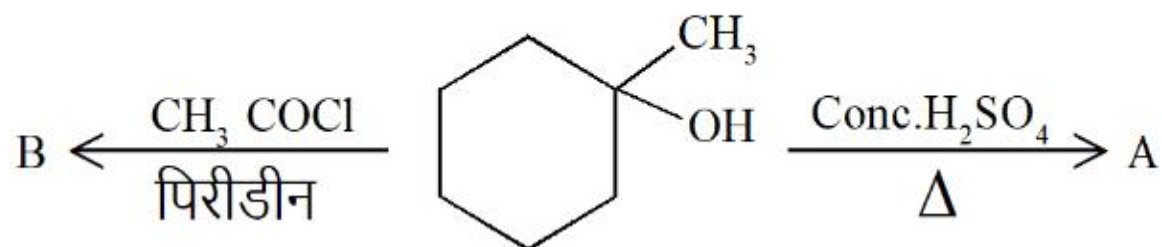
Question Number : 78 Question Id : 68019114411 Question Type : MCQ Option Shuffling : Yes

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

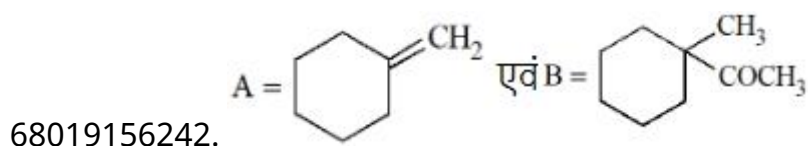
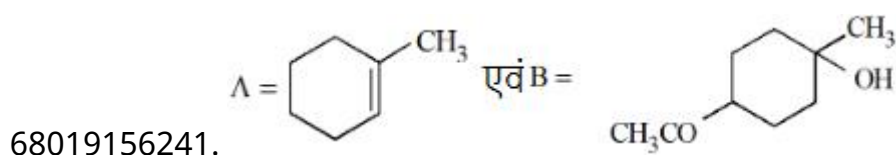
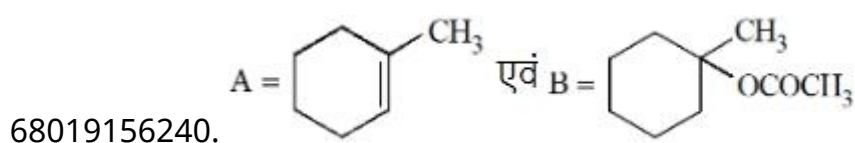
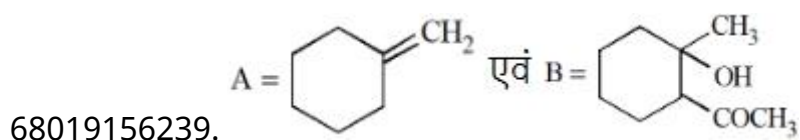
Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

अभिक्रिया के निम्नलिखित सेटों में से क्रमशः मुख्य उत्पाद A एवं B है:



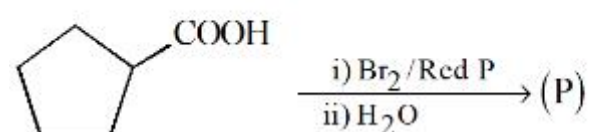
Options :



Question Number : 79 Question Id : 68019114412 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A
Minimum Instruction Time : 0

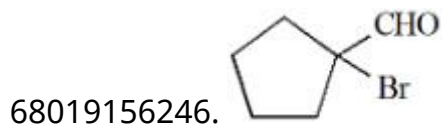
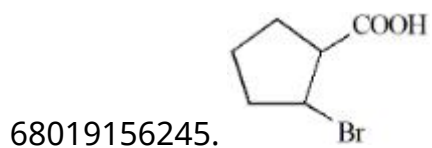
Correct Marks : 4 Wrong Marks : 1

Identify the product (P) in the following reaction:



Options :





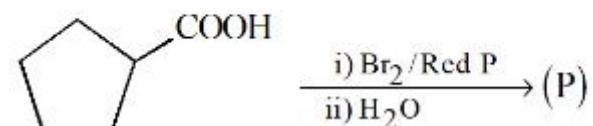
Question Number : 79 Question Id : 68019114412 Question Type : MCQ Option Shuffling : Yes

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

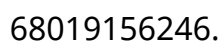
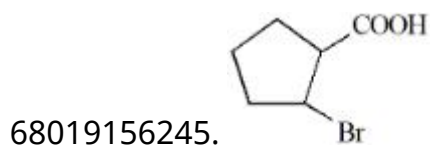
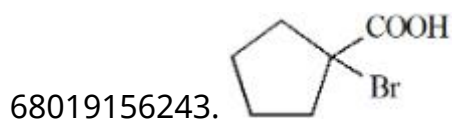
Minimum Instruction Time : 0

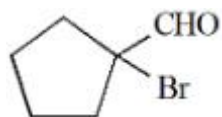
Correct Marks : 4 Wrong Marks : 1

निम्नलिखित अभिक्रिया में उत्पाद P को पहचानें:



Options :



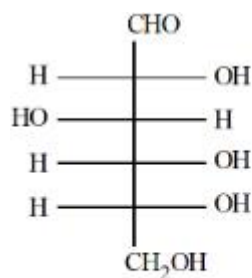


Question Number : 80 Question Id : 68019114413 Question Type : MCQ Option Shuffling : Yes

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 **incorrect** statement regarding the given structure is

Options :

68019156247. has 4 asymmetric carbon atom

68019156248. can be oxidized to a dicarboxylic acid with Br_2 water

68019156249. despite the presence of $-\text{CHO}$ does not give Schiff's test

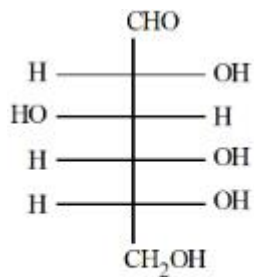
68019156250. will coexist in equilibrium with 2 other cyclic structure

Question Number : 80 Question Id : 68019114413 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



दी गई संरचना के संदर्भ में गलत कथन है:

Options :

68019156247. इसमें 4 असममित कार्बन परमाणु हैं

68019156248. यह Br_2 जल द्वारा द्वि-कार्बोक्सिलिक अम्ल में ऑक्सीकृत किया जा सकता है

68019156249. यह $-\text{CHO}$ समूह होने के बावजूद, शिफ परीक्षण नहीं देता है

68019156250. यह दो अन्य चक्रीय संरचनाओं के सह अस्तित्व के साथ साम्यावस्था में रहेगा

Chemistry Section B

Section Id :	680191262
Section Number :	6
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	10
Number of Questions to be attempted :	5
Section Marks :	20
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	680191352

Question Shuffling Allowed :

Yes

Is Section Default? :

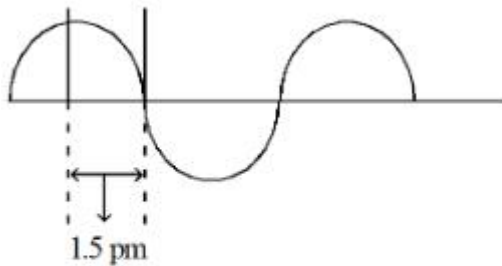
null

Question Number : 81 Question Id : 68019114414 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

A hypothetical electromagnetic wave is show below.



The frequency of the wave is $x \times 10^{19}$ Hz.

$x =$ _____ (nearest integer)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

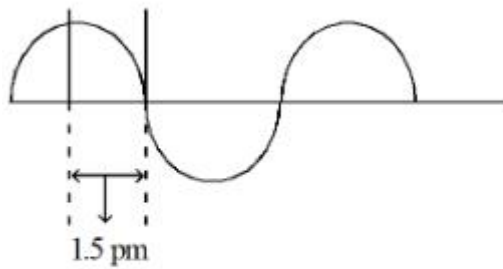
1

Question Number : 81 Question Id : 68019114414 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

एक काल्पनिक विद्युत चुम्बकीय तरंग दिखाई गई है।



तरंग की आवृत्ति $x \times 10^{19}$ Hz है।

$x =$ _____ (निकटतम पूर्णांक में)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 82 **Question Id :** 68019114415 **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 molecules from the following which are exceptions to octet rule is _____.

$\text{CO}_2, \text{NO}_2, \text{H}_2\text{SO}_4, \text{BF}_3, \text{CH}_4, \text{SiF}_4, \text{ClO}_2, \text{PCl}_5, \text{BeF}_2, \text{C}_2\text{H}_6, \text{CHCl}_3, \text{CBr}_4$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 82 **Question Id :** 68019114415 **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 अणुओं की संख्या जो अष्टक नियम के अपवाद हैं _____.

CO_2 , NO_2 , H_2SO_4 , BF_3 , CH_4 , SiF_4 , ClO_2 , PCl_5 , BeF_2 , C_2H_6 , CHCl_3 , CBr_4

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

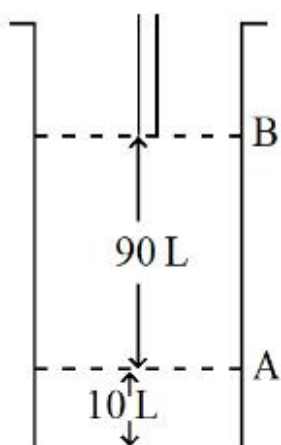
Possible Answers :

1

Question Number : 83 Question Id : 68019114416 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1



Consider the figure provided.

1 mol of an ideal gas is kept in a cylinder, fitted with a piston, at the position A, at 18°C . If the piston is moved to position B, keeping the temperature unchanged, then 'x' L atm work is done in this reversible process.

x = _____ L atm. (nearest integer)

[Given : Absolute temperature = $^\circ\text{C} + 273.15$, $R = 0.08206\text{ L atm mol}^{-1}\text{ K}^{-1}$]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

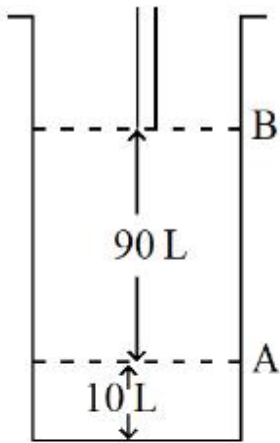
Possible Answers :

1

Question Number : 83 **Question Id :** 68019114416 **Question Type :** SA **Calculator :** None

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

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



दिए गए चित्र पर विचार करें:

एक पिस्टन युक्त सिलिन्डर में 1 मोल आदर्श गैस रखी गई है, जो 18°C पर स्थान A पर है। यदि यह पिस्टन बिना तापमान में परिवर्तन किए स्थान B पर चली जाती है तो इस विपरीत प्रक्रम में किया गया कार्य 'x' L atm है।

x = _____ L atm. (निकटतम पूर्णांक में)

[दिया गया है: परम तापमान = $^{\circ}\text{C} + 273.15$, $R = 0.08206\text{ L atm mol}^{-1}\text{ K}^{-1}$]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 84 **Question Id :** 68019114417 **Question Type :** SA **Calculator :** None

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

Correct Marks : 4 Wrong Marks : 1

A solution containing 10 g of an electrolyte AB_2 in 100 g of water boils at 100.52°C . The degree of ionization of the electrolyte (α) is _____ $\times 10^{-1}$. (nearest integer)

[Given : Molar mass of $AB_2 = 200 \text{ g mol}^{-1}$, K_b (molal boiling point elevation const. of water) = $0.52 \text{ K kg mol}^{-1}$, boiling point of water = 100°C ; AB_2 ionises as $AB_2 \rightarrow A^{2+} + 2B^-$]

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 : 68019114417 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

एक विलयन, जिसमें विद्युत अपघट्य AB_2 के 10 g जल के 100 g में विलेय है, 100.52°C पर उबलता है। विद्युत अपघट्य के वियोजन का अंश (α) है _____ $\times 10^{-1}$. $AB_2 \rightarrow A^{2+} + 2B^-$ प्रकार से आयनित होता है

[दिया गया है: AB_2 का मोलर द्रव्यमान = 200 g mol^{-1} , K_b (जल का मोलर कथनांक उन्नयन स्थिरांक) = $0.52 \text{ K kg mol}^{-1}$, जल का कथनांक = 100°C]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

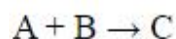
1

Question Number : 85 Question Id : 68019114418 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Consider the following reaction



The time taken for A to become $1/4^{\text{th}}$ of its initial concentration is twice the time taken to become $1/2$ of the same. Also, when the change of concentration of B is plotted against time, the resulting graph gives a straight line with a negative slope and a positive intercept on the concentration axis.

The overall order of the reaction is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

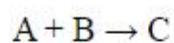
1

Question Number : 85 Question Id : 68019114418 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

निम्न अभिक्रिया पर विचार करें:



A के लिए अपने प्रारम्भिक सान्द्रता का $1/4^{\text{th}}$ होने में लगा समय उसके $1/2$ होने में लगे समय का दोगुना है। साथ ही, जब B की सान्द्रता में परिवर्तन को समय के विरुद्ध प्लॉट किया जाता है तो परिणामी ग्राफ ऋणात्मक प्रवणता के साथ एक सीधी रेखा तथा सान्द्रता अक्ष पर एक धनात्मक अन्तः खण्ड देता है।

अभिक्रिया की समग्र कोटि है _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 86 Question Id : 68019114419 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

The 'spin only' magnetic moment value of MO_4^{2-} is _____ BM. (Where M is a metal having least metallic radii. among Sc, Ti, V, Cr, Mn and Zn).

(Given atomic number: Sc = 21, Ti = 22, V = 23, Cr = 24, Mn = 25 and Zn = 30)

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 : 68019114419 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

MO_4^{2-} का 'प्रचक्रण मात्र' चुम्बकीय आघूर्ण है: _____ BM. (जहाँ M, Sc, Ti, V, Cr, Mn एवं Zn में न्यूनतम धात्विक त्रिज्या वाला धातु है।)

(दिया गया परमाणु क्रमांक: Sc = 21, Ti = 22, V = 23, Cr = 24, Mn = 25 एवं Zn = 30)

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 : 68019114420 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

If 279 g of aniline is reacted with one equivalent of benzenediazonium chloride, the maximum amount of aniline yellow formed will be _____ g. (nearest integer)

(consider complete conversion).

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 : 68019114420 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

यदि 279 g ऐनिलीन की क्रिया बेन्जीन डाइऐजोनियम क्लोराइड के एक तुल्यांक के साथ कराई जाए तो निर्मित ऐनिलीन येलो की अधिकतम मात्रा होगी _____ g (निकटतम पूर्णांक में)

(पूर्ण परिवर्तन मानिए)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

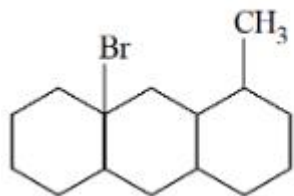
1

Question Number : 88 Question Id : 68019114421 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 optical isomers in following compound is: _____



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

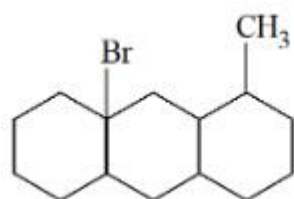
1

Question Number : 88 Question Id : 68019114421 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

निम्न यौगिक में प्रकाशिक समावयवों की संख्या है: _____



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

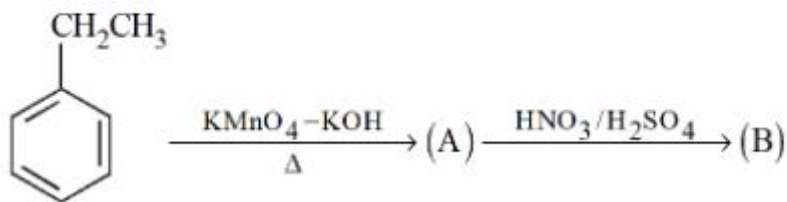
1

Question Number : 89 Question Id : 68019114422 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Major product B of the following reaction has _____ π -bond.



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

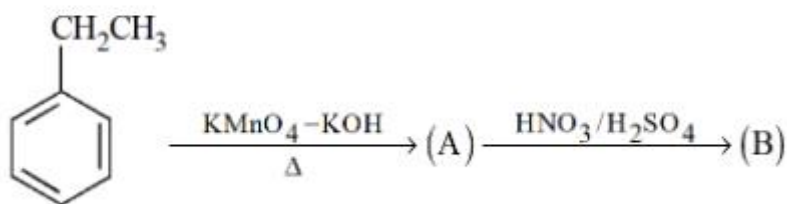
1

Question Number : 89 Question Id : 68019114422 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

निम्न अभिक्रिया के मुख्य उत्पाद B में _____ π -आबन्ध हैं।



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

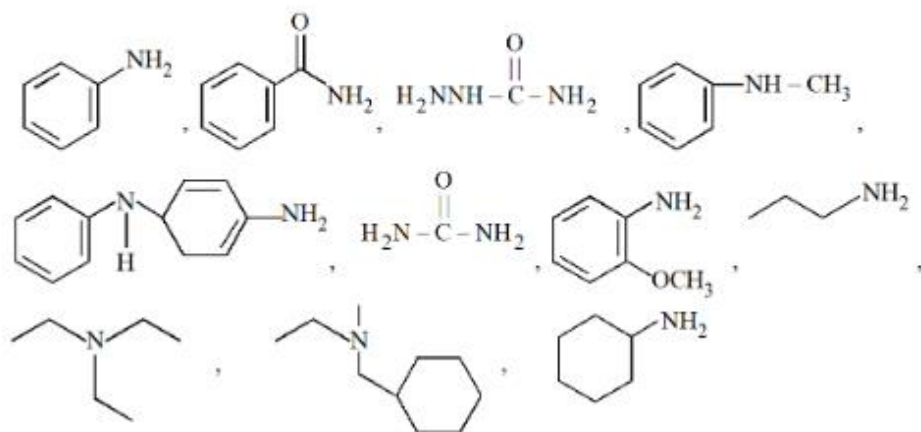
1

Question Number : 90 Question Id : 68019114423 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 amine compounds from the following giving solids which are soluble in NaOH upon reaction with Hinsberg's reagent is _____.



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

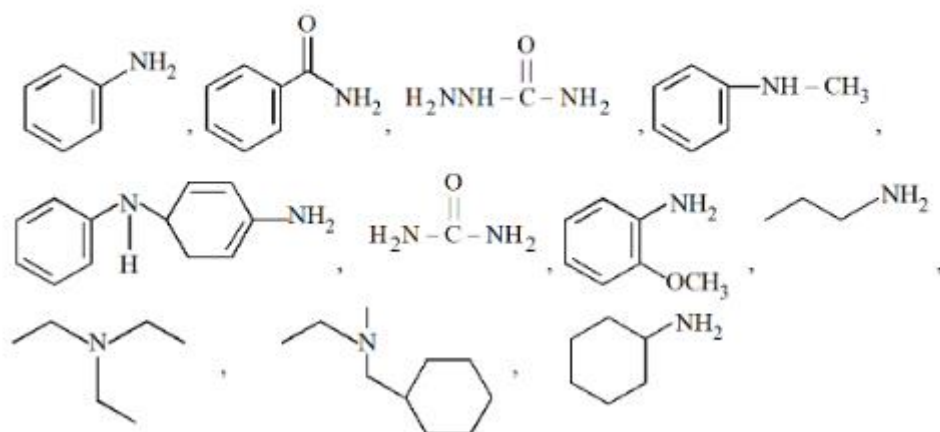
1

Question Number : 90 Question Id : 68019114423 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 ऐमीन यौगिकों की संख्या, जो हिन्सबर्ग अभिकर्मक के साथ अभिक्रिया करके NaOH में विलेय ठोस देते हैं, है _____



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1