

National Testing Agency

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B Tech

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

Mathematics Section A

Section Id :	680191275
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 :	680191365
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 1 Question Id : 68019114604 Question Type : MCQ Option Shuffling : Yes 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 range of the function $f(x) = \frac{1}{2 + \sin 3x + \cos 3x}$, $x \in \mathbb{R}$ be $[a, b]$. If α and β are respectively the A.M. and the G.M. of a and b , then $\frac{\alpha}{\beta}$ is equal to

Options :

68019156801. 2

68019156802. $\sqrt{2}$

68019156803. π

68019156804. $\sqrt{\pi}$

Question Number : 1 Question Id : 68019114604 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

माना फलन $f(x) = \frac{1}{2 + \sin 3x + \cos 3x}$, $x \in \mathbb{R}$ का परिसर $[a, b]$ है। यदि a और b के A.M. तथा G.M. क्रमशः α तथा β हैं, तो $\frac{\alpha}{\beta}$ बराबर है

Options :

68019156801. 2

68019156802. $\sqrt{2}$

68019156803. π

68019156804. $\sqrt{\pi}$

Question Number : 2 Question Id : 68019114605 Question Type : MCQ Option Shuffling : Yes 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 the real part of $\frac{z-2i}{z+2i}$ is zero. Then, the maximum value of $|z - (6+8i)|$ is equal to

Options :

68019156805. 8

68019156806. 10

68019156807. 12

68019156808. ∞

Question Number : 2 Question Id : 68019114605 Question Type : MCQ Option Shuffling : Yes 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 z एक सम्मिश्र संख्या है, जिसके लिए $\frac{z-2i}{z+2i}$ का वास्तविक भाग शून्य है। तो
 $|z-(6+8i)|$ का अधिकतम मान बराबर है

Options :

68019156805. 8

68019156806. 10

68019156807. 12

68019156808. ∞

Question Number : 3 Question Id : 68019114606 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Let $\alpha, \beta; \alpha > \beta$, be the roots of the equation $x^2 - \sqrt{2}x - \sqrt{3} = 0$. Let

$P_n = \alpha^n - \beta^n, n \in \mathbb{N}$. Then $(11\sqrt{3} - 10\sqrt{2})P_{10} + (11\sqrt{2} + 10)P_{11} - 11P_{12}$ is
equal to

Options :

68019156809. $11\sqrt{3}P_9$

68019156810. $11\sqrt{2}P_9$

68019156811. $10\sqrt{3}P_9$

68019156812. $10\sqrt{2} P_9$

Question Number : 3 Question Id : 68019114606 Question Type : MCQ Option Shuffling : Yes 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 समीकरण $x^2 - \sqrt{2}x - \sqrt{3} = 0$ के मूल $\alpha, \beta; \alpha > \beta$ हैं। माना $P_n = \alpha^n - \beta^n, n \in \mathbb{N}$ है।
तो $(11\sqrt{3} - 10\sqrt{2})P_{10} + (11\sqrt{2} + 10)P_{11} - 11P_{12}$ बराबर है

Options :

68019156809. $11\sqrt{3} P_9$

68019156810. $11\sqrt{2} P_9$

68019156811. $10\sqrt{3} P_9$

68019156812. $10\sqrt{2} P_9$

Question Number : 4 Question Id : 68019114607 Question Type : MCQ Option Shuffling : Yes 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 $B = \begin{bmatrix} 1 & 3 \\ 1 & 5 \end{bmatrix}$ and A be a 2×2 matrix such that $AB^{-1} = A^{-1}$. If $BCB^{-1} = A$ and $C^4 + \alpha C^2 + \beta I = O$, then $2\beta - \alpha$ is equal to

Options :

68019156813. 2

68019156814. 8

68019156815. 10

68019156816. 16

Question Number : 4 Question Id : 68019114607 Question Type : MCQ Option Shuffling : Yes 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 $B = \begin{bmatrix} 1 & 3 \\ 1 & 5 \end{bmatrix}$ है तथा एक 2×2 आव्यूह A के लिए $AB^{-1} = A^{-1}$ है। यदि $BCB^{-1} = A$ तथा $C^4 + \alpha C^2 + \beta I = O$ हैं, तो $2\beta - \alpha$ बराबर है

Options :

68019156813. 2

68019156814. 8

68019156815. 10

68019156816. 16

Question Number : 5 Question Id : 68019114608 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

$\lim_{x \rightarrow 0} \frac{e - (1 + 2x)^{\frac{1}{2x}}}{x}$ is equal to

Options :

68019156817. e

68019156818. 0

68019156819. $e - e^2$

68019156820. $\frac{-2}{e}$

Question Number : 5 Question Id : 68019114608 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

$\lim_{x \rightarrow 0} \frac{e - (1 + 2x)^{\frac{1}{2x}}}{x}$ बराबर है

Options :

68019156817. e

68019156818. 0

68019156819. $e - e^2$

68019156820. $\frac{-2}{e}$

Question Number : 6 Question Id : 68019114609 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The sum of the coefficient of $x^{2/3}$ and $x^{-2/5}$ in the binomial expansion of $\left(x^{2/3} + \frac{1}{2}x^{-2/5}\right)^9$ is

Options :

68019156821. 21/4

68019156822. 63/16

68019156823. 19/4

68019156824. 69/16

Question Number : 6 Question Id : 68019114609 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

$\left(x^{2/3} + \frac{1}{2}x^{-2/5}\right)^9$ के द्विपद प्रसार में $x^{2/3}$ तथा $x^{-2/5}$ के गुणांकों का योग है

Options :

68019156821. 21/4

68019156822. 63/16

68019156823. 19/4

68019156824. 69/16

Question Number : 7 Question Id : 68019114610 Question Type : MCQ Option Shuffling : Yes 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 $a, ar, ar^2, \dots$ be an infinite G.P. If $\sum_{n=0}^{\infty} ar^n = 57$ and $\sum_{n=0}^{\infty} a^3 r^{3n} = 9747$, then $a+18r$ is equal to

Options :

68019156825. 27

68019156826. 31

68019156827. 38

68019156828. 46

Question Number : 7 Question Id : 68019114610 Question Type : MCQ Option Shuffling : Yes 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 $a, ar, ar^2, \dots$ एक अनंत गुणोत्तर श्रेणी है। यदि $\sum_{n=0}^{\infty} ar^n = 57$ तथा $\sum_{n=0}^{\infty} a^3 r^{3n} = 9747$ हैं, तो $a+18r$ बराबर है

Options :

68019156825. 27

68019156826. 31

68019156827. 38

68019156828. 46

Question Number : 8 Question Id : 68019114611 Question Type : MCQ Option Shuffling : Yes 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 $\log_e y = 3 \sin^{-1} x$, then $(1 - x^2) y'' - xy'$ at $x = \frac{1}{2}$ is equal to

Options :

68019156829. $9e^{\pi/2}$

68019156830. $9e^{\pi/6}$

68019156831. $3e^{\pi/2}$

68019156832. $3e^{\pi/6}$

Question Number : 8 Question Id : 68019114611 Question Type : MCQ Option Shuffling : Yes 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 $\log_e y = 3 \sin^{-1} x$ है, तो $x = \frac{1}{2}$ पर $(1 - x^2) y'' - xy'$ बराबर है

Options :

68019156829. $9e^{\pi/2}$

68019156830. $9e^{\pi/6}$

68019156831. $3e^{\pi/2}$

68019156832. $3e^{\pi/6}$

Question Number : 9 Question Id : 68019114612 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

$$\lim_{x \rightarrow \frac{\pi}{2}} \left(\frac{\int_{x^3}^{(\pi/2)^3} \left(\sin(2t^{1/3}) + \cos(t^{1/3}) \right) dt}{\left(x - \frac{\pi}{2} \right)^2} \right) \text{ is equal to}$$

Options :

68019156833. $\frac{3\pi^2}{2}$

68019156834. $\frac{5\pi^2}{9}$

68019156835. $\frac{9\pi^2}{8}$

68019156836. $\frac{11\pi^2}{10}$

Question Number : 9 Question Id : 68019114612 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

$$\lim_{x \rightarrow \frac{\pi}{2}} \left(\frac{\int_{x^3}^{(\pi/2)^3} \left(\sin(2t^{1/3}) + \cos(t^{1/3}) \right) dt}{\left(x - \frac{\pi}{2} \right)^2} \right) \text{ बराबर है}$$

Options :

68019156833. $\frac{3\pi^2}{2}$

68019156834. $\frac{5\pi^2}{9}$

68019156835. $\frac{9\pi^2}{8}$

68019156836. $\frac{11\pi^2}{10}$

Question Number : 10 Question Id : 68019114613 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The area (in square units) of the region enclosed by the ellipse $x^2 + 3y^2 = 18$ in the first quadrant below the line $y = x$ is

Options :

68019156837. $\sqrt{3}\pi$

68019156838. $\sqrt{3}\pi - \frac{3}{4}$

68019156839. $\sqrt{3}\pi + \frac{3}{4}$

68019156840. $\sqrt{3}\pi + 1$

Question Number : 10 Question Id : 68019114613 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

प्रथम चतुर्थांश में रेखा $y = x$ के नीचे दीघर्वृत $x^2 + 3y^2 = 18$ से घिरे क्षेत्र का क्षेत्रफल (वर्ग इकाइयों में) है

Options :

68019156837. $\sqrt{3}\pi$

68019156838. $\sqrt{3}\pi - \frac{3}{4}$

68019156839. $\sqrt{3}\pi + \frac{3}{4}$

68019156840. $\sqrt{3}\pi + 1$

Question Number : 11 Question Id : 68019114614 Question Type : MCQ Option Shuffling : Yes

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 integral $\int_{1/4}^{3/4} \cos\left(2 \cot^{-1} \sqrt{\frac{1-x}{1+x}}\right) dx$ is equal to

Options :

68019156841. $1/4$

68019156842. $-1/4$

68019156843. $1/2$

68019156844. $-1/2$

Question Number : 11 Question Id : 68019114614 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

समाकलन $\int_{1/4}^{3/4} \cos\left(2 \cot^{-1} \sqrt{\frac{1-x}{1+x}}\right) dx$ बराबर है

Options :

68019156841. $1/4$

68019156842. $-1/4$

68019156843. $1/2$

68019156844. $-1/2$

Question Number : 12 Question Id : 68019114615 Question Type : MCQ Option Shuffling : Yes

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 the integral $\int_{-1}^2 \log_e \left(x + \sqrt{x^2 + 1}\right) dx$ is

Options :

68019156845. $\sqrt{2} - \sqrt{5} + \log_e \left(\frac{9+4\sqrt{5}}{1+\sqrt{2}}\right)$

68019156846. $\sqrt{5} - \sqrt{2} + \log_e \left(\frac{9+4\sqrt{5}}{1+\sqrt{2}}\right)$

68019156847. $\sqrt{2} - \sqrt{5} + \log_e \left(\frac{7+4\sqrt{5}}{1+\sqrt{2}}\right)$

68019156848. $\sqrt{5} - \sqrt{2} + \log_e \left(\frac{7+4\sqrt{5}}{1+\sqrt{2}} \right)$

Question Number : 12 Question Id : 68019114615 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A
Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

समाकलन $\int_{-1}^2 \log_e (x + \sqrt{x^2 + 1}) dx$ का मान है

Options :

68019156845. $\sqrt{2} - \sqrt{5} + \log_e \left(\frac{9+4\sqrt{5}}{1+\sqrt{2}} \right)$

68019156846. $\sqrt{5} - \sqrt{2} + \log_e \left(\frac{9+4\sqrt{5}}{1+\sqrt{2}} \right)$

68019156847. $\sqrt{2} - \sqrt{5} + \log_e \left(\frac{7+4\sqrt{5}}{1+\sqrt{2}} \right)$

68019156848. $\sqrt{5} - \sqrt{2} + \log_e \left(\frac{7+4\sqrt{5}}{1+\sqrt{2}} \right)$

Question Number : 13 Question Id : 68019114616 Question Type : MCQ Option Shuffling : Yes
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 $\int_0^x \sqrt{1 - (y'(t))^2} dt = \int_0^x y(t) dt$, $0 \leq x \leq 3$, $y \geq 0$, $y(0) = 0$. Then
 at $x = 2$, $y'' + y + 1$ is equal to

Options :

68019156849. 1

68019156850. 1/2

68019156851. $\sqrt{2}$

68019156852. 2

Question Number : 13 Question Id : 68019114616 Question Type : MCQ Option Shuffling : Yes
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 $\int_0^x \sqrt{1 - (y'(t))^2} dt = \int_0^x y(t) dt$, $0 \leq x \leq 3$, $y \geq 0$, $y(0) = 0$ हैं। तो $x = 2$ पर $y'' + y + 1$ बराबर है

Options :

68019156849. 1

68019156850. 1/2

68019156851. $\sqrt{2}$

68019156852. 2

Question Number : 14 Question Id : 68019114617 Question Type : MCQ Option Shuffling : Yes
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 vertices of a triangle ABC are $A(3, -1)$ and $B(-2, 3)$, and its orthocentre is $P(1,1)$. If the coordinates of the point C are (α, β) and the centre of the circle circumscribing the triangle PAB is (h,k) , then the value of $(\alpha + \beta) + 2(h+k)$ equals

Options :

68019156853. 5

68019156854. 15

68019156855. 51

68019156856. 81

Question Number : 14 Question Id : 68019114617 Question Type : MCQ Option Shuffling : Yes

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 के दो शीर्ष $A(3, -1)$ और $B(-2, 3)$ हैं तथा उसका लंब केन्द्र $P(1,1)$ है। यदि बिन्दु C के निर्देशांक (α, β) हैं तथा त्रिभुज PAB के परिवृत्त का केन्द्र (h,k) है, तब $(\alpha + \beta) + 2(h+k)$ का मान बराबर है

Options :

68019156853. 5

68019156854. 15

68019156855. 51

68019156856. 81

Question Number : 15 Question Id : 68019114618 Question Type : MCQ Option Shuffling : Yes

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 foci of a hyperbola H coincide with the foci of the ellipse

$E: \frac{(x-1)^2}{100} + \frac{(y-1)^2}{75} = 1$ and the eccentricity of the hyperbola H be the reciprocal of the eccentricity of the ellipse E . If the length of the transverse axis of H is α and the length of its conjugate axis is β , then $3\alpha^2 + 2\beta^2$ is equal to

Options :

68019156857. 205

68019156858. 242

68019156859. 237

68019156860. 225

Question Number : 15 Question Id : 68019114618 Question Type : MCQ Option Shuffling : Yes

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 अतिपरवलय H की नाभियाँ, दीर्घवृत्त $E: \frac{(x-1)^2}{100} + \frac{(y-1)^2}{75} = 1$ की नाभियों पर हैं तथा अतिपरवलय H की उत्केन्द्रता, दीर्घवृत्त E की उत्केन्द्रता व्युत्क्रम (reciprocal) है। यदि अतिपरवलय H के अनुप्रस्थ अक्ष की लंबाई α है तथा इसके संयुग्मी अक्ष की लंबाई β है, तो $3\alpha^2 + 2\beta^2$ बराबर है

Options :

68019156857. 205

68019156858. 242

68019156859. 237

68019156860. 225

Question Number : 16 Question Id : 68019114619 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Consider the line L passing through the points (1, 2, 3) and (2, 3, 5). The distance of the point $\left(\frac{11}{3}, \frac{11}{3}, \frac{19}{3}\right)$ from the line L along the line $\frac{3x-11}{2} = \frac{3y-11}{1} = \frac{3z-19}{2}$ is equal to

Options :

68019156861. 6

68019156862. 5

68019156863. 4

68019156864. 3

Question Number : 16 Question Id : 68019114619 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

बिंदुओं (1, 2, 3) तथा (2, 3, 5) से होकर जाने वाली रेखा L का विचार कीजिए। रेखा $\frac{3x-11}{2} = \frac{3y-11}{1} = \frac{3z-19}{2}$ के अनुदिश, बिंदु $\left(\frac{11}{3}, \frac{11}{3}, \frac{19}{3}\right)$ की रेखा L से दूरी है:

Options :

68019156861. 6

68019156862. 5

68019156863. 4

68019156864. 3

Question Number : 17 Question Id : 68019114620 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Between the following two statements:

Statement I : Let $\vec{a} = \hat{i} + 2\hat{j} - 3\hat{k}$ and $\vec{b} = 2\hat{i} + \hat{j} - \hat{k}$. Then the vector $\vec{r}$ satisfying $\vec{a} \times \vec{r} = \vec{a} \times \vec{b}$ and $\vec{a} \cdot \vec{r} = 0$ is of magnitude $\sqrt{10}$.

Statement II : In a triangle ABC , $\cos 2A + \cos 2B + \cos 2C \geq -\frac{3}{2}$.

Options :

68019156865. Both Statement I and Statement II are correct.

68019156866. Both Statement I and Statement II are incorrect.

68019156867. Statement I is correct but Statement II is incorrect.

68019156868. Statement I is incorrect but Statement II is correct.

Question Number : 17 Question Id : 68019114620 Question Type : MCQ Option Shuffling : Yes

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 दो कथनों:

कथन I : माना $\vec{a} = \hat{i} + 2\hat{j} - 3\hat{k}$ और $\vec{b} = 2\hat{i} + \hat{j} - \hat{k}$ हैं। तो $\vec{a} \times \vec{r} = \vec{a} \times \vec{b}$ तथा $\vec{a} \cdot \vec{r} = 0$ को संतुष्ट करने वाले सदिश $\vec{r}$ का परिमाण $\sqrt{10}$ है।

कथन II : एक त्रिभुज ABC में $\cos 2A + \cos 2B + \cos 2C \geq -\frac{3}{2}$ है।

में से

Options :

68019156865. कथन I तथा कथन II दोनों सही हैं।

68019156866. कथन I तथा कथन II दोनों गलत हैं।

68019156867. कथन I सही है परन्तु कथन II गलत है।

68019156868. कथन I गलत है परन्तु कथन II सही है।

Question Number : 18 Question Id : 68019114621 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Let $\vec{a} = 2\hat{i} + \alpha\hat{j} + \hat{k}$, $\vec{b} = -\hat{i} + \hat{k}$, $\vec{c} = \beta\hat{j} - \hat{k}$, where α and β are integers and $\alpha\beta = -6$. Let the values of the ordered pair (α, β) , for which the area of the parallelogram of diagonals $\vec{a} + \vec{b}$ and $\vec{b} + \vec{c}$ is $\frac{\sqrt{21}}{2}$, be (α_1, β_1) and (α_2, β_2) . Then $\alpha_1^2 + \beta_1^2 - \alpha_2\beta_2$ is equal to

Options :

68019156869. 17

68019156870. 19

68019156871. 21

68019156872. 24

Question Number : 18 Question Id : 68019114621 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

माना $\vec{a} = 2\hat{i} + \alpha\hat{j} + \hat{k}$, $\vec{b} = -\hat{i} + \hat{k}$, $\vec{c} = \beta\hat{j} - \hat{k}$ हैं, जहाँ α और β पूर्णांक हैं और $\alpha\beta = -6$ है। माना क्रमित युग्म (α, β) के मान, जिनके लिए विकर्णों $\vec{a} + \vec{b}$ और $\vec{b} + \vec{c}$ के समांतर चतुर्भुज का क्षेत्रफल $\frac{\sqrt{21}}{2}$ है, (α_1, β_1) और (α_2, β_2) हैं। तो $\alpha_1^2 + \beta_1^2 - \alpha_2\beta_2$ बराबर है

Options :

68019156869. 17

68019156870. 19

68019156871. 21

68019156872. 24

Question Number : 19 Question Id : 68019114622 Question Type : MCQ Option Shuffling : Yes

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 variance of the frequency distribution

x	c	$2c$	$3c$	$4c$	$5c$	$6c$
f	2	1	1	1	1	1

is 160, then the value of $c \in \mathbb{N}$ is

Options :

68019156873. 6

68019156874. 7

68019156875. 8

68019156876. 5

Question Number : 19 Question Id : 68019114622 Question Type : MCQ Option Shuffling : Yes

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 बारंबारता बंटन

x	c	$2c$	$3c$	$4c$	$5c$	$6c$
f	2	1	1	1	1	1

का प्रसरण 160 है, तो $c \in \mathbb{N}$ का मान है

Options :

68019156873. 6

68019156874. 7

68019156875. 8

68019156876. 5

Question Number : 20 Question Id : 68019114623 Question Type : MCQ Option Shuffling : Yes

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 an unbiased dice is rolled thrice, then the probability of getting a greater number in the i^{th} roll than the number obtained in the $(i-1)^{\text{th}}$ roll, $i=2, 3$, is equal to

Options :

68019156877. 5/54

68019156878. 3/54

68019156879. 2/54

68019156880. 1/54

Question Number : 20 Question Id : 68019114623 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

यदि एक अनभिन्नत पासे को तीन बार फेंका जाता है, तो $i=2, 3$ के लिए i -वीं बार फेंकने पर प्राप्त संख्या के, $(i-1)$ -वीं बार फेंकने पर प्राप्त संख्या से अधिक होने की प्रायिकता है

Options :

68019156877. 5/54

68019156878. 3/54

68019156879. 2/54

68019156880. 1/54

Mathematics Section B

Section Id :	680191276
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 : 680191366
Question Shuffling Allowed : Yes
Is Section Default? : null

Question Number : 21 Question Id : 68019114624 Question Type : SA Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Let $A = \{(x, y) : 2x + 3y = 23, x, y \in \mathbb{N}\}$ and $B = \{x : (x, y) \in A\}$. Then the number of one-one functions from A to B 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 : 68019114624 Question Type : SA Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

माना $A = \{(x, y) : 2x + 3y = 23, x, y \in \mathbb{N}\}$ तथा $B = \{x : (x, y) \in A\}$. हैं। तो A से B के एकैकी फलनों की संख्या है _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 22 Question Id : 68019114625 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 matrices : $A = \begin{bmatrix} 2 & -5 \\ 3 & m \end{bmatrix}$, $B = \begin{bmatrix} 20 \\ m \end{bmatrix}$ and $X = \begin{bmatrix} x \\ y \end{bmatrix}$. Let the set of all m , for which the system of equations $AX = B$ has a negative solution (i.e., $x < 0$ and $y < 0$), be the interval (a, b) . Then $8 \int_a^b |A| dm$ 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 : 68019114625 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

आव्यूहों $A = \begin{bmatrix} 2 & -5 \\ 3 & m \end{bmatrix}$, $B = \begin{bmatrix} 20 \\ m \end{bmatrix}$, $X = \begin{bmatrix} x \\ y \end{bmatrix}$ का विचार कीजिए। माना m के सभी मान, जिनके लिए समीकरण निकाय $AX = B$ का ऋणात्मक हल (अर्थात्, $x < 0$ और $y < 0$) का समुच्चय, अंतराल (a, b) है। तो $8 \int_a^b |A| dm$ 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 : 68019114626 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 integers, between 100 and 1000 having the sum of their digits equals to 14, is _____.

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 : 68019114626 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

100 और 1000 के बीच पूर्णांकों, जिनके अंकों का योग 14 है, 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 : 24 Question Id : 68019114627 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

If $\left(\frac{1}{\alpha+1} + \frac{1}{\alpha+2} + \dots + \frac{1}{\alpha+1012}\right) - \left(\frac{1}{2 \cdot 1} + \frac{1}{4 \cdot 3} + \frac{1}{6 \cdot 5} + \dots + \frac{1}{2024 \cdot 2023}\right) = \frac{1}{2024}$, then α is equal to _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 24 **Question Id :** 68019114627 **Question Type :** SA **Calculator :** None

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

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

यदि $\left(\frac{1}{\alpha+1} + \frac{1}{\alpha+2} + \dots + \frac{1}{\alpha+1012}\right) - \left(\frac{1}{2 \cdot 1} + \frac{1}{4 \cdot 3} + \frac{1}{6 \cdot 5} + \dots + \frac{1}{2024 \cdot 2023}\right) = \frac{1}{2024}$ है, तो α बराबर है _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 25 **Question Id :** 68019114628 **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 set of all values of p , for which

$f(x) = (p^2 - 6p + 8)(\sin^2 2x - \cos^2 2x) + 2(2 - p)x + 7$ does not have any critical point, be the interval (a, b) . Then $16ab$ 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 : 25 Question Id : 68019114628 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

माना p के सभी मानों, जिनके लिए

$f(x) = (p^2 - 6p + 8)(\sin^2 2x - \cos^2 2x) + 2(2 - p)x + 7$ का एक भी क्रान्तिक बिंदु नहीं है, का समुच्चय, अंतराल (a, b) है। तो $16ab$ बराबर है _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 26 Question Id : 68019114629 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

For a differentiable function $f : \mathbb{R} \rightarrow \mathbb{R}$, suppose $f'(x) = 3f(x) + \alpha$, where $\alpha \in \mathbb{R}$, $f(0) = 1$ and $\lim_{x \rightarrow -\infty} f(x) = 7$. Then $9f(-\log_e 3)$ 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 : 26 Question Id : 68019114629 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

एक अवकलनीय फलन $f: \mathbb{R} \rightarrow \mathbb{R}$ के लिए, माना $f'(x) = 3f(x) + \alpha$, जहाँ $\alpha \in \mathbb{R}$, $f(0) = 1$ तथा $\lim_{x \rightarrow -\infty} f(x) = 7$ हैं। तो $9f(-\log_e 3)$ 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 : 27 Question Id : 68019114630 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 circle $C: x^2 + y^2 = 4$ and the parabola $P: y^2 = 8x$. If the set of all values of α , for which three chords of the circle C on three distinct lines passing through the point $(\alpha, 0)$ are bisected by the parabola P is the interval (p, q) , then $(2q - p)^2$ 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 : 68019114630 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

वृत्त $C : x^2 + y^2 = 4$ तथा परवलय $P: y^2 = 8x$ का विचार कीजिए। यदि α के सभी मानों, जिनके लिए बिंदु $(\alpha, 0)$ से होकर जाने वाली तीन भिन्न रेखाओं पर वृत्त C की तीन जावाँ, परवलय P द्वारा समद्विभाजित होती हैं, का समुच्चय अंतराल (p, q) है, तो $(2q - p)^2$ 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 :** 68019114631 **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, B and C be three points on the parabola $y^2 = 6x$ and let the line segment AB meet the line L through C parallel to the x -axis at the point D . Let M and N respectively be the feet of the perpendiculars from A and B on L . Then $\left(\frac{AM \cdot BN}{CD}\right)^2$ 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 :** 68019114631 **Question Type :** SA **Calculator :** None

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

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

माना परवलय $y^2 = 6x$ पर तीन बिंदु A, B तथा C हैं और माना C से होकर जाने वाली तथा x -अक्ष के समांतर रेखा L , रेखाखंड AB को बिंदु D पर मिलती है। माना A तथा B से रेखा L पर डाले गए लम्बों के पाद क्रमशः M तथा N हैं। तो $\left(\frac{AM \cdot BN}{CD}\right)^2$ 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 :** 68019114632 **Question Type :** SA **Calculator :** None

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

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

The square of the distance of the image of the point $(6, 1, 5)$ in the line $\frac{x-1}{3} = \frac{y}{2} = \frac{z-2}{4}$, from the origin 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 :** 68019114632 **Question Type :** SA **Calculator :** None

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

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

बिंदु $(6, 1, 5)$ के रखा $\frac{x-1}{3} = \frac{y}{2} = \frac{z-2}{4}$ में प्रतिबिंब की मूल बिंदु से दूरी का वर्ग 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 :** 68019114633 **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 inverse trigonometric functions take principal values. The number of real solutions of the equation $2 \sin^{-1} x + 3 \cos^{-1} x = \frac{2\pi}{5}$, is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 30 **Question Id :** 68019114633 **Question Type :** SA **Calculator :** None

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

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

माना प्रतिलोम त्रिकोणमितीय फलन मुख्य मान लेते हैं। तो समीकरण $2 \sin^{-1} x + 3 \cos^{-1} x = \frac{2\pi}{5}$ के वास्तविक हलों की संख्या है _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

Physics Section A

Section Id :	680191277
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 :	680191367
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 31 Question Id : 68019114634 Question Type : MCQ Option Shuffling : Yes

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 de-Broglie wavelength associated with a particle of mass m and energy E is $h / \sqrt{2mE}$. The dimensional formula for Planck's constant is :

Options :

68019156891. $[M^2L^2T^{-2}]$

68019156892. $[ML^2T^{-1}]$

68019156893. $[ML^{-1}T^{-2}]$

68019156894. $[MLT^{-2}]$

Question Number : 31 Question Id : 68019114634 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

m द्रव्यमान तथा E ऊर्जा के एक कण से संबद्ध डी-ब्रॉग्ली तरंग दैर्घ्य $h / \sqrt{2mE}$ है। प्लांक नियतांक का विमीय सूत्र है:

Options :

68019156891. $[M^2L^2T^{-2}]$

68019156892. $[ML^2T^{-1}]$

68019156893. $[ML^{-1}T^{-2}]$

68019156894. $[MLT^{-2}]$

Question Number : 32 Question Id : 68019114635 Question Type : MCQ Option Shuffling : Yes

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 cars are travelling towards each other at speed of 20 m s^{-1} each. When the cars are 300 m apart, both the drivers apply brakes and the cars retard at the rate of 2 m s^{-2} . The distance between them when they come to rest is :

Options :

68019156895. 50 m

68019156896. 100 m

68019156897. 200 m

68019156898. 25 m

Question Number : 32 Question Id : 68019114635 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

दो कारें 20 मी/से की चाल से एक दूसरे की ओर गति कर रही हैं। जब वे एक दूसरे से 300 मी की दूरी पर हैं, दोनों ड्राइवर 2 मी से^{-2} की दर से मंदन आरोपित करते हुए ब्रेक लगाते हैं। उनके विराम में आने पर उनके बीच की दूरी है:

Options :

68019156895. 50 m

68019156896. 100 m

68019156897. 200 m

68019156898. 25 m

Question Number : 33 Question Id : 68019114636 Question Type : MCQ Option Shuffling : Yes

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 nucleus at rest disintegrates into two smaller nuclei with their masses in the ratio of 2:1. After disintegration they will move :

Options :

68019156899. in the same direction with same speed.

68019156900. in opposite directions with speed in the ratio of 1:2 respectively.

68019156901. in opposite directions with speed in the ratio of 2:1 respectively.

68019156902. in opposite directions with the same speed.

Question Number : 33 Question Id : 68019114636 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

विरामावस्था में एक नाभिक 2:1 के द्रव्यमान अनुपात में दो छोटे नाभिकों में विखण्डित होता है। विखण्डन के उपरान्त वे गति करेंगे:

Options :

68019156899. समान दिशा में समान चाल से ।

68019156900. विपरीत दिशा में क्रमशः 1:2 अनुपात की चालों से।

68019156901. विपरीत दिशा में क्रमशः 2:1 अनुपात की चालों से।

68019156902. विपरीत दिशा में समान चाल से।

Question Number : 34 Question Id : 68019114637 Question Type : MCQ Option Shuffling : Yes

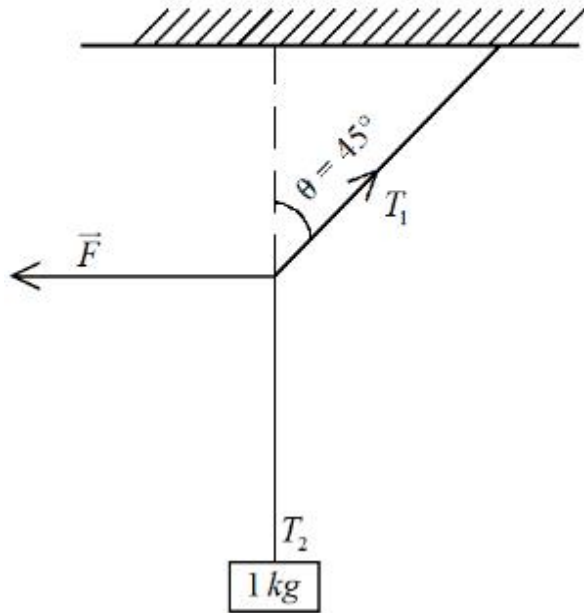
Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

A 1 kg mass is suspended from the ceiling by a rope of length 4m. A horizontal force ' F ' is applied at the mid point of the rope so that the rope makes an angle of 45° with respect to the vertical axis as shown in figure. The magnitude of F is :

(Assume that the system is in equilibrium and $g = 10 \text{ m/s}^2$)



Options :

68019156903. 10 N

68019156904. $\frac{10}{\sqrt{2}} \text{ N}$

68019156905. $\frac{1}{10 \times \sqrt{2}} \text{ N}$

68019156906. 1 N

Question Number : 34 Question Id : 68019114637 Question Type : MCQ Option Shuffling : Yes

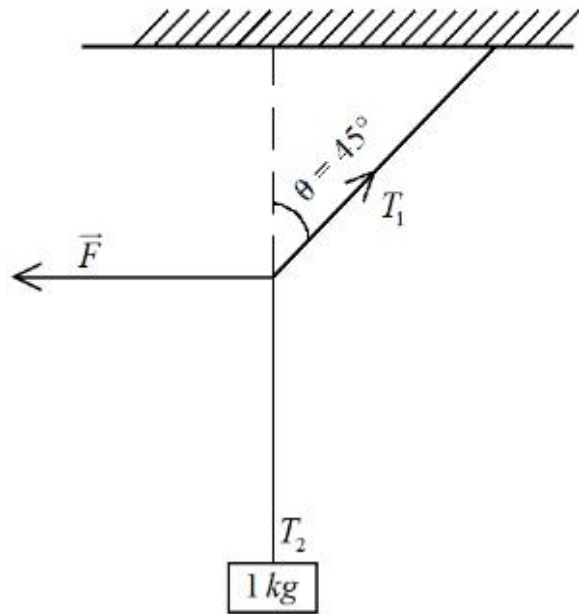
Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

एक किग्रा द्रव्यमान को 4 मी लम्बाई की एक रस्सी द्वारा सीलिंग से लटकाया गया है। रस्सी के मध्य बिन्दु पर क्षैतिज बल F के अनुप्रयोग से चित्र अनुसार ऊर्ध्वाधर अक्ष से 45° का एक कोण बनता है। F का परिमाण है:

(द्रव्यमान को साम्यावस्था में मानकर तथा $g = 10$ मी/से²) :



Options :

68019156903. 10 N

68019156904. $\frac{10}{\sqrt{2}}\text{ N}$

68019156905. $\frac{1}{10 \times \sqrt{2}}\text{ N}$

68019156906. 1 N

Question Number : 35 Question Id : 68019114638 Question Type : MCQ Option Shuffling : Yes

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 hydrogen atom in ground state is given an energy of 10.2 eV . How many spectral lines will be emitted due to transition of electrons ?

Options :

68019156907. 1

68019156908. 3

68019156909. 6

68019156910. 10

Question Number : 35 Question Id : 68019114638 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

हाइड्रोजन परमाणु को मूल अवस्था में 10.2 eV ऊर्जा दी गई है। इलेक्ट्रान के संक्रमण के कारण कितनी स्पैक्ट्रमी रेखाएँ उत्सर्जित होगी ?

Options :

68019156907. 1

68019156908. 3

68019156909. 6

68019156910. 10

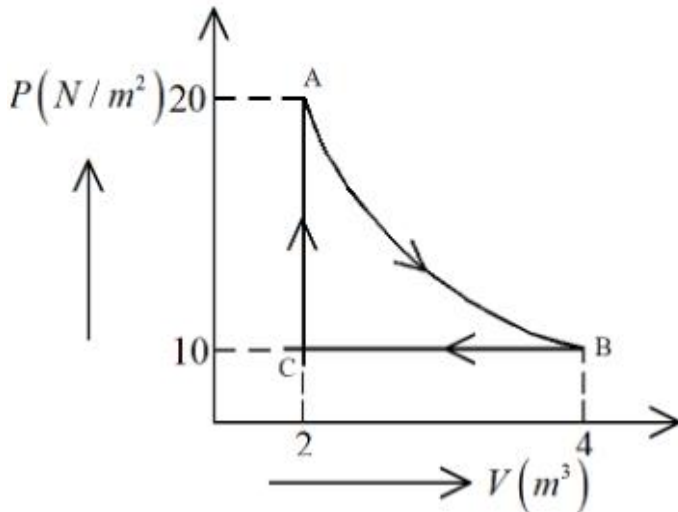
Question Number : 36 Question Id : 68019114639 Question Type : MCQ Option Shuffling : Yes

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 real gas within a closed chamber at 27°C undergoes the cyclic process as shown in figure. The gas obeys $PV^3 = RT$ equation for the path A to B . The net work done in the complete cycle is (assuming $R = 8 \text{ J/mol K}$) :



Options :

68019156911. 20 J

68019156912. -20 J

68019156913. 205 J

68019156914. 225 J

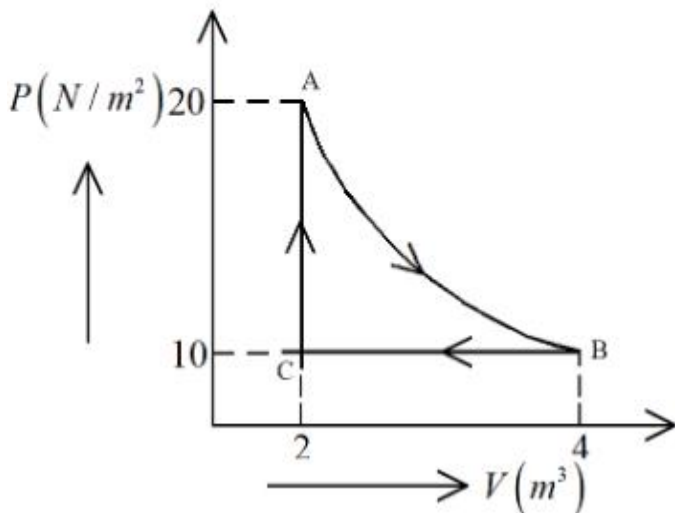
Question Number : 36 Question Id : 68019114639 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

एक बन्द चेम्बर में 27°C पर एक वास्तविक गैस प्रदर्शित चित्र के अनुसार एक चक्रीय प्रक्रम से गुजरती है। A से B पथ के लिए गैस $PV^3 = RT$ समीकरण का अनुसरण करती है। चक्र पूर्ण करने के लिए कुल कार्य है (यदि $R = 8 \text{ J/mol K}$) :



Options :

68019156911. 20 J

68019156912. -20 J

68019156913. 205 J

68019156914. 225 J

Question Number : 37 Question Id : 68019114640 Question Type : MCQ Option Shuffling : Yes

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 energy released in the fusion of 2 kg of hydrogen deep in the sun is E_H and the energy released in the fission of 2 kg of ^{235}U is E_U . The ratio $\frac{E_H}{E_U}$ is approximately:

(Consider the fusion reaction as $4^1_1\text{H} + 2e^- \rightarrow ^4_2\text{He} + 2\nu + 6\gamma + 26.7 \text{ MeV}$, energy released in the fission reaction of ^{235}U is 200 MeV per fission nucleus and $N_A = 6.023 \times 10^{23}$)

Options :

68019156915. 7.62

68019156916. 9.13

68019156917. 25.6

68019156918. 15.04

Question Number : 37 Question Id : 68019114640 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

सूर्य में 2 kg हाइड्रोजन के संलयन में उत्पन्न ऊर्जा E_H तथा 2 kg के ^{235}U के विखण्डन में उत्पन्न ऊर्जा E_U है। अनुपात $\frac{E_H}{E_U}$ लगभग बराबर है:

($4^1_1\text{H} + 2e^- \rightarrow ^4_2\text{He} + 2\nu + 6\gamma + 26.7\text{ MeV}$ को संलयन अभिक्रिया मानकर तथा ^{235}U की विखण्डन अभिक्रिया में प्रति नाभिक विखण्डन उत्पन्न ऊर्जा 200 MeV है, $N_A = 6.023 \times 10^{23}$)

Options :

68019156915. 7.62

68019156916. 9.13

68019156917. 25.6

68019156918. 15.04

Question Number : 38 Question Id : 68019114641 Question Type : MCQ Option Shuffling : Yes

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 satellite of 10^3 kg mass is revolving in circular orbit of radius $2R$. If $\frac{10^4 R}{6}$ J energy is supplied to the satellite, it would revolve in a new circular orbit of radius :

(use $g = 10 \text{ m/s}^2$, $R = \text{radius of earth}$)

Options :

68019156919. $2.5 R$

68019156920. $3 R$

68019156921. $4 R$

68019156922. $6 R$

Question Number : 38 Question Id : 68019114641 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

10^3 किग्रा द्रव्यमान का एक उपग्रह $2R$ त्रिज्या की एक कक्षा में परिक्रमण कर रहा है। यदि उपग्रह को $\frac{10^4 R}{6}$ जूल ऊर्जा प्रदान की जाये तो यह किस त्रिज्या की नई कक्षा में परिक्रमण करेगा:

(दिया है $g = 10 \text{ मी/से}^2$, $R = \text{पृथ्वी की त्रिज्या}$)

Options :

68019156919. $2.5 R$

68019156920. $3 R$

68019156921. $4 R$

68019156922. $6 R$

Question Number : 39 Question Id : 68019114642 Question Type : MCQ Option Shuffling : Yes

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 excess pressure inside a soap bubble is thrice the excess pressure inside a second soap bubble. The ratio between the volume of the first and the second bubble is:

Options :

68019156923. 1 : 3

68019156924. 1 : 9

68019156925. 1 : 27

68019156926. 1 : 81

Question Number : 39 Question Id : 68019114642 Question Type : MCQ Option Shuffling : Yes

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 साबुन के बुलबुले में अधिक्य दाब दूसरे साबुन बुलबुले के अन्दर अधिक्य दाब से तीन गुना है। प्रथम तथा द्वितीय बुलबुले के आयतनों का अनुपात है:

Options :

68019156923. 1 : 3

68019156924. 1 : 9

68019156925. 1 : 27

68019156926. 1 : 81

Question Number : 40 Question Id : 68019114643 Question Type : MCQ Option Shuffling : Yes

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 spherical ball of radius 1×10^{-4} m and density 10^5 kg/m^3 falls freely under gravity through a distance h before entering a tank of water. If after entering in water the velocity of the ball does not change, then the value of h is approximately:

(The coefficient of viscosity of water is $9.8 \times 10^{-6} \text{ N s/m}^2$)

Options :

68019156927. 2296 m

68019156928. 2249 m

68019156929. 2396 m

68019156930. 2518 m

Question Number : 40 Question Id : 68019114643 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

1×10^{-4} m त्रिज्या तथा 10^5 kg/m^3 घनत्व की एक गोलीय गेंद पानी के टैंक में प्रवेश करने से पूर्व h ऊँचाई से गुरुत्व के अधीन मुक्त रूप से गिरती है। यदि पानी में प्रवेश करने के उपरान्त वेग अपरिवर्तित रहता हो तो h का लगभग मान है:

(पानी का श्यानता गुणांक $9.8 \times 10^{-6} \text{ N s/m}^2$)

Options :

68019156927. 2296 m

68019156928. 2249 m

68019156929. 2396 m

68019156930. 2518 m

Question Number : 41 Question Id : 68019114644 Question Type : MCQ Option Shuffling : Yes

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 temperature of a gas is -78°C and the average translational kinetic energy of its molecules is K . The temperature at which the average translational kinetic energy of the molecules of the same gas becomes $2K$ is :

Options :

68019156931. 117°C

68019156932. 127°C

68019156933. -78°C

68019156934. -39°C

Question Number : 41 Question Id : 68019114644 Question Type : MCQ Option Shuffling : Yes

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 गैस का तापमान -78°C है एवं इसके अणुओं की औसत स्थानान्तरीय गतिज ऊर्जा K है। वह ताप जिस पर गैस के अणुओं की औसत स्थानान्तरीय गतिज ऊर्जा $2K$ हो जाये, है:

Options :

68019156931. 117°C

68019156932. 127°C

68019156933. -78°C

68019156934. -39°C

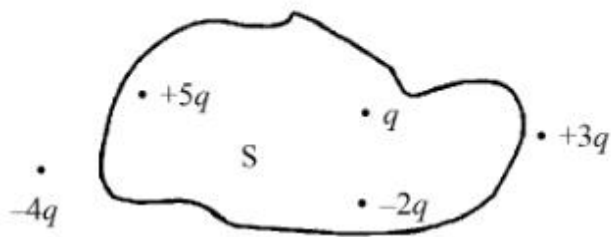
Question Number : 42 Question Id : 68019114645 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Five charges $+q$, $+5q$, $-2q$, $+3q$ and $-4q$ are situated as shown in the figure. The electric flux due to this configuration through the surface S is :



Options :

68019156935. $\frac{4q}{\epsilon_0}$

68019156936. $\frac{5q}{\epsilon_0}$

68019156937. $\frac{3q}{\epsilon_0}$

68019156938. $\frac{q}{\epsilon_0}$

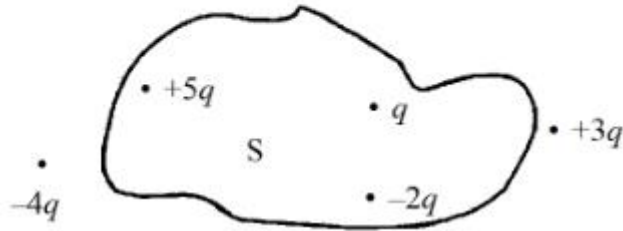
Question Number : 42 Question Id : 68019114645 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

प्रदर्शित चित्र के अनुसार, पाँच आवेश $+q$, $+5q$, $-2q$, $+3q$ तथा $-4q$ स्थापित हैं। इस अभिविन्यास के कारण S सतह से गुजरने वाला फ्लक्स है:



Options :

68019156935. $\frac{4q}{\epsilon_0}$

68019156936. $\frac{5q}{\epsilon_0}$

68019156937. $\frac{3q}{\epsilon_0}$

68019156938. $\frac{q}{\epsilon_0}$

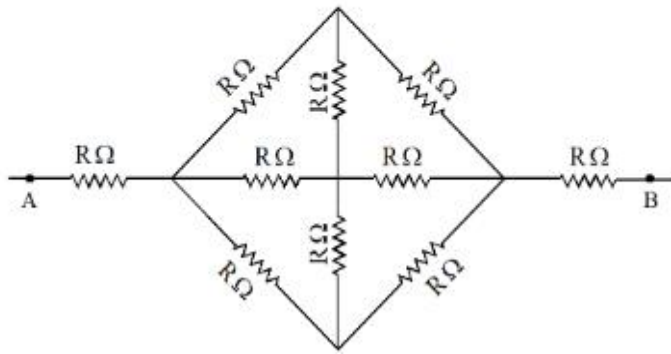
Question Number : 43 Question Id : 68019114646 Question Type : MCQ Option Shuffling : Yes

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 effective resistance between A and B , if resistance of each resistor is R , will be :



Options :

68019156939. $\frac{2}{3}R$

68019156940. $\frac{4R}{3}$

68019156941. $\frac{5R}{3}$

68019156942. $\frac{8R}{3}$

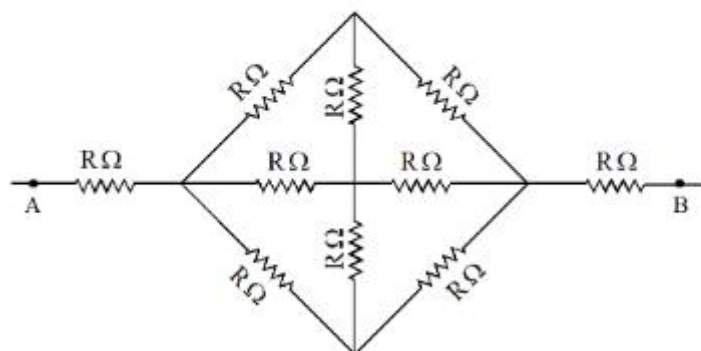
Question Number : 43 Question Id : 68019114646 Question Type : MCQ Option Shuffling : Yes

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 प्रत्येक प्रतिरोध R हो तो A व B के बीच तुल्य प्रतिरोध क्या होगा:



Options :

68019156939. $\frac{2}{3}R$

68019156940. $\frac{4R}{3}$

68019156941. $\frac{5R}{3}$

68019156942. $\frac{8R}{3}$

Question Number : 44 Question Id : 68019114647 Question Type : MCQ Option Shuffling : Yes
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 a deuteron ($q = +e$, $m = 2.0u$) having same kinetic energies enter a region of uniform magnetic field $\vec{B}$, moving perpendicular to $\vec{B}$. The ratio of the radius r_d of deuteron path to the radius r_p of the proton path is :

Options :

68019156943. $\sqrt{2}:1$

68019156944. $1:\sqrt{2}$

68019156945. $1:2$

68019156946. $1:1$

Question Number : 44 Question Id : 68019114647 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A
Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

समान गतिज ऊर्जा का एक प्रोटान तथा एक ड्यूट्रॉन ($q = +e$, $m = 2.0u$) एक समान चुम्बकीय क्षेत्र $\vec{B}$ के परिसर में प्रवेश करता है तथा $\vec{B}$ के लम्बवत गति करता है। ड्यूट्रान पथ की त्रिज्या r_d तथा प्रोटान पथ की त्रिज्या r_p का अनुपात है:

Options :

68019156943. $\sqrt{2}:1$

68019156944. $1:\sqrt{2}$

68019156945. $1:2$

68019156946. $1:1$

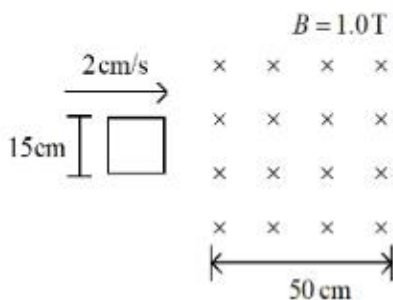
Question Number : 45 Question Id : 68019114648 Question Type : MCQ Option Shuffling : Yes

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 square loop of side 15 cm being moved towards right at a constant speed of 2 cm/s as shown in figure. The front edge enters the 50 cm wide magnetic field at $t = 0$. The value of induced emf in the loop at $t = 10$ s will be :



Options :

68019156947. zero

68019156948. 0.3 mV

68019156949. 3 mV

68019156950. 4.5 mV

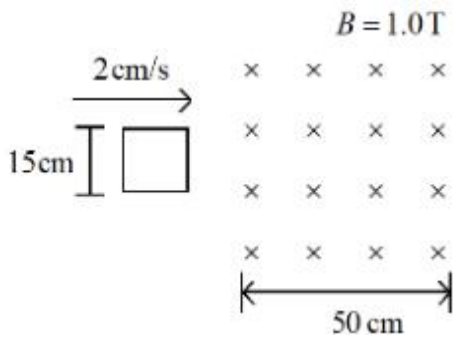
Question Number : 45 Question Id : 68019114648 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

प्रदर्शित चित्र के अनुसार 15 सेमी भुजा का एक वर्गाकार लूप 2 सेमी/से की नियत चाल से दाहिनी ओर गति करता है। $t = 0$ पर सम्मुख 50 सेमी चौड़ाई के चुम्बकीय क्षेत्र में प्रवेश करती है। $t = 10 \text{ s}$ पर लूप में उत्पन्न वि.बा. बल का मान होगा:



Options :

68019156947. शून्य

68019156948. 0.3 mV

68019156949. 3 mV

68019156950. 4.5 mV

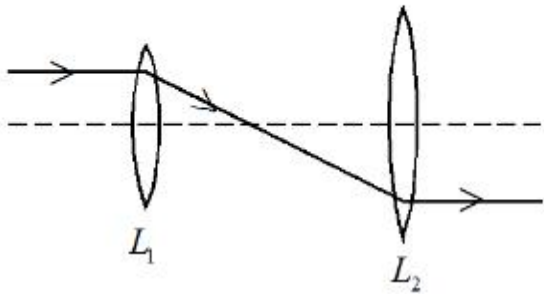
Question Number : 46 Question Id : 68019114649 Question Type : MCQ Option Shuffling : Yes

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 following figure represents two biconvex lenses L_1 and L_2 having focal length 10 cm and 15 cm respectively. The distance between L_1 & L_2 is :



Options :

68019156951. 10 cm

68019156952. 15 cm

68019156953. 25 cm

68019156954. 35 cm

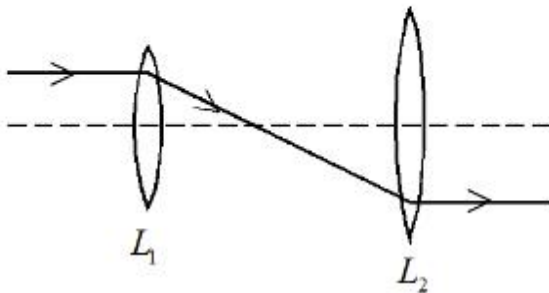
Question Number : 46 Question Id : 68019114649 Question Type : MCQ Option Shuffling : Yes

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 चित्र क्रमशः 10 cm व 15 cm फोकस दूरी के L_1 व L_2 दो द्वि-उत्तल लेंसों को दर्शाता है। L_1 व L_2 के बीच की दूरी है:



Options :

68019156951. 10 cm

68019156952. 15 cm

68019156953. 25 cm

68019156954. 35 cm

Question Number : 47 Question Id : 68019114650 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

UV light of 4.13 eV is incident on a photosensitive metal surface having work function 3.13 eV. The maximum kinetic energy of ejected photoelectrons will be:

Options :

68019156955. 1 eV

68019156956. 3.13 eV

68019156957. 4.13 eV

68019156958. 7.26 eV

Question Number : 47 Question Id : 68019114650 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

4.13 eV का एक पराबैंगनी प्रकाश 3.13 eV कार्यफलन की धातु की सतह पर आपतित होता है। प्रकाश इलेक्ट्रॉनों की अधिकतम गतिज ऊर्जा होगी:

Options :

68019156955. 1 eV

68019156956. 3.13 eV

68019156957. 4.13 eV

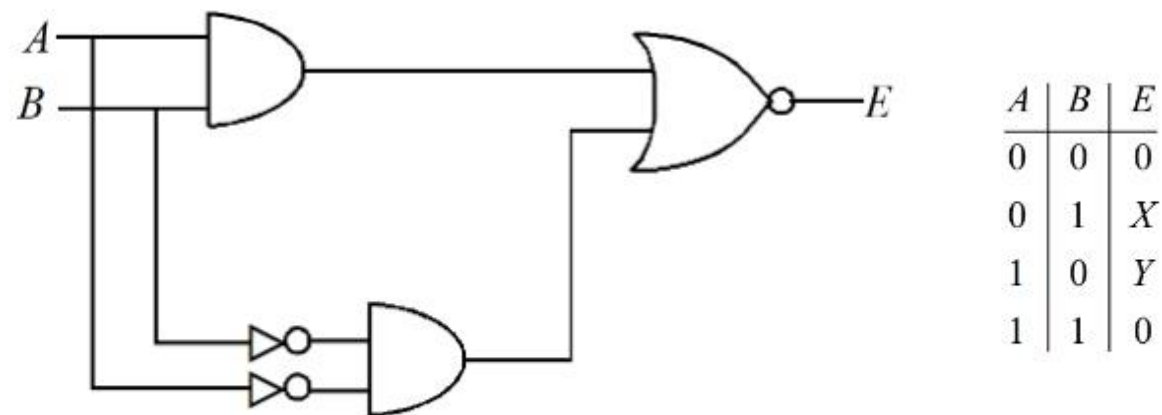
68019156958. 7.26 eV

Question Number : 48 Question Id : 68019114651 Question Type : MCQ Option Shuffling : Yes

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 truth table of the above circuit the value of X and Y are :

Options :

68019156959. 1, 0

68019156960. 0, 1

68019156961. 0, 0

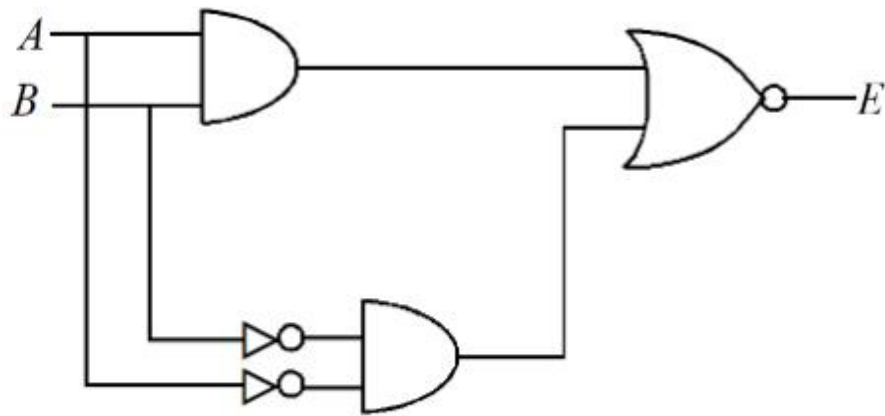
68019156962. 1, 1

Question Number : 48 Question Id : 68019114651 Question Type : MCQ Option Shuffling : Yes

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	B	E
0	0	0
0	1	X
1	0	Y
1	1	0

उपरोक्त परिपथ की सत्यता सारणी में क्रमशः X तथा Y के मान हैं:

Options :

68019156959. 1, 0

68019156960. 0, 1

68019156961. 0, 0

68019156962. 1, 1

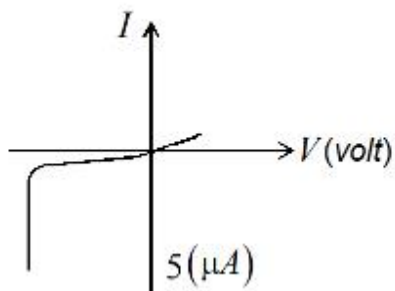
Question Number : 49 Question Id : 68019114652 Question Type : MCQ Option Shuffling : Yes

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 I - V characteristics of an electronic device shown in the figure. The device is :



Options :

68019156963. a diode which can be used as a rectifier

68019156964. a zener diode which can be used as a voltage regulator

68019156965. a solar cell

68019156966. a transistor which can be used as an amplifier

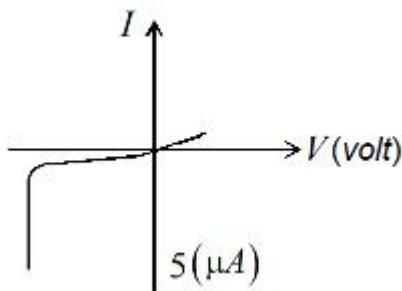
Question Number : 49 Question Id : 68019114652 Question Type : MCQ Option Shuffling : Yes

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 इलेक्ट्रॉनिक युक्ति का I - V अभिलाक्षणिक चित्र में दर्शाया गया है। युक्ति है :



Options :

68019156963. दिष्टकारी के रूप में प्रयुक्त डायोड

68019156964. वोल्टेज रेगुलेटर के रूप में प्रयुक्त एक ज़ीनर डायोड

68019156965. एक सोलर सेल

68019156966. प्रवर्धक के रूप में प्रयुक्त एक ट्रांजिस्टर

Question Number : 50 Question Id : 68019114653 Question Type : MCQ Option Shuffling : Yes

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 magnetic field in a plane electromagnetic wave is

$B_y = (3.5 \times 10^{-7}) \sin (1.5 \times 10^3 x + 0.5 \times 10^{11} t)$ T. The corresponding electric field will be :

Options :

68019156967. $E_y = 1.17 \sin (1.5 \times 10^3 x + 0.5 \times 10^{11} t) \text{Vm}^{-1}$

68019156968. $E_y = 10.5 \sin (1.5 \times 10^3 x + 0.5 \times 10^{11} t) \text{Vm}^{-1}$

68019156969. $E_z = 105 \sin (1.5 \times 10^3 x + 0.5 \times 10^{11} t) \text{Vm}^{-1}$

68019156970. $E_z = 1.17 \sin (1.5 \times 10^3 x + 0.5 \times 10^{11} t) \text{Vm}^{-1}$

Question Number : 50 Question Id : 68019114653 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

एक समतल विद्युतचुंबकीय तरंग में चुम्बकीय क्षेत्र

$B_y = (3.5 \times 10^{-7}) \sin (1.5 \times 10^3 x + 0.5 \times 10^{11} t)$ T है। वैद्युत क्षेत्र होगा:

Options :

68019156967. $E_y = 1.17 \sin (1.5 \times 10^3 x + 0.5 \times 10^{11} t) \text{Vm}^{-1}$

68019156968. $E_y = 10.5 \sin (1.5 \times 10^3 x + 0.5 \times 10^{11} t) \text{Vm}^{-1}$

68019156969. $E_z = 105 \sin (1.5 \times 10^3 x + 0.5 \times 10^{11} t) \text{Vm}^{-1}$

68019156970. $E_z = 1.17 \sin (1.5 \times 10^3 x + 0.5 \times 10^{11} t) \text{Vm}^{-1}$

Physics Section B

Section Id :	680191278
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 :	680191368
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 51 Question Id : 68019114654 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

A force $(3x^2 + 2x - 5)$ N displaces a body from $x = 2$ m to $x = 4$ m. Work done by this force is _____ J.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 51 Question Id : 68019114654 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

$(3x^2 + 2x - 5)$ N का एक बल किसी वस्तु को $x = 2$ m से $x = 4$ m तक विस्थापित करता है। इस बल द्वारा कृत कार्य _____ J 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 : 68019114655 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Monochromatic light of wavelength 500 nm is used in Young's double slit experiment. An interference pattern is obtained on a screen. When one of the slits is covered with a very thin glass plate (refractive index = 1.5), the central maximum is shifted to a position previously occupied by the 4th bright fringe. The thickness of the glass-plate is _____ μm .

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 : 68019114655 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

यंग द्विझिरी प्रयोग में प्रयुक्त एकवर्णी प्रकाश की तरंगदैर्घ्य 500 nm है। एक व्यतिकरण प्रारूप एक पर्दे पर प्राप्त होता है। एक झिरी को एक बहुत पतली काँच प्लेट (अपवर्तनांक = 1.5) से ढक दिया गया है। अब केन्द्रीय उच्चिष्ठ पूर्व में उपस्थित चौथी फ्रिंज की स्थिति तक विस्थापित हो जाता है। काँच की प्लेट की मोटाई _____ μm 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 :** 68019114656 **Question Type :** SA **Calculator :** None

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

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

A capacitor of reactance $4\sqrt{3} \Omega$ and a resistor of resistance 4Ω are connected in series with an ac source of peak value $8\sqrt{2} \text{ V}$. The power dissipation in the circuit is _____ W.

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 :** 68019114656 **Question Type :** SA **Calculator :** None

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

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

$4\sqrt{3} \Omega$ प्रतिघात का एक संघारित्र तथा 4Ω का एक प्रतिरोध $8\sqrt{2} \text{ V}$ शिखर मान के एक प्रत्यावर्ती स्रोत से श्रेणी क्रम में जुड़ा है। परिपथ में शक्ति क्षय _____ W है।

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 : 68019114657 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

A straight magnetic strip has a magnetic moment of 44 Am^2 . If the strip is bent in a semicircular shape, its magnetic moment will be _____ Am^2 .

(given $\pi = \frac{22}{7}$)

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 : 68019114657 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

एक सीधी चुम्बकीय पट्टी का चुम्बकीय आधूर्ण 44 Am^2 है। यदि इसे अर्द्धवृत्ताकार आकृति में मोड़ दिया जाये तो पट्टी का चुम्बकीय आधूर्ण _____ Am^2 होगा ।

(दिया है $\pi = \frac{22}{7}$)

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 :** 68019114658 **Question Type :** SA **Calculator :** None

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

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

At room temperature (27°C), the resistance of a heating element is $50\ \Omega$. The temperature coefficient of the material is $2.4 \times 10^{-4}\ ^{\circ}\text{C}^{-1}$. The temperature of the element, when its resistance is $62\ \Omega$, is _____ $^{\circ}\text{C}$.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 55 **Question Id :** 68019114658 **Question Type :** SA **Calculator :** None

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

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

सामान्य तापमान (27°C) पर एक ऊष्मा तन्तु का प्रतिरोध $50\ \Omega$ है। पदार्थ का ताप गुणांक $2.4 \times 10^{-4}\ ^{\circ}\text{C}^{-1}$ है। $62\ \Omega$ प्रतिरोध होने पर तन्तु का तापमान _____ $^{\circ}\text{C}$ है।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

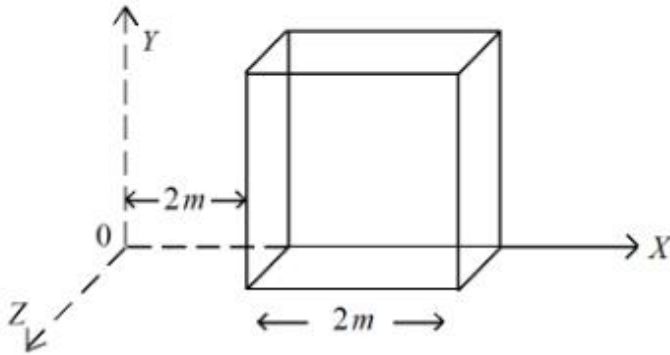
1

Question Number : 56 Question Id : 68019114659 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 $\vec{E} = (2x\hat{i})NC^{-1}$ exists in space. A cube of side 2m is placed in the space as per figure given below. The electric flux through the cube is _____ Nm^2/C .



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

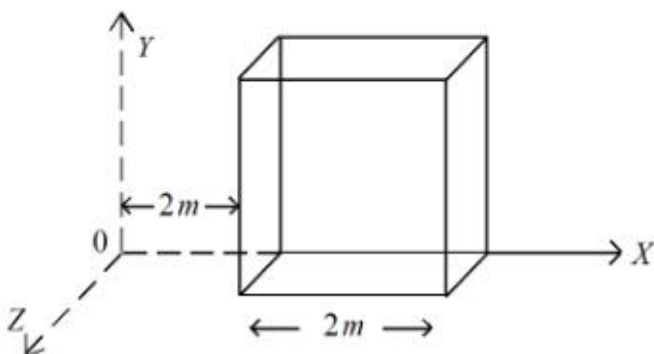
1

Question Number : 56 Question Id : 68019114659 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

आकाश में उपस्थित वैद्युत क्षेत्र $\vec{E} = (2x\hat{i})NC^{-1}$ है। चित्र के अनुसार आकाश में 2 मी भुजा का एक घन रख दिया गया है। इस घन से गुजरने वाला वैद्युत फ्लक्स _____ Nm^2/C 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 : 68019114660 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

A particle of mass 0.50 kg executes simple harmonic motion under force $F = -50\text{ (Nm}^{-1}\text{)} x$. The time period of oscillation is $\frac{x}{35}\text{ s}$. The value of x is _____ .

(Given $\pi = \frac{22}{7}$)

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 : 68019114660 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

0.50 किग्रा द्रव्यमान का एक कण किसी बल $F = -50\text{ (Nm}^{-1}\text{)} x$ के अन्तर्गत सरल आवर्त गति करता है। दोलन का आवर्तकाल $\frac{x}{35}\text{ s}$ से है। x का मान _____ है।

(दिया है $\pi = \frac{22}{7}$)

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 :** 68019114661 **Question Type :** SA **Calculator :** None

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

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

A circular disc reaches from top to bottom of an inclined plane of length l . When it slips down the plane, it takes t s. When it rolls down the plane then it takes

$\left(\frac{\alpha}{2}\right)^{1/2} t$ s, where α is _____.

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 :** 68019114661 **Question Type :** SA **Calculator :** None

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

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

एक वृत्ताकार चकती l लम्बाई के एक आनत तल पर शिखर से निचले बिन्दु तक पहुँचती है।

जब यह नीचे फिसलती है तो t सेकंड समय लेती है। जब नीचे लुढ़कती है तो यह $\left(\frac{\alpha}{2}\right)^{1/2} t$

सेकंड समय लेती है, जहाँ $\alpha =$ _____ है।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 59 Question Id : 68019114662 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

The resultant of two vectors $\vec{A}$ and $\vec{B}$ is perpendicular to $\vec{A}$ and its magnitude is half that of $\vec{B}$. The angle between vectors $\vec{A}$ and $\vec{B}$ is _____°.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 59 Question Id : 68019114662 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

दो सदिशों $\vec{A}$ व $\vec{B}$ का परिणामी $\vec{A}$ के लम्बवत है तथा इसका परिमाण $\vec{B}$ के परिमाण का आधा है। $\vec{A}$ तथा $\vec{B}$ के बीच का कोण _____° है।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

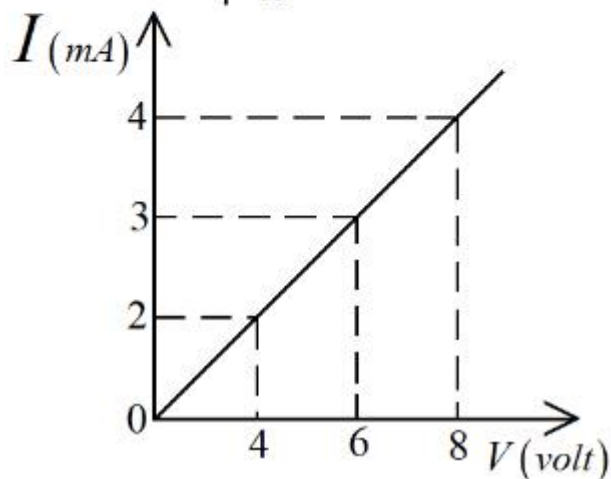
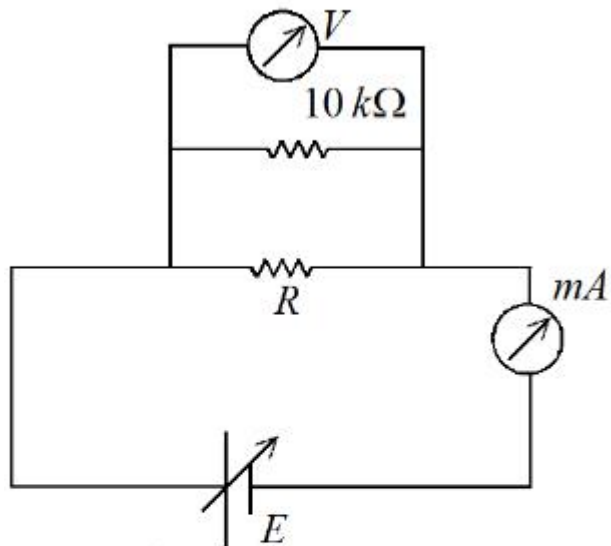
1

Question Number : 60 Question Id : 68019114663 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

To determine the resistance (R) of a wire, a circuit is designed below. The V - I characteristic curve for this circuit is plotted for the voltmeter and the ammeter readings as shown in figure. The value of R is _____ Ω .



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

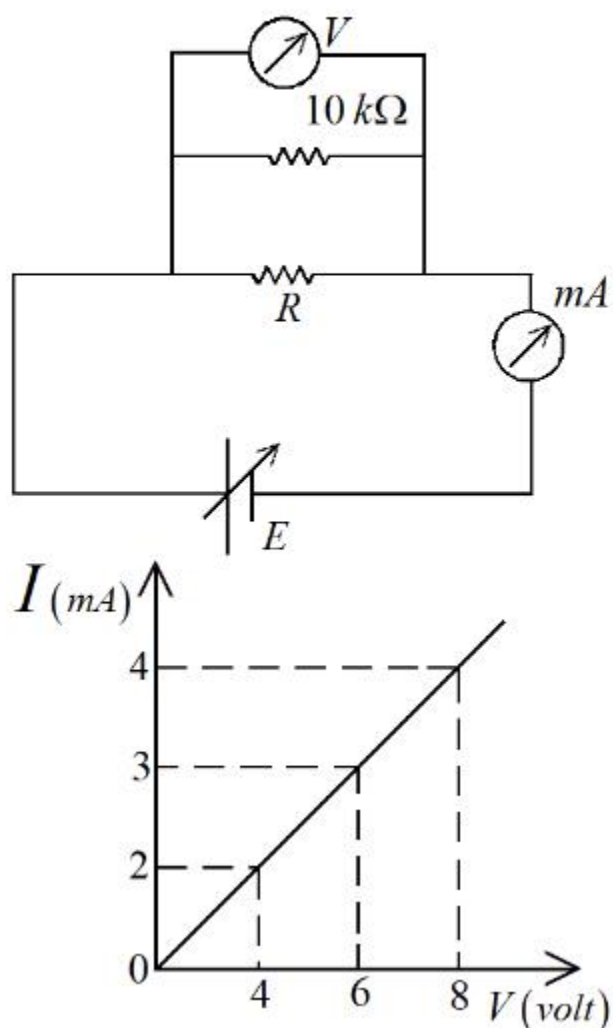
1

Question Number : 60 Question Id : 68019114663 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

प्रतिरोध (R) को ज्ञात करने हेतु निम्न परिपथ तैयार किया गया है। इस परिपथ का V - I अभिलाक्षणिक वक्र वोल्टमीटर तथा अमीटर के पाठ्यांक के लिए खींचा गया है जैसा कि चित्र में प्रदर्शित है। R का मान _____ Ω 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 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 :	680191369
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 61 Question Id : 68019114664 Question Type : MCQ Option Shuffling : Yes

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 candela is the luminous intensity, in a given direction, of a source that emits monochromatic radiation of frequency ' A ' $\times 10^{12}$ hertz and that has a radiant intensity in that direction of $\frac{1}{B}$ watt per steradian.

'A' and 'B' are respectively

Options :

68019156981. 450 and 683

68019156982. 450 and $\frac{1}{683}$

68019156983. 540 and 683

68019156984. 540 and $\frac{1}{683}$

Question Number : 61 Question Id : 68019114664 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

केंडेला किसी स्त्रोत की दी गई दिशा में ज्योति तीव्रता (luminous intensity) है जो 'A' $\times 10^{12}$ हर्टज़ आवृत्ति की एकवर्णी विकिरण को उत्सर्जित करता है जिसकी ज्योति तीव्रता (radiant intensity) उस दिशा में $\frac{1}{B}$ वॉट प्रति स्टेरेडियन है।

'A' एवं 'B' हैं क्रमशः

Options :

68019156981. 450 एवं 683

68019156982. 450 एवं $\frac{1}{683}$

68019156983. 540 एवं 683

68019156984. 540 एवं $\frac{1}{683}$

Question Number : 62 Question Id : 68019114665 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The correct increasing order for bond angles among BF_3 , PF_3 and ClF_3 is :

Options :

68019156985. $\text{BF}_3 < \text{PF}_3 < \text{ClF}_3$

68019156986. $\text{PF}_3 < \text{BF}_3 < \text{ClF}_3$

68019156987. $\text{ClF}_3 < \text{PF}_3 < \text{BF}_3$

68019156988. $\text{BF}_3 = \text{PF}_3 < \text{ClF}_3$

Question Number : 62 Question Id : 68019114665 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

BF_3 , PF_3 एवं ClF_3 में आबन्ध कोण का सही बढ़ता क्रम है:

Options :

68019156985. $\text{BF}_3 < \text{PF}_3 < \text{ClF}_3$

68019156986. $\text{PF}_3 < \text{BF}_3 < \text{ClF}_3$

68019156987. $\text{ClF}_3 < \text{PF}_3 < \text{BF}_3$

68019156988. $\text{BF}_3 = \text{PF}_3 < \text{ClF}_3$

Question Number : 63 Question Id : 68019114666 Question Type : MCQ Option Shuffling : Yes

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 a sparingly soluble salt AB_2 , the equilibrium concentrations of A^{2+} ions and B^- ions are $1.2 \times 10^{-4} \text{M}$ and $0.24 \times 10^{-3} \text{M}$, respectively. The solubility product of AB_2 is :

Options :

68019156989. 6.91×10^{-12}

68019156990. 27.65×10^{-12}

68019156991. 0.069×10^{-12}

68019156992. 0.276×10^{-12}

Question Number : 63 Question Id : 68019114666 Question Type : MCQ Option Shuffling : Yes

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 अल्पविलेय लवण AB_2 के लिए, A^{2+} एवं B^- की साम्यावस्था सान्द्रताएँ क्रमशः $1.2 \times 10^{-4}M$ एवं $0.24 \times 10^{-2} M$ हैं। AB_2 का विलेयता गुणनफल है:

Options :

68019156989. 6.91×10^{-12}

68019156990. 27.65×10^{-12}

68019156991. 0.069×10^{-12}

68019156992. 0.276×10^{-12}

Question Number : 64 Question Id : 68019114667 Question Type : MCQ Option Shuffling : Yes

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 (Cell)		LIST II (Use/Property/Reaction)	
A.	Leclanche cell	I.	Converts energy of combustion into electrical energy
B.	Ni - Cd cell	II.	Does not involve any ion in solution and is used in hearing aids
C.	Fuel cell	III.	Rechargeable
D.	Mercury cell	IV.	Reaction at anode $\text{Zn} \rightarrow \text{Zn}^{2+} + 2\text{e}^-$

Choose the correct answer from the options given below:

Options :

68019156993. A-I, B-II, C-III, D-IV

68019156994. A-IV, B-III, C-I, D-II

68019156995. A-III, B-I, C-IV, D-II

68019156996. A-II, B-III, C-IV, D-I

Question Number : 64 Question Id : 68019114667 Question Type : MCQ Option Shuffling : Yes

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 (सेल)		सूची II (उपयोग/गुण/अभिक्रिया)	
A.	लैक्लांशे सेल	I.	दहन की उर्जा को वैद्युत उर्जा में परिवर्तित करता है।
B.	Ni - Cd सेल	II.	विलयन में किसी आयन का उपयोग नहीं करता है तथा श्रवण यंत्रों में उपयोग किया जाता है।
C.	ईंधन सेल	III.	पुनः आवेशित हो सकता है।
D.	मर्क्युरी सेल	IV.	ऐनोड पर अभिक्रिया $\text{Zn} \rightarrow \text{Zn}^{2+} + 2\text{e}^-$

नीचे दिए गए विकल्पों में से सही उत्तर को चुने:

Options :

68019156993. A-I, B-II, C-III, D-IV

68019156994. A-IV, B-III, C-I, D-II

68019156995. A-III, B-I, C-IV, D-II

68019156996. A-II, B-III, C-IV, D-I

Question Number : 65 Question Id : 68019114668 Question Type : MCQ Option Shuffling : Yes

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 out of the following is a correct equation to show change in molar conductivity with respect to concentration for a weak electrolyte, if the symbols carry their usual meaning :

Options :

68019156997. $\Lambda_m - \Lambda_m^\circ + AC^{\frac{1}{2}} = 0$

68019156998. $\Lambda_m - \Lambda_m^\circ - AC^{\frac{1}{2}} = 0$

68019156999. $\Lambda_m^2 C - K_a \Lambda_m^{\circ 2} + K_a \Lambda_m \Lambda_m^\circ = 0$

68019157000. $\Lambda_m^2 C + K_a \Lambda_m^{\circ 2} - K_a \Lambda_m \Lambda_m^\circ = 0$

Question Number : 65 Question Id : 68019114668 Question Type : MCQ Option Shuffling : Yes

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 एक समीकरण है जो किसी दुर्बल विद्युत अपघट्य की सान्द्रता के सापेक्ष मोलर चालकता में परिवर्तन को प्रदर्शित करता है, जहाँ प्रतीक सामान्य अर्थों को निरूपित करते हैं:

Options :

68019156997. $\Lambda_m - \Lambda_m^\circ + AC^{\frac{1}{2}} = 0$

68019156998. $\Lambda_m - \Lambda_m^\circ - AC^{\frac{1}{2}} = 0$

68019156999. $\Lambda_m^2 C - K_a \Lambda_m^{\circ 2} + K_a \Lambda_m \Lambda_m^\circ = 0$

68019157000. $\Lambda_m^2 C + K_a \Lambda_m^{\circ 2} - K_a \Lambda_m \Lambda_m^\circ = 0$

Question Number : 66 Question Id : 68019114669 Question Type : MCQ Option Shuffling : Yes

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 electronic configuration of Einsteinium is :

(Given atomic number of Einsteinium = 99)

Options :

68019157001. $[Rn] 5f^{12} 6d^0 7s^2$

68019157002. $[Rn] 5f^{11} 6d^0 7s^2$

68019157003. $[Rn] 5f^{10} 6d^0 7s^2$

68019157004. $[Rn] 5f^{13} 6d^0 7s^2$

Question Number : 66 Question Id : 68019114669 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

आइन्स्टाइनियम का इलेक्ट्रॉनिक विन्यास है:

(दिया गया है: आइन्स्टाइनियम का परमाणु क्रमांक = 99)

Options :

68019157001. $[\text{Rn}] 5f^{12} 6d^0 7s^2$

68019157002. $[\text{Rn}] 5f^{11} 6d^0 7s^2$

68019157003. $[\text{Rn}] 5f^{10} 6d^0 7s^2$

68019157004. $[\text{Rn}] 5f^{13} 6d^0 7s^2$

Question Number : 67 Question Id : 68019114670 Question Type : MCQ Option Shuffling : Yes

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 Element)		LIST II (Electronic Configuration)	
A.	N	I.	$[\text{Ar}] 3d^{10} 4s^2 4p^5$
B.	S	II.	$[\text{Ne}] 3s^2 3p^4$
C.	Br	III.	$[\text{He}] 2s^2 2p^3$
D.	Kr	IV.	$[\text{Ar}] 3d^{10} 4s^2 4p^6$

Choose the correct answer from the options given below:

Options :

68019157005. A-I, B-IV, C-III, D-II

68019157006. A-IV, B-III, C-II, D-I

68019157007. A-III, B-II, C-I, D-IV

68019157008. A-II, B-I, C-IV, D-III

Question Number : 67 Question Id : 68019114670 Question Type : MCQ Option Shuffling : Yes

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 करे:

सूची I (तत्व)		सूची II (इलेक्ट्रॉनिक विन्यास)	
A.	N	I.	[Ar] 3d ¹⁰ 4s ² 4p ⁵
B.	S	II.	[Ne] 3s ² 3p ⁴
C.	Br	III.	[He] 2s ² 2p ³
D.	Kr	IV.	[Ar] 3d ¹⁰ 4s ² 4p ⁶

नीचे दिए गए विकल्पों में से सही उत्तर को चुने:

Options :

68019157005. A-I, B-IV, C-III, D-II

68019157006. A-IV, B-III, C-II, D-I

68019157007. A-III, B-II, C-I, D-IV

68019157008. A-II, B-I, C-IV, D-III

Question Number : 68 Question Id : 68019114671 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Match List I with List II

LIST I		LIST II	
A.	Melting Point [K]	I.	$Tl > In > Ga > Al > B$
B.	Ionic Radius [M^{+3}/pm]	II.	$B > Tl > Al \approx Ga > In$
C.	$\Delta_f H_f$ [$kJ\ mol^{-1}$]	III.	$Tl > In > Al > Ga > B$
D.	Atomic Radius [pm]	IV.	$B > Al > Tl > In > Ga$

Choose the correct answer from the options given below:

Options :

68019157009. A-IV, B-I, C-II, D-III

68019157010. A-III, B-IV, C-I, D-II

68019157011. A-II, B-III, C-IV, D-I

68019157012. A-I, B-II, C-III, D-IV

Question Number : 68 Question Id : 68019114671 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

सूची I का मिलान सूची II से करें:

सूची I		सूची II	
A.	गलनांक [K]	I.	$Tl > In > Ga > Al > B$
B.	आयनिक त्रिज्या [M^{+3}/pm]	II.	$B > Tl > Al \approx Ga > In$
C.	$\Delta_f H_f$ [$kJ\ mol^{-1}$]	III.	$Tl > In > Al > Ga > B$
D.	परमाणु त्रिज्या [pm]	IV.	$B > Al > Tl > In > Ga$

नीचे दिए गए विकल्पों में से सही उत्तर को चुने:

Options :

68019157009. A-IV, B-I, C-II, D-III

68019157010. A-III, B-IV, C-I, D-II

68019157011. A-II, B-III, C-IV, D-I

68019157012. A-I, B-II, C-III, D-IV

Question Number : 69 Question Id : 68019114672 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Give below are two statements :

Statement I : The higher oxidation states are more stable down the group among transition elements unlike p-block elements.

Statement II : Copper can not liberate hydrogen from weak acids.

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

Options :

68019157013. Both Statement I and Statement II are true

68019157014. Both Statement I and Statement II are false

68019157015. Statement I is true but Statement II is false

68019157016. Statement I is false but Statement II is true

Question Number : 69 Question Id : 68019114672 Question Type : MCQ Option Shuffling : Yes

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 : p-ब्लॉक तत्वों के विपरीत, संक्रमण तत्वों में समूह में नीचे आने पर उच्च ऑक्सीकरण अवस्थाएँ अधिक स्थायी होती हैं।

कथन II : कॉपर दुर्बल अम्लों से हाइड्रोजन निर्मुक्त नहीं करा सकता है।

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

Options :

68019157013. दोनों कथन I तथा कथन II सही है।

68019157014. दोनों कथन I तथा कथन II गलत है।

68019157015. कथन I सही है परन्तु कथन II गलत है।

68019157016. कथन I गलत है परन्तु कथन II सही है।

Question Number : 70 Question Id : 68019114673 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The coordination environment of Ca^{2+} ion in its complex with EDTA^{4-} is :

Options :

68019157017. tetrahedral

68019157018. square planar

68019157019. octahedral

68019157020. trigonal prismatic

Question Number : 70 Question Id : 68019114673 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

EDTA⁴⁻ के साथ बने संकुल में Ca²⁺ का उपसहसंयोजन परिवेश है:

Options :

68019157017. चतुष्फलकीय

68019157018. वर्ग समतलीय

68019157019. अष्टफलकीय

68019157020. त्रिकोणीय प्रिज्मीय

Question Number : 71 Question Id : 68019114674 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Match List I with List II

LIST I		LIST II	
A.	K ₂ [Ni (CN) ₄]	I.	sp ³
B.	[Ni (CO) ₄]	II.	sp ³ d ²
C.	[Co (NH ₃) ₆]Cl ₃	III.	dsp ²
D.	Na ₃ [CoF ₆]	IV.	d ² sp ³

Choose the correct answer from the options given below:

Options :

68019157021. A-I, B-III, C-II, D-IV

68019157022. A-III, B-II, C-IV, D-I

68019157023. A-III, B-I, C-IV, D-II

68019157024. A-III, B-I, C-II, D-IV

Question Number : 71 Question Id : 68019114674 Question Type : MCQ Option Shuffling : Yes

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 करे:

सूची I		सूची II	
A.	$K_2[Ni(CN)_4]$	I.	sp^3
B.	$[Ni(CO)_4]$	II.	sp^3d^2
C.	$[Co(NH_3)_6]Cl_3$	III.	dsp^2
D.	$Na_3[CoF_6]$	IV.	d^2sp^3

नीचे दिए गए विकल्पों में से सही उत्तर को चुने:

Options :

68019157021. A-I, B-III, C-II, D-IV

68019157022. A-III, B-II, C-IV, D-I

68019157023. A-III, B-I, C-IV, D-II

68019157024. A-III, B-I, C-II, D-IV

Question Number : 72 Question Id : 68019114675 Question Type : MCQ Option Shuffling : Yes

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 (Test)		LIST II (Observation)	
A.	Br ₂ water test	I.	Yellow orange or orange red precipitate formed
B.	Ceric ammonium nitrate test	II.	Reddish orange colour disappears
C.	Ferric chloride test	III.	Red colour appears
D.	2, 4 - DNP test	IV.	Blue, Green, Violet or Red colour appear

Choose the correct answer from the options given below:

Options :

68019157025. A-II, B-III, C-IV, D-I

68019157026. A-III, B-IV, C-I, D-II

68019157027. A-IV, B-I, C-II, D-III

68019157028. A-I, B-II, C-III, D-IV

Question Number : 72 Question Id : 68019114675 Question Type : MCQ Option Shuffling : Yes

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 करे:

सूची I (परीक्षण)		सूची II (प्रेक्षण)	
A.	Br ₂ जल परीक्षण	I.	पीला-नारंगी या नारंगी-लाल अवक्षेप बनता है।
B.	सेरिक अमोनियम नाइट्रेट परीक्षण	II.	लाल-नारंगी रंग गायब हो जाता है।
C.	फेरिक क्लोराइड परीक्षण	III.	लाल रंग उत्पन्न होता है।
D.	2, 4 - DNP परीक्षण	IV.	नीला, हरा, बैंगनी या लाल रंग उत्पन्न होता है।

नीचे दिए गए विकल्पों में से सही उत्तर को चुने:

Options :

68019157025. A-II, B-III, C-IV, D-I

68019157026. A-III, B-IV, C-I, D-II

68019157027. A-IV, B-I, C-II, D-III

68019157028. A-I, B-II, C-III, D-IV

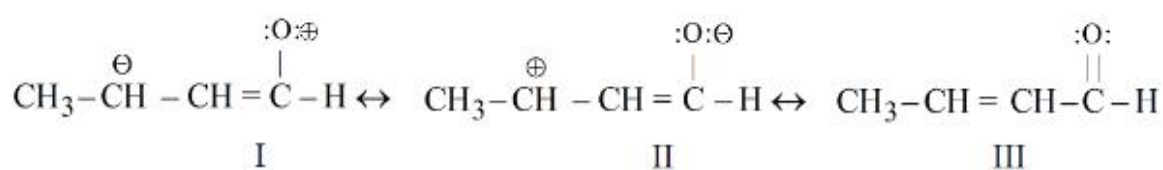
Question Number : 73 Question Id : 68019114676 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The correct stability order of the following resonance structures of $\text{CH}_3 - \text{CH} = \text{CH} - \text{CHO}$ is



Options :

68019157029. III > II > I

68019157030. I > II > III

68019157031. II > III > I

68019157032. II > I > III

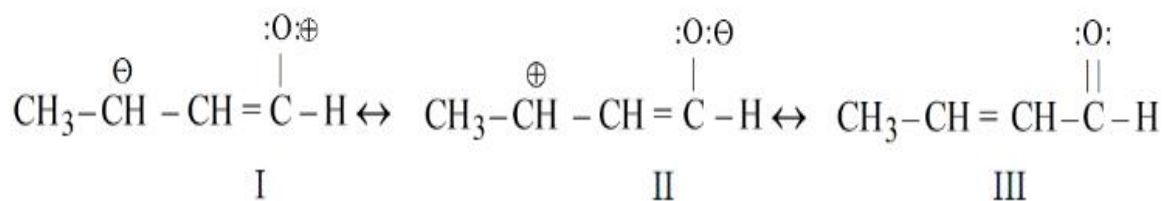
Question Number : 73 Question Id : 68019114676 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

$\text{CH}_3 - \text{CH} = \text{CH} - \text{CHO}$ के निम्नलिखित अनुनाद संरचनाओं के स्थायित्व का सही क्रम है:



Options :

68019157029. $\text{III} > \text{II} > \text{I}$

68019157030. $\text{I} > \text{II} > \text{III}$

68019157031. $\text{II} > \text{III} > \text{I}$

68019157032. $\text{II} > \text{I} > \text{III}$

Question Number : 74 Question Id : 68019114677 Question Type : MCQ Option Shuffling : Yes

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 ethyne is

Options :

68019157033. Ethyne is linear

68019157034. The carbon - carbon bonds in ethyne is weaker than that in ethene

68019157035. Both carbons are sp hybridised

68019157036. The $\text{C} - \text{C}$ bonds in ethyne is shorter than that in ethene

Question Number : 74 Question Id : 68019114677 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

इथाइन से सम्बन्धित गलत कथन है:

Options :

68019157033. इथाइन रेखीय है।

68019157034. इथाइन में, एथीन की तुलना में, कार्बन-कार्बन आबन्ध दुर्बल है।

68019157035. दोनों ही कार्बन sp संकरित हैं।

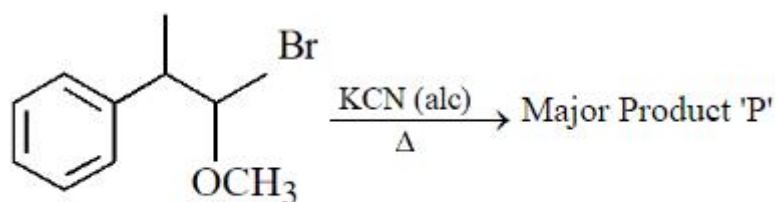
68019157036. एथाइन में, एथीन की तुलना में, $C - C$ आबन्ध छोटा है।

Question Number : 75 Question Id : 68019114678 Question Type : MCQ Option Shuffling : Yes

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

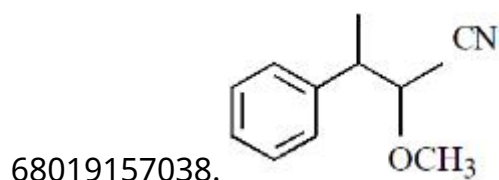
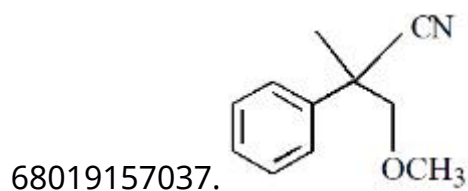
Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

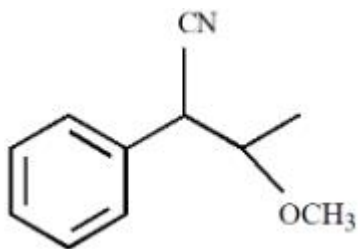


In the above reaction product 'P' is

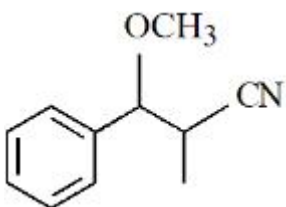
Options :



68019157039.



68019157040.

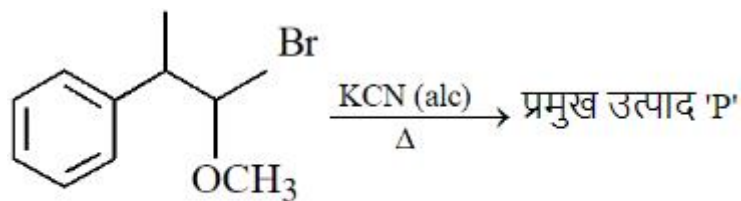


Question Number : 75 Question Id : 68019114678 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

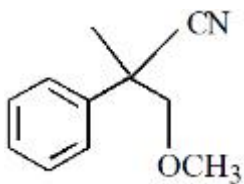
Correct Marks : 4 Wrong Marks : 1



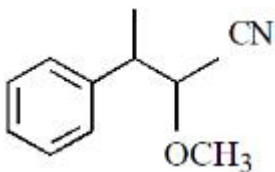
उपरोक्त अभिक्रिया में उत्पाद 'P' है

Options :

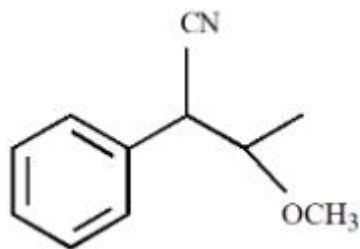
68019157037.



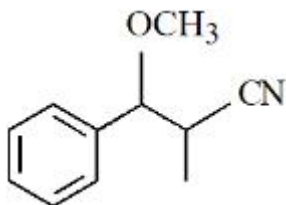
68019157038.



68019157039.



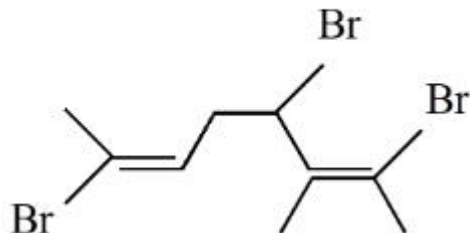
68019157040.



Question Number : 76 Question Id : 68019114679 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A
Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Total number of stereo isomers possible for the given structure :



Options :

68019157041. 8

68019157042. 3

68019157043. 2

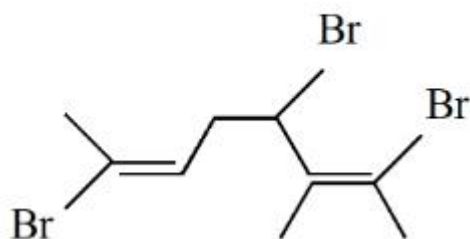
68019157044. 4

Question Number : 76 Question Id : 68019114679 Question Type : MCQ Option Shuffling : Yes
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 लिए, त्रिविम समावयवों की कुल संभावित संख्या है:



Options :

68019157041. 8

68019157042. 3

68019157043. 2

68019157044. 4

Question Number : 77 Question Id : 68019114680 Question Type : MCQ Option Shuffling : Yes

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 compounds will give silver mirror with ammoniacal silver nitrate?

- A. Formic acid
- B. Formaldehyde
- C. Benzaldehyde
- D. Acetone

Choose the correct answer from the options given below :

Options :

68019157045. A only

68019157046. B and C only

68019157047. C and D only

68019157048. A, B and C only

Question Number : 77 Question Id : 68019114680 Question Type : MCQ Option Shuffling : Yes

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 यौगिकों में से कौन अमोनिएकल सिल्वर नाइट्रेट के साथ रजत दर्पण देता है:

- A. फार्मिक अम्ल
- B. फार्मिलिहाइड
- C. बेन्जैलिहाइड
- D. ऐसीटोन

नीचे दिए गए विकल्पों में से सही उत्तर चुने:

Options :

68019157045. केवल A

68019157046. केवल B एवं C

68019157047. केवल C एवं D

68019157048. केवल A, B एवं C

Question Number : 78 Question Id : 68019114681 Question Type : MCQ Option Shuffling : Yes

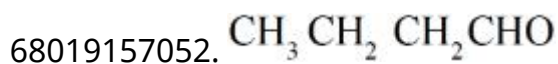
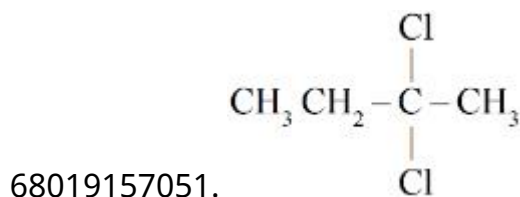
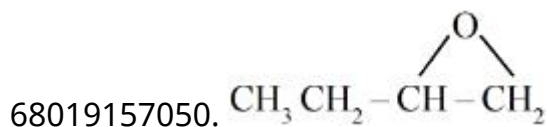
Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Which of the following compound can give positive iodoform test when treated with aqueous KOH solution followed by potassium hypoiodite.

Options :



Question Number : 78 Question Id : 68019114681 Question Type : MCQ Option Shuffling : Yes

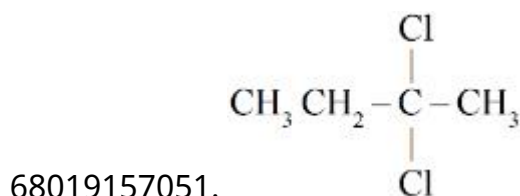
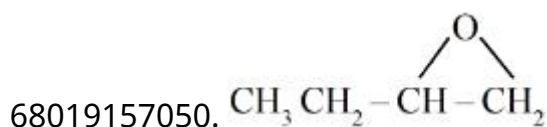
Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित यौगिकों में से कौन धनात्मक आयडोफार्म परीक्षण देगा जब उसे जलीय KOH विलयन तदोपरान्त पोटैशियम हाइपोआयोडाइट के साथ उपचारित किया जाता है?

Options :



68019157052. $\text{CH}_3\text{CH}_2\text{CH}_2\text{CHO}$

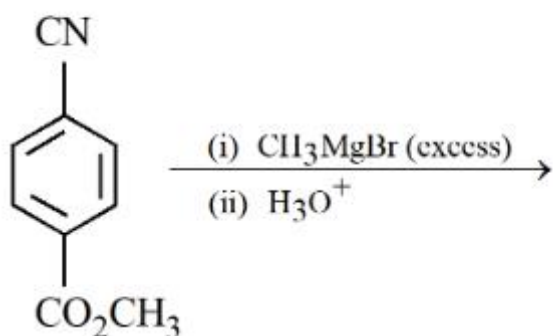
Question Number : 79 Question Id : 68019114682 Question Type : MCQ Option Shuffling : Yes

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

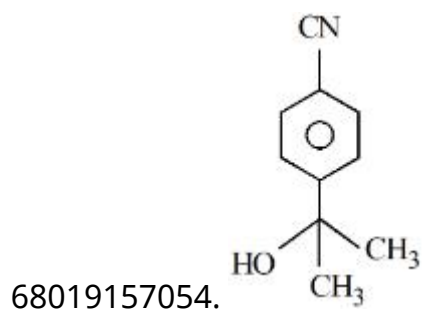
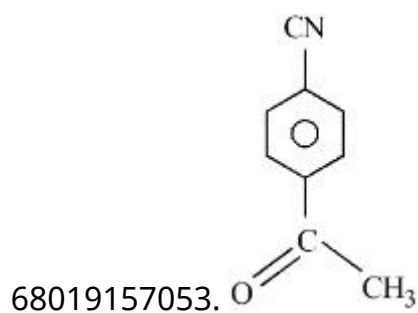
Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

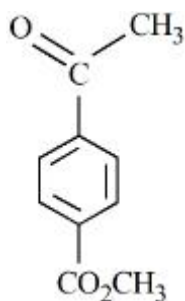
Major product of the following reaction is



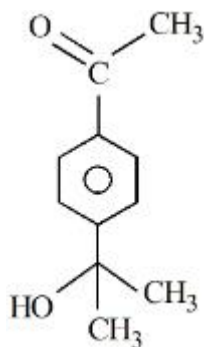
Options :



68019157055.



68019157056.



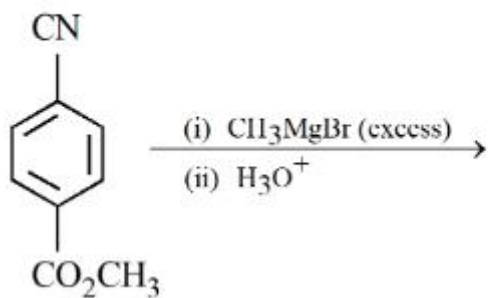
Question Number : 79 Question Id : 68019114682 Question Type : MCQ Option Shuffling : Yes

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

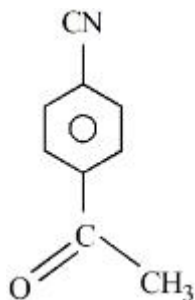
Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित अभिक्रिया के लिए मुख्य उत्पाद है:

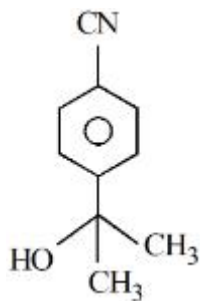


Options :

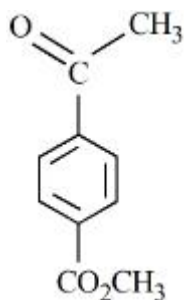


68019157053.

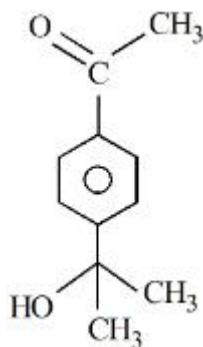
68019157054.



68019157055.



68019157056.



Question Number : 80 Question Id : 68019114683 Question Type : MCQ Option Shuffling : Yes

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 about Glucose is :

Options :

68019157057. Glucose is an aldohexose

68019157058. Glucose is soluble in water because of having aldehyde functional group

68019157059. Glucose remains in multiple isomeric form in its aqueous solution

68019157060. Glucose is one of the monomer unit in sucrose

Question Number : 80 Question Id : 68019114683 Question Type : MCQ Option Shuffling : Yes

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 के बारे में गलत कथन है:

Options :

68019157057. ग्लूकोस एक ऐल्डोहेक्सोस है।

68019157058. ग्लूकोस जल में घुलनशील है क्योंकि उसमें एल्डिहाइड क्रियात्मक समूह पाया जाता है।

68019157059. ग्लूकोस अपने जलीय विलयन में कई समावयवी रूपों में पाया जाता है।

68019157060. ग्लूकोस, सुक्रोस के एकलक इकाईयों में से एक है।

Chemistry Section B

Section Id :	680191280
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 : 680191370
Question Shuffling Allowed : Yes
Is Section Default? : null

Question Number : 81 Question Id : 68019114684 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Based on Heisenberg's uncertainty principle, the uncertainty in the velocity of the electron to be found within an atomic nucleus of diameter 10^{-15} m is _____ $\times 10^9$ ms⁻¹ (nearest integer)

[Given : mass of electron = 9.1×10^{-31} kg, Plank's constant (h) = 6.626×10^{-34} Js]
(Value of $\pi = 3.14$)

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 : 68019114684 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

हाइजेनबर्ग अनिश्चितता के अनुसार, 10^{-15} m व्यास वाले परमाणु नाभिक में पाए जाने वाले इलेक्ट्रॉन के वेग में अनिश्चितता है: _____ $\times 10^9$ ms⁻¹ (निकटतम पूर्णांक में)

[दिया गया है: इलेक्ट्रॉन का द्रव्यमान = 9.1×10^{-31} kg, प्लांक स्थिरांक (h) = 6.626×10^{-34} Js]
(Value of $\pi = 3.14$)

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 :** 68019114685 **Question Type :** SA **Calculator :** None

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

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

Total number of electrons present in (π^*) molecular orbitals of O_2 , O_2^+ and O_2^- is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 82 **Question Id :** 68019114685 **Question Type :** SA **Calculator :** None

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

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

O_2 , O_2^+ एवं O_2^- के (π^*) आण्विक कक्षकों में पाए जाने वाले इलेक्ट्रॉनों की कुल संख्या है: _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 83 Question Id : 68019114686 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

When $\Delta H_{\text{vap}} = 30 \text{ kJ/mol}$ and $\Delta S_{\text{vap}} = 75 \text{ J mol}^{-1}\text{K}^{-1}$, then the temperature of vapour, at one atmosphere is _____ K.

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 : 68019114686 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

जब $\Delta H_{\text{vap}} = 30 \text{ kJ/mol}$ तथा $\Delta S_{\text{vap}} = 75 \text{ J mol}^{-1}\text{K}^{-1}$ है तो एक atm पर वाष्प का ताप है: _____ K.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 84 Question Id : 68019114687 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

The vapor pressure of pure benzene and methyl benzene at 27°C is given as 80 Torr and 24 Torr, respectively. The mole fraction of methyl benzene in vapor phase, in equilibrium with an equimolar mixture of those two liquids (ideal solution) at the same temperature is _____ $\times 10^{-2}$ (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 : 84 **Question Id :** 68019114687 **Question Type :** SA **Calculator :** None

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

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

27°C पर शुद्ध बेन्जीन एवं मेथिल बेन्जीन का वाष्प दाब क्रमशः 80 Torr एवं 24 Torr है। वाष्प अवस्था में मेथिल बेन्जीन का मोल प्रभाज, जो समान ताप पर इन दोनों द्रवों के सममोलर मिश्रण (आदर्श विलयन) के साथ साम्यावस्था में है, है: _____ $\times 10^{-2}$ (निकटतम पूर्णांक में)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

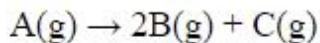
1

Question Number : 85 **Question Id :** 68019114688 **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 first order gas phase reaction at constant temperature



If the total pressure of the gases is found to be 200 torr after 23 sec. and 300 torr upon the complete decomposition of A after a very long time, then the rate constant of the given reaction is _____ $\times 10^{-2} \text{ s}^{-1}$ (nearest integer)

[Given : $\log_{10}(2) = 0.301$]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

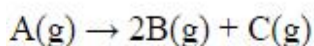
1

Question Number : 85 **Question Id :** 68019114688 **Question Type :** SA **Calculator :** None

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

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

स्थिर ताप पर प्रथम कोटि की निम्नलिखित गैसीय प्रावस्था अभिक्रिया पर विचार करें:



यदि गैसों का कुल दाब 23 सेकेन्ड बाद 200 torr एवं काफी लंबे अंतराल के बाद A के पूर्ण अपघटन के कारण 300 torr पाया जाता है तो दी गई अभिक्रिया का वेग स्थिरांक है:

_____ $\times 10^{-2} \text{ s}^{-1}$

[दिया गया है : $\log_{10}(2) = 0.301$]

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 : 68019114689 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

A transition metal 'M' among Sc, Ti, V, Cr, Mn and Fe has the highest second ionisation enthalpy. The spin-only magnetic moment value of M^+ ion is _____ BM (Near integer)

(Given atomic number Sc : 21, Ti : 22, V : 23, Cr : 24, Mn : 25, Fe : 26)

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 : 68019114689 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Sc, Ti, V, Cr, Mn एवं Fe में से किसी संक्रमण धातु 'M' का द्वितीय आयनन एन्थैल्पी सर्वाधिक है। M^+ आयन का 'प्रचक्रण मात्र' चुम्बकीय आधूर्ण है: _____ BM (निकटतम पूर्णांक में)

(दिया गया है: परमाणु क्रमांक: Sc : 21, Ti : 22, V : 23, Cr : 24, Mn : 25, Fe : 26)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

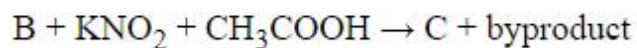
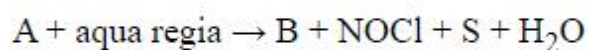
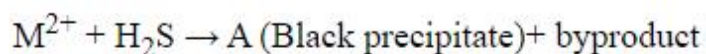
1

Question Number : 87 Question Id : 68019114690 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 test for a group-IV cation.



The spin-only magnetic moment value of the metal complex C is _____ BM
(Nearest integer)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

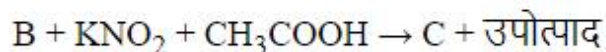
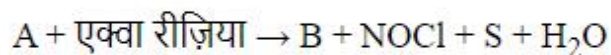
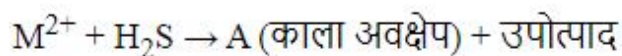
1

Question Number : 87 Question Id : 68019114690 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

समूह-IV धनायन के निम्न परीक्षण पर विचार कीजिए:



धातु संकुल C के 'प्रचक्रण मात्र' चुम्बकीय आधूर्ण का मान है: _____ BM (निकटतम पूर्णांक)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

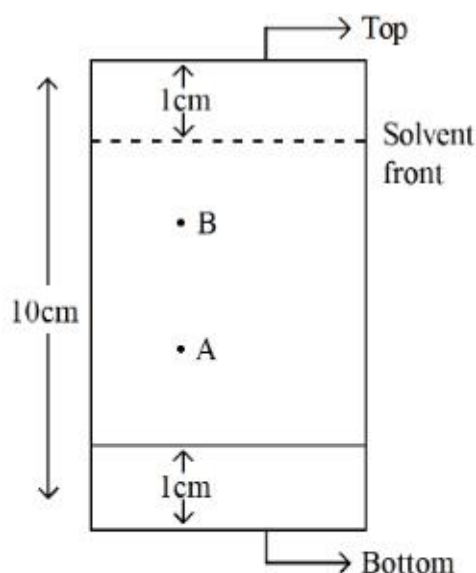
Possible Answers :

1

Question Number : 88 Question Id : 68019114691 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1



In the given TLC, the distance of spot A & B are 5 cm & 7 cm, from the bottom of TLC plate, respectively.

R_f value of B is $x \times 10^{-1}$ times more than A. The value of x is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

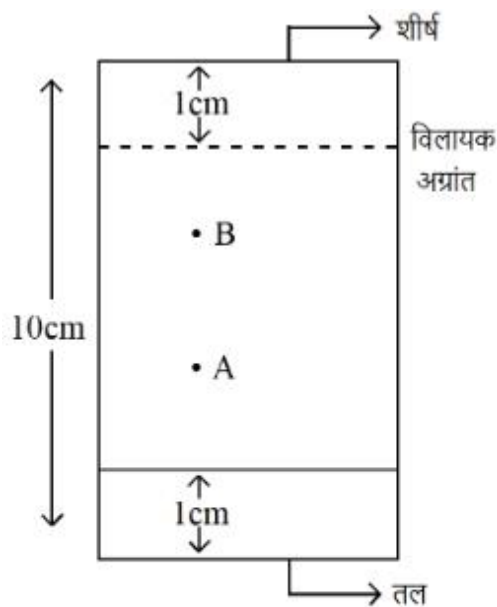
Possible Answers :

1

Question Number : 88 Question Id : 68019114691 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1



दी गई TLC में स्पॉट A एवं स्पॉट B की TLC प्लेट के तल से दूरी क्रमशः 5 cm एवं 7 cm है।

B का R_f मान A से $x \times 10^{-1}$ गुना अधिक 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 : 89 **Question Id :** 68019114692 **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 oxygen atoms present in chemical formula of fuming sulphuric acid is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 89 Question Id : 68019114692 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

सधूम सल्फ्यूरिक अम्ल के सूत्र में उपस्थित ऑक्सीजन परमाणुओं की संख्या है: _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 90 Question Id : 68019114693 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 compounds from the following which **cannot** undergo Friedel-Crafts reactions is: _____

toluene, nitrobenzene, xylene, cumene, aniline, chlorobenzene, *m*-nitroaniline, *m*-dinitrobenzene

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 : 68019114693 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 यौगिकों की संख्या जो फ्रीडेल-क्राफ्ट अभिक्रिया प्रदर्शित नहीं करते हैं: _____

टॉलूईन, नाइट्रोबेन्जीन, जाइलीन, क्यूमीन, ऐनिलीन, क्लोरोबेन्जीन, m-नाइट्रोऐनिलीन, m-डाइनाइट्रोबेन्जीन

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1