

Question Paper Name :	B Tech 30th Jan 2024 Shift 1
Subject Name :	B. Tech
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B. Tech

Group Number :	1
Group Id :	53354310
Group Maximum Duration :	0
Group Minimum Duration :	180
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	300
Is this Group for Examiner? :	No
Examiner permission :	Cant View
Show Progress Bar? :	No

Mathematics Section A

Section Id :	53354348
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 :

53354348

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 1 Question Id : 533543827 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

If the domain of the function $f(x) = \cos^{-1} \left(\frac{2-|x|}{4} \right) + \{\log_e (3-x)\}^{-1}$ is $[-\alpha, \beta] - \{\gamma\}$, then

 $\alpha + \beta + \gamma$ is equal to :

Options :

5335432711. 8

5335432712. 9

5335432713. 11

5335432714. 12

Question Number : 1 Question Id : 533543827 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

यदि फलन $f(x) = \cos^{-1} \left(\frac{2-|x|}{4} \right) + \{\log_e (3-x)\}^{-1}$ का प्रांत $[-\alpha, \beta) - \{\gamma\}$ है, तो $\alpha + \beta + \gamma$ बराबर है :

Options :

5335432711. 8

5335432712. 9

5335432713. 11

5335432714. 12

Question Number : 2 Question Id : 533543828 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

If $z = x + iy$, $xy \neq 0$, satisfies the equation $z^2 + i\bar{z} = 0$, then $|z^2|$ is equal to :

Options :

5335432715. $\frac{1}{4}$

5335432716.

1

5335432717. 4

5335432718. 9

Question Number : 2 Question Id : 533543828 Question Type : MCQ Option Shuffling : Yes 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 $z = x + iy$, $xy \neq 0$ समीकरण $z^2 + i\bar{z} = 0$ को संतुष्ट करता है, तो $|z^2|$ बराबर है :

Options :

5335432715. $\frac{1}{4}$

5335432716. 1

5335432717. 4

5335432718. 9

Question Number : 3 Question Id : 533543829 Question Type : MCQ Option Shuffling : Yes 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 system of linear equations $x+y+z=4\mu$, $x+2y+2\lambda z=10\mu$, $x+3y+4\lambda^2 z=\mu^2+15$, where $\lambda, \mu \in \mathbb{R}$. Which one of the following statements is NOT correct ?

Options :

5335432719. The system is consistent if $\lambda \neq \frac{1}{2}$

5335432720. The system is inconsistent if $\lambda = \frac{1}{2}$ and $\mu \neq 1$

5335432721. The system has unique solution if $\lambda \neq \frac{1}{2}$ and $\mu \neq 1, 15$

5335432722. The system has infinite number of solutions if $\lambda = \frac{1}{2}$ and $\mu = 15$

Question Number : 3 Question Id : 533543829 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

रैखिक समीकरण निकाय $x+y+z=4\mu$, $x+2y+2\lambda z=10\mu$, $x+3y+4\lambda^2 z=\mu^2+15$, जहाँ $\lambda, \mu \in \mathbb{R}$ हैं, का विचार कीजिए। निम्न कथनों में से कौन सा सही नहीं है?

Options :

5335432719. यदि $\lambda \neq \frac{1}{2}$ है, तो निकाय संगत है

5335432720. यदि $\lambda = \frac{1}{2}$ तथा $\mu \neq 1$ हैं, तो निकाय असंगत है

5335432721. यदि $\lambda \neq \frac{1}{2}$ तथा $\mu \neq 1, 15$ हैं, तो निकाय का अद्वितीय हल है

5335432722. यदि $\lambda = \frac{1}{2}$ तथा $\mu = 15$ हैं, तो निकाय के अनंत हल हैं

Question Number : 4 Question Id : 533543830 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

If $f(x) = \begin{vmatrix} 2\cos^4 x & 2\sin^4 x & 3 + \sin^2 2x \\ 3 + 2\cos^4 x & 2\sin^4 x & \sin^2 2x \\ 2\cos^4 x & 3 + 2\sin^4 x & \sin^2 2x \end{vmatrix}$,

then $\frac{1}{5} f'(0) =$ is equal to :

Options :

5335432723. 0

5335432724. 1

5335432725. 2

5335432726. 6

Question Number : 4 Question Id : 533543830 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

यदि $f(x) = \begin{vmatrix} 2\cos^4 x & 2\sin^4 x & 3 + \sin^2 2x \\ 3 + 2\cos^4 x & 2\sin^4 x & \sin^2 2x \\ 2\cos^4 x & 3 + 2\sin^4 x & \sin^2 2x \end{vmatrix}$ है, तो $\frac{1}{5} f'(0)$ बराबर है :

Options :

5335432723. 0

5335432724. 1

5335432725. 2

5335432726. 6

Question Number : 5 Question Id : 533543831 Question Type : MCQ Option Shuffling : Yes 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 integers x and y are chosen with replacement from the set $\{0, 1, 2, 3, \dots, 10\}$. Then the probability that $|x - y| > 5$, is :

Options :

5335432727. $\frac{60}{121}$

5335432728.

$$\frac{30}{121}$$

$$5335432729. \quad \frac{62}{121}$$

$$5335432730. \quad \frac{31}{121}$$

Question Number : 5 Question Id : 533543831 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

समुच्चय $\{0, 1, 2, 3, \dots, 10\}$ से प्रतिस्थापना सहित दो पूर्णांक x तथा y चुने जाते हैं। तो $|x - y| > 5$ की प्रायिकता है :

Options :

$$5335432727. \quad \frac{60}{121}$$

$$5335432728. \quad \frac{30}{121}$$

$$5335432729. \quad \frac{62}{121}$$

$$5335432730. \quad \frac{31}{121}$$

Question Number : 6 Question Id : 533543832 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Let S_n denote the sum of first n terms of an arithmetic progression. If $S_{20} = 790$ and $S_{10} = 145$, then $S_{15} - S_5$ is :

Options :

5335432731. 405

5335432732. 395

5335432733. 390

5335432734. 410

Question Number : 6 Question Id : 533543832 Question Type : MCQ Option Shuffling : Yes 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 समांतर श्रेणी के प्रथम n पदों का योग S_n है। यदि $S_{20} = 790$ तथा $S_{10} = 145$ हैं, तो $S_{15} - S_5$ बराबर है :

Options :

5335432731. 405

5335432732. 395

5335432733. 390

5335432734. 410

Question Number : 7 Question Id : 533543833 Question Type : MCQ Option Shuffling : Yes 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 maximum area of a triangle whose one vertex is at $(0, 0)$ and the other two vertices lie on the curve $y = -2x^2 + 54$ at points (x, y) and $(-x, y)$, where $y > 0$, is :

Options :

5335432735. 92

5335432736. 108

5335432737. 88

5335432738. 122

Question Number : 7 Question Id : 533543833 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

त्रिभुज, जिसका एक शीर्ष $(0, 0)$ है तथा अन्य दो शीर्ष वक्र $y = -2x^2 + 54$ के बिंदु (x, y) तथा $(-x, y)$ हैं, जहाँ $y > 0$ है, का अधिकतम क्षेत्रफल है :

5335432735. 92

5335432736. 108

5335432737. 88

5335432738. 122

Question Number : 8 Question Id : 533543834 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Let $f : \left[-\frac{\pi}{2}, \frac{\pi}{2}\right] \rightarrow \mathbf{R}$ be a differentiable function such that $f(0) = \frac{1}{2}$. If the $\lim_{x \rightarrow 0} \frac{x \int_0^x f(t) dt}{e^{x^2} - 1} = \alpha$, then $8\alpha^2$ is equal to :

Options :

5335432739. 1

5335432740. 2

5335432741. 4

5335432742. 16

Question Number : 8 Question Id : 533543834 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

माना $f : \left[-\frac{\pi}{2}, \frac{\pi}{2}\right] \rightarrow \mathbb{R}$ एक अवकलनीय फलन है तथा $f(0) = \frac{1}{2}$ है। यदि $\lim_{x \rightarrow 0} \frac{x \int_0^x f(t) dt}{e^{x^2} - 1} = \alpha$ है, तो $8\alpha^2$ बराबर है :

Options :

5335432739. 1

5335432740. 2

5335432741. 4

5335432742. 16

Question Number : 9 Question Id : 533543835 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Let $g : \mathbb{R} \rightarrow \mathbb{R}$ be a non constant twice differentiable function such that $g'\left(\frac{1}{2}\right) = g'\left(\frac{3}{2}\right)$. If a real

valued function f is defined as $f(x) = \frac{1}{2}[g(x) + g(2-x)]$, then

Options :

5335432743. $f''(x) = 0$ for atleast two x in $(0, 2)$

5335432744. $f''(x) = 0$ for exactly one x in $(0, 1)$

5335432745. $f''(x) = 0$ for no x in $(0, 1)$

5335432746. $f'\left(\frac{3}{2}\right) + f'\left(\frac{1}{2}\right) = 1$

Question Number : 9 Question Id : 533543835 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

माना $g : \mathbb{R} \rightarrow \mathbb{R}$ एक परिवर्तनीय तथा दो बार अवकलनीय फलन है और $g'\left(\frac{1}{2}\right) = g'\left(\frac{3}{2}\right)$ है। यदि एक वास्तविक मान

फलन f , $f(x) = \frac{1}{2}[g(x) + g(2-x)]$ द्वारा परिभाषित है, तो :

Options :

5335432743. $(0, 2)$ में कम से कम दो x के लिए $f''(x) = 0$ है

5335432744. $(0, 1)$ में ठीक एक x के लिए $f''(x) = 0$ है

5335432745. $(0, 1)$ में कोई भी x नहीं है, जिसके लिए $f''(x) = 0$ है

5335432746.

$$f'\left(\frac{3}{2}\right) + f'\left(\frac{1}{2}\right) = 1 \quad \frac{3}{2}$$

Question Number : 10 Question Id : 533543836 Question Type : MCQ Option Shuffling : Yes 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 $\lim_{n \rightarrow \infty} \sum_{k=1}^n \frac{n^3}{(n^2 + k^2)(n^2 + 3k^2)}$ is :

Options :

5335432747. $\frac{13(2\sqrt{3} - 3)\pi}{8}$

5335432748. $\frac{(2\sqrt{3} + 3)\pi}{24}$

5335432749. $\frac{\pi}{8(2\sqrt{3} + 3)}$

5335432750. $\frac{13\pi}{8(4\sqrt{3} + 3)}$

Question Number : 10 Question Id : 533543836 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

$$\lim_{n \rightarrow \infty} \sum_{k=1}^n \frac{n^3}{(n^2 + k^2)(n^2 + 3k^2)} \text{ का मान है :}$$

Options :

5335432747. $\frac{13(2\sqrt{3} - 3)\pi}{8}$

5335432748. $\frac{(2\sqrt{3} + 3)\pi}{24}$

5335432749. $\frac{\pi}{8(2\sqrt{3} + 3)}$

5335432750. $\frac{13\pi}{8(4\sqrt{3} + 3)}$

Question Number : 11 Question Id : 533543837 Question Type : MCQ Option Shuffling : Yes 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 bounded by the parabola $y^2 = 4(x - 2)$ and the line $y = 2x - 8$, is :

Options :

5335432751. 6

5335432752. 7

5335432753.

5335432754. 9

Question Number : 11 Question Id : 533543837 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

परवलय $y^2 = 4(x - 2)$ तथा रेखा $y = 2x - 8$ से घिरे क्षेत्र का क्षेत्रफल (वर्ग इकाई में) है :

Options :

5335432751. 6

5335432752. 7

5335432753. 8

5335432754. 9

Question Number : 12 Question Id : 533543838 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Let $y = y(x)$ be the solution of the differential equation $\sec x \, dy + \{2(1-x)\tan x + x(2-x)\} \, dx = 0$ such that $y(0) = 2$. Then $y(2)$ is equal to :

Options :

5335432755. 1

5335432756. 2

5335432757. $2\{\sin(2) + 1\}$ 5335432758. $2\{1 - \sin(2)\}$

Question Number : 12 Question Id : 533543838 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

माना अवकल समीकरण $\sec x \, dy + \{2(1-x)\tan x + x(2-x)\} \, dx = 0$, $y(0) = 2$ का हल $y = y(x)$ है। तो $y(2)$ बराबर है :

Options :

5335432755. 1

5335432756. 2

5335432757. $2\{\sin(2) + 1\}$ 5335432758. $2\{1 - \sin(2)\}$

Question Number : 13 Question Id : 533543839 Question Type : MCQ Option Shuffling : Yes 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 line passing through the point A(9, 0) makes an angle of 30° with the positive direction of x -axis. If this line is rotated about A through an angle of 15° in the clockwise direction, then its equation in the new position is :

Options :

5335432759. $\frac{y}{\sqrt{3} - 2} + x = 9$

5335432760. $\frac{x}{\sqrt{3} - 2} + y = 9$

5335432761. $\frac{y}{\sqrt{3} + 2} + x = 9$

5335432762. $\frac{x}{\sqrt{3} + 2} + y = 9$

Question Number : 13 Question Id : 533543839 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

बिंदु A (9, 0) से होकर जाने वाली एक रेखा x -अक्ष की धनात्मक दिशा से 30° का कोण बनाती है। यदि इस रेखा को घड़ी की दिशा में 15° के कोण तक A के सापेक्ष घुमाया जाता है, तो नयी स्थिति में इसका समीकरण है :

Options :

5335432759. $\frac{y}{\sqrt{3} - 2} + x = 9$

5335432760. $\frac{x}{\sqrt{3}-2} + y = 9$

5335432761. $\frac{y}{\sqrt{3}+2} + x = 9$

5335432762. $\frac{x}{\sqrt{3}+2} + y = 9$

Question Number : 14 Question Id : 533543840 Question Type : MCQ Option Shuffling : Yes 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 circles $(x+1)^2 + (y+2)^2 = r^2$ and $x^2 + y^2 - 4x - 4y + 4 = 0$ intersect at exactly two distinct points, then

Options :

5335432763. $\frac{1}{2} < r < 7$

5335432764. $0 < r < 7$

5335432765. $3 < r < 7$

5335432766. $5 < r < 9$

Question Number : 14 Question Id : 533543840 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

यदि वृत्त $(x+1)^2 + (y+2)^2 = r^2$ तथा $x^2 + y^2 - 4x - 4y + 4 = 0$ एक दूसरे को ठीक दो भिन्न बिंदुओं पर काटते हैं, तो :

Options :

5335432763. $\frac{1}{2} < r < 7$

5335432764. $0 < r < 7$

5335432765. $3 < r < 7$

5335432766. $5 < r < 9$

Question Number : 15 Question Id : 533543841 Question Type : MCQ Option Shuffling : Yes 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 length of the minor axis of an ellipse is equal to half of the distance between the foci, then the eccentricity of the ellipse is :

Options :

5335432767. $\frac{2}{\sqrt{5}}$

5335432768. $\frac{1}{\sqrt{3}}$

5335432769. $\frac{\sqrt{5}}{3}$

5335432770. $\frac{\sqrt{3}}{2}$

Question Number : 15 Question Id : 533543841 Question Type : MCQ Option Shuffling : Yes 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 दीर्घवृत्त के लघु अक्ष की लंबाई, इसकी नाभियों के बीच की दूरी की आधी है, तो इस दीर्घवृत्त की उत्केन्द्रता है :

Options :

5335432767. $\frac{2}{\sqrt{5}}$

5335432768. $\frac{1}{\sqrt{3}}$

5335432769. $\frac{\sqrt{5}}{3}$

5335432770. $\frac{\sqrt{3}}{2}$

Question Number : 16 Question Id : 533543842 Question Type : MCQ Option Shuffling : Yes 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 (α, β, γ) be the foot of perpendicular from the point $(1, 2, 3)$ on the line $\frac{x+3}{5} = \frac{y-1}{2} = \frac{z+4}{3}$.

Then $19(\alpha + \beta + \gamma)$ is equal to :

Options :

5335432771. 99

5335432772. 100

5335432773. 101

5335432774. 102

Question Number : 16 Question Id : 533543842 Question Type : MCQ Option Shuffling : Yes 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 बिंदु $(1, 2, 3)$ से रेखा $\frac{x+3}{5} = \frac{y-1}{2} = \frac{z+4}{3}$ पर लंब का पाद (α, β, γ) है। तो $19(\alpha + \beta + \gamma)$ बराबर है :

Options :

5335432771. 99

5335432772. 100

5335432773. 101

5335432774. 102

Question Number : 17 Question Id : 533543843 Question Type : MCQ Option Shuffling : Yes 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(2, 3, 5) and C(-3, 4, -2) be opposite vertices of a parallelogram ABCD. If the diagonal

$\vec{BD} = \hat{i} + 2\hat{j} + 3\hat{k}$, then the area of the parallelogram is equal to :

Options :

5335432775. $\frac{1}{2}\sqrt{474}$ 5335432776. $\frac{1}{2}\sqrt{306}$ 5335432777. $\frac{1}{2}\sqrt{410}$ 5335432778. $\frac{1}{2}\sqrt{586}$

Question Number : 17 Question Id : 533543843 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

माना एक समांतर चतुर्भुज ABCD के दो सम्मुख शीर्ष $A(2, 3, 5)$ तथा $C(-3, 4, -2)$ हैं। यदि इसका विकर्ण

$\vec{BD} = \hat{i} + 2\hat{j} + 3\hat{k}$ है, तो समांतर चतुर्भुज का क्षेत्रफल है :

Options :

5335432775. $\frac{1}{2}\sqrt{474}$

5335432776. $\frac{1}{2}\sqrt{306}$

5335432777. $\frac{1}{2}\sqrt{410}$

5335432778. $\frac{1}{2}\sqrt{586}$

Question Number : 18 Question Id : 533543844 Question Type : MCQ Option Shuffling : Yes 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 $\vec{a} = a_1\hat{i} + a_2\hat{j} + a_3\hat{k}$ and $\vec{b} = b_1\hat{i} + b_2\hat{j} + b_3\hat{k}$ be two vectors such that $|\vec{a}| = 1$,

$\vec{a} \cdot \vec{b} = 2$ and $|\vec{b}| = 4$. If $\vec{c} = 2(\vec{a} \times \vec{b}) - 3\vec{b}$, then the angle between $\vec{b}$ and $\vec{c}$ is equal to :

Options :

5335432779. $\cos^{-1}\left(-\frac{\sqrt{3}}{2}\right)$

5335432780.

$$\cos^{-1}\left(\frac{2}{\sqrt{3}}\right)$$

5335432781.

$$\cos^{-1}\left(\frac{2}{3}\right)$$

5335432782.

$$\cos^{-1}\left(-\frac{1}{\sqrt{3}}\right)$$

Question Number : 18 Question Id : 533543844 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

माना दो सदिशों $\vec{a} = a_1 \hat{i} + a_2 \hat{j} + a_3 \hat{k}$ तथा $\vec{b} = b_1 \hat{i} + b_2 \hat{j} + b_3 \hat{k}$ के लिए $|\vec{a}| = 1$, $\vec{a} \cdot \vec{b} = 2$ तथा $|\vec{b}| = 4$ हैं। यदि $\vec{c} = 2(\vec{a} \times \vec{b}) - 3\vec{b}$ है, तो $\vec{b}$ तथा $\vec{c}$ के बीच कोण है :

Options :

5335432779.

$$\cos^{-1}\left(-\frac{\sqrt{3}}{2}\right)$$

5335432780.

$$\cos^{-1}\left(\frac{2}{\sqrt{3}}\right)$$

5335432781.

$$\cos^{-1}\left(\frac{2}{3}\right)$$

$$\cos^{-1}\left(-\frac{1}{\sqrt{3}}\right)$$

5335432782.

Question Number : 19 Question Id : 533543845 Question Type : MCQ Option Shuffling : Yes 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 M denote the median of the following frequency distribution

Class	0 – 4	4 – 8	8 – 12	12 – 16	16 – 20
Frequency	3	9	10	8	6

Then 20M is equal to :

Options :

5335432783. 52

5335432784. 104

5335432785. 208

5335432786. 416

Question Number : 19 Question Id : 533543845 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

वर्ग	0 – 4	4 – 8	8 – 12	12 – 16	16 – 20
बारंबारता	3	9	10	8	6

की माध्यिका M है। तो $20M$ बराबर है :

Options :

5335432783. 52

5335432784. 104

5335432785. 208

5335432786. 416

Question Number : 20 Question Id : 533543846 Question Type : MCQ Option Shuffling : Yes 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 $2\sin^3 x + \sin 2x \cos x + 4\sin x - 4 = 0$ has exactly 3 solutions in the interval $\left[0, \frac{n\pi}{2}\right]$, $n \in \mathbb{N}$, then the roots of the equation $x^2 + nx + (n-3) = 0$ belong to :

Options :

5335432787. $\mathbb{Z}$

5335432788. $(0, \infty)$

5335432789. $(-\infty, 0)$

5335432790. $\left(-\frac{\sqrt{17}}{2}, \frac{\sqrt{17}}{2}\right)$

Question Number : 20 Question Id : 533543846 Question Type : MCQ Option Shuffling : Yes 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 $2\sin^3x + \sin 2x \cos x + 4\sin x - 4 = 0$ के अंतराल $\left[0, \frac{n\pi}{2}\right]$, $n \in \mathbb{N}$ में ठीक 3 हल हैं, तो समीकरण

$x^2 + nx + (n-3) = 0$ के मूल किस में हैं?

Options :

5335432787. $\mathbb{Z}$

5335432788. $(0, \infty)$

5335432789. $(-\infty, 0)$

5335432790. $\left(-\frac{\sqrt{17}}{2}, \frac{\sqrt{17}}{2}\right)$

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 :

53354349

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 21 Question Id : 533543847 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Let $A = \{1, 2, 3, \dots, 7\}$ and let $P(A)$ denote the power set of A . If the number of functions $f: A \rightarrow P(A)$ such that $a \in f(a), \forall a \in A$ is m^n , m and $n \in \mathbb{N}$ and m is least, then $m+n$ is equal to _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 21 Question Id : 533543847 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

माना $A = \{1, 2, 3, \dots, 7\}$ है तथा माना समुच्चय A का घात (Power) समुच्चय $P(A)$ है। यदि फलनों $f: A \rightarrow P(A)$, जिनके लिए $a \in f(a), \forall a \in A$ है, की संख्या $m^n, m, n \in \mathbb{N}$ हैं तथा m न्यूनतम है, तो $m+n$ बराबर है _____।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 22 Question Id : 533543848 Question Type : SA Calculator : None Response

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

Correct Marks : 4 Wrong Marks : 1

Let $\alpha, \beta \in \mathbb{N}$ be roots of the equation $x^2 - 70x + \lambda = 0$, where $\frac{\lambda}{2}, \frac{\lambda}{3} \in \mathbb{N}$. If λ assumes the minimum

possible value, then $\frac{(\sqrt{\alpha-1} + \sqrt{\beta-1})(\lambda+35)}{|\alpha-\beta|}$ is equal to :

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 22 Question Id : 533543848 Question Type : SA Calculator : None Response

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

Correct Marks : 4 Wrong Marks : 1

माना समीकरण $x^2 - 70x + \lambda = 0$, जहाँ $\frac{\lambda}{2}, \frac{\lambda}{3} \notin \mathbb{N}$ हैं, के मूल $\alpha, \beta \in \mathbb{N}$ हैं। λ के न्यूनतम संभव मान के लिए,

$$\frac{(\sqrt{\alpha-1} + \sqrt{\beta-1})(\lambda+35)}{|\alpha-\beta|} \text{ बराबर है } \underline{\hspace{2cm}}.$$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 23 **Question Id :** 533543849 **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 integral terms in the expansion of $\left\{7\left(\frac{1}{2}\right) + 11\left(\frac{1}{6}\right)\right\}^{824}$ is equal to _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 23 **Question Id :** 533543849 **Question Type :** SA **Calculator :** None **Response**

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

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

$\left\{7\left(\frac{1}{2}\right) + 11\left(\frac{1}{6}\right)\right\}^{824}$ के प्रसार में पूर्णांक पदों 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 :** 533543850 **Question Type :** SA **Calculator :** None **Response**

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

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

Let $\alpha = 1^2 + 4^2 + 8^2 + 13^2 + 19^2 + 26^2 + \dots$ upto 10 terms and $\beta = \sum_{n=1}^{10} n^4$. If $4\alpha - \beta = 55k + 40$, then k 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 :** 533543850 **Question Type :** SA **Calculator :** None **Response**

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

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

माना $\alpha = 1^2 + 4^2 + 8^2 + 13^2 + 19^2 + 26^2 + \dots$ 10 पदों तक तथा $\beta = \sum_{n=1}^{10} n^4$ हैं। यदि $4\alpha - \beta = 55k + 40$ है, तो k

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 :** 533543851 **Question Type :** SA **Calculator :** None **Response**

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

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

The value of $9 \int_0^9 \left[\frac{\sqrt{10x}}{\sqrt{x+1}} \right] dx$, where $[t]$ denotes the greatest integer less than or equal to t , is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 25 **Question Id :** 533543851 **Question Type :** SA **Calculator :** None **Response**

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

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

$9 \int_0^9 \left[\sqrt{\frac{10x}{x+1}} \right] dx$, जहाँ $[t]$ महत्तम पूर्णांक $\leq t$ है, का मान है _____।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 26 **Question Id :** 533543852 **Question Type :** SA **Calculator :** None **Response**

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

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

Let $y=y(x)$ be the solution of the differential equation $(1-x^2) dy = [xy + (x^3+2)\sqrt{3(1-x^2)}] dx$,

$-1 < x < 1, y(0)=0$. If $y\left(\frac{1}{2}\right) = \frac{m}{n}$, m and n are co-prime numbers, then $m+n$ is equal to _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 26 **Question Id :** 533543852 **Question Type :** SA **Calculator :** None **Response**

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

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

माना अवकल समीकरण $(1-x^2)dy = [xy + (x^3+2)\sqrt{3(1-x^2)}]dx$, $-1 < x < 1$, $y(0)=0$, का हल $y=y(x)$ है।

यदि $y\left(\frac{1}{2}\right) = \frac{m}{n}$ है, m तथा n असहभाज्य संख्याएँ हैं, तो $m+n$ बराबर है _____।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 27 **Question Id :** 533543853 **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 latus rectum of the hyperbola $\frac{x^2}{9} - \frac{y^2}{b^2} = 1$ subtend an angle of $\frac{\pi}{3}$ at the centre of the hyperbola. If b^2 is equal to $\frac{l}{m}(1 + \sqrt{n})$, where l and m are co-prime numbers, then $l^2 + m^2 + n^2$ 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 :** 533543853 **Question Type :** SA **Calculator :** None **Response**

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

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

माना अतिपरवलय $\frac{x^2}{9} - \frac{y^2}{b^2} = 1$ की नाभिलंब जीवा, अतिपरवलय के केन्द्र पर $\frac{\pi}{3}$ का कोण बनाती है। यदि

$b^2 = \frac{l}{m}(1 + \sqrt{n})$ है, जहाँ l तथा m असहभाज्य संख्याएँ हैं, तो $l^2 + m^2 + n^2$ 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 :** 533543854 **Question Type :** SA **Calculator :** None **Response**

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

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

If d_1 is the shortest distance between the lines $x+1=2y=-12z$, $x=y+2=6z-6$ and d_2 is the shortest distance between the lines $\frac{x-1}{2} = \frac{y+8}{-7} = \frac{z-4}{5}$, $\frac{x-1}{2} = \frac{y-2}{1} = \frac{z-6}{-3}$, then the

value of $\frac{32\sqrt{3} d_1}{d_2}$ is :

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 28 **Question Id :** 533543854 **Question Type :** SA **Calculator :** None **Response**

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

यदि रेखाओं $x+1=2y=-12z$, $x=y+2=6z-6$ के बीच न्यूनतम दूरी d_1 है तथा रेखाओं

$\frac{x-1}{2} = \frac{y+8}{-7} = \frac{z-4}{5}$, $\frac{x-1}{2} = \frac{y-2}{1} = \frac{z-6}{-3}$ के बीच न्यूनतम दूरी d_2 है, तो $\frac{32\sqrt{3} d_1}{d_2}$ 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 : 29 **Question Id :** 533543855 **Question Type :** SA **Calculator :** None **Response**

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

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

A group of 40 students appeared in an examination of 3 subjects - Mathematics, Physics and Chemistry. It was found that all students passed in atleast one of the subjects, 20 students passed in Mathematics, 25 students passed in Physics, 16 students passed in Chemistry, atmost 11 students passed in both Mathematics and Physics, atmost 15 students passed in both Physics and Chemistry, atmost 15 students passed in both Mathematics and Chemistry. The maximum number of students passed in all the three subjects 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 :** 533543855 **Question Type :** SA **Calculator :** None **Response**

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

Correct Marks : 4 Wrong Marks : 1

40 छात्रों का एक समूह 3 विषयों गणित, भौतिक विज्ञान तथा रसायन विज्ञान की परीक्षा में बैठा। यह पाया गया कि सभी छात्र कम से कम एक विषय में उत्तीर्ण हुए, 20 छात्र गणित में उत्तीर्ण हुए, 25 छात्र भौतिक विज्ञान में उत्तीर्ण हुए, 16 छात्र रसायन विज्ञान में उत्तीर्ण हुए, अधिक से अधिक 11 छात्र गणित तथा भौतिक विज्ञान दोनों में उत्तीर्ण हुए, अधिक से अधिक 15 छात्र भौतिक विज्ञान तथा रसायन विज्ञान दोनों में उत्तीर्ण हुए, अधिक से अधिक 15 छात्र गणित तथा रसायन विज्ञान दोनों में उत्तीर्ण हुए। तो तीनों विषयों में अधिक से अधिक उत्तीर्ण हुए छात्रों 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 : 30 Question Id : 533543856 Question Type : SA Calculator : None Response

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

Correct Marks : 4 Wrong Marks : 1

If the function

$$f(x) = \begin{cases} \frac{1}{|x|} & , |x| \geq 2 \\ ax^2 + 2b & , |x| < 2 \end{cases}$$

is differentiable on $\mathbf{R}$, then $48(a + b)$ 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 : 30 Question Id : 533543856 Question Type : SA Calculator : None Response

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

Correct Marks : 4 Wrong Marks : 1

यदि फलन

$$f(x) = \begin{cases} \frac{1}{|x|} & , |x| \geq 2 \\ ax^2 + 2b & , |x| < 2 \end{cases}$$

R पर अवकलनीय है, तो $48(a+b)$ बराबर है _____ ।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Physics Section A

Section Id :	53354350
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 :

53354350

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 31 Question Id : 533543857 Question Type : MCQ Option Shuffling : Yes 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) Coefficient of viscosity

(I) $[M L^2 T^{-2}]$

(B) Surface tension

(II) $[M L^2 T^{-1}]$

(C) Angular momentum

(III) $[M L^{-1} T^{-1}]$

(D) Rotational kinetic energy

(IV) $[M L^0 T^{-2}]$

Choose the correct answer from the options given below :

Options :

5335432801. (A)-(I), (B)-(II), (C)-(III), (D)-(IV)

5335432802. (A)-(III), (B)-(IV), (C)-(II), (D)-(I)

5335432803. (A)-(II), (B)-(I), (C)-(IV), (D)-(III)

5335432804. (A)-(IV), (B)-(III), (C)-(II), (D)-(I)

Question Number : 31 Question Id : 533543857 Question Type : MCQ Option Shuffling : Yes Is

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

Correct Marks : 4 Wrong Marks : 1

सूची - I का सूची - II के साथ मिलान कीजिए।

सूची - I

सूची - II

(A) श्यानता गुणांक

(I) $[M L^2 T^{-2}]$

(B) पृष्ठ तनाव

(II) $[M L^2 T^{-1}]$

(C) कोणीय संवेग

(III) $[M L^{-1} T^{-1}]$

(D) घूर्णन गतिज ऊर्जा

(IV) $[M L^0 T^{-2}]$

नीचे दिये गये विकल्पों में से सही उत्तर का चयन कीजिए।

Options :

5335432801. (A)-(I), (B)-(II), (C)-(III), (D)-(IV)

5335432802. (A)-(III), (B)-(IV), (C)-(II), (D)-(I)

5335432803. (A)-(II), (B)-(I), (C)-(IV), (D)-(III)

5335432804. (A)-(IV), (B)-(III), (C)-(II), (D)-(I)

Question Number : 32 Question Id : 533543858 Question Type : MCQ Option Shuffling : Yes 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 particle of mass m is projected with a velocity ' u ' making an angle of 30° with the horizontal. The magnitude of angular momentum of the projectile about the point of projection when the particle is at its maximum height h is :

Options :

5335432805. $\frac{\sqrt{3}}{2} \frac{\mu^2}{g}$

5335432806. zero

5335432807. $\frac{\sqrt{3}}{16} \frac{\mu^3}{g}$

5335432808. $\frac{\mu^3}{\sqrt{2} g}$

Question Number : 32 Question Id : 533543858 Question Type : MCQ Option Shuffling : Yes 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 m द्रव्यमान का कण क्षैतिज से 30° के कोण पर ' u ' वेग से प्रक्षेपित किया जाता है। जब कण अपनी अधिकतम ऊँचाई पर h पर हो तो प्रक्षेपण बिन्दु के परितः प्रक्षेप्य का कोणीय संवेग है :

Options :

5335432805. $\frac{\sqrt{3}}{2} \frac{\mu^2}{g}$

5335432806. zero

5335432807. $\frac{\sqrt{3}}{16} \frac{\mu^3}{g}$

5335432808. $\frac{\mu^3}{\sqrt{2} g}$

Question Number : 33 Question Id : 533543859 Question Type : MCQ Option Shuffling : Yes 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 body of mass 100 g is dropped from a height of 10 m from the ground. After hitting the ground, the body rebounds to a height of 5 m. The impulse of force imparted by the ground to the body is given by : (given, $g=9.8 \text{ m/s}^2$)

Options :

5335432809. 2.39 kg ms^{-1}

5335432810. 43.2 kg ms^{-1}

5335432811. 23.9 kg ms^{-1}

5335432812. 4.32 kg ms^{-1}

Question Number : 33 Question Id : 533543859 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

100 ग्राम द्रव्यमान की एक गोलीय वस्तु पृथ्वी तल से 10 मी. की ऊँचाई से गिराई गई है। जमीन से टकराने के बाद वस्तु 5 मी की ऊँचाई तक उछलती है। जमीन द्वारा वस्तु को दिया गया बल का आवेग होगा : (दिया है $g = 9.8 \text{ m/s}^2$)

Options :

5335432809. 2.39 kg ms^{-1}

5335432810. 43.2 kg ms^{-1}

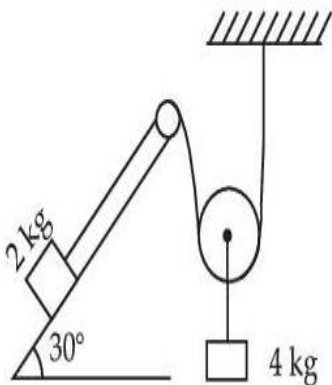
5335432811. 23.9 kg ms^{-1}

5335432812. 4.32 kg ms^{-1}

Question Number : 34 Question Id : 533543860 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

All surfaces shown in figure are assumed to be frictionless and the pulleys and the string are light.
The acceleration of the block of mass 2 kg is :



Options :

5335432813. $\frac{g}{3}$

5335432814. $\frac{g}{4}$

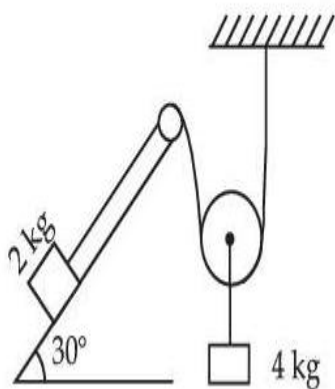
5335432815. $\frac{g}{2}$

5335432816. g

Question Number : 34 Question Id : 533543860 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

चित्र में प्रदर्शित सभी तल घर्षणरहित लिये गये हैं तथा धिरनी व धागा हल्का है। 2 किग्रा. द्रव्यमान के गुटके का त्वरण है :



Options :

5335432813. $\frac{g}{3}$

5335432814. $\frac{g}{4}$

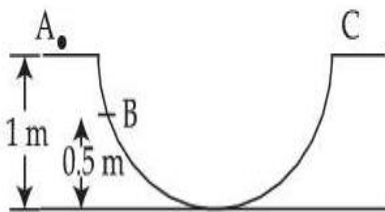
5335432815. $\frac{g}{2}$

5335432816. g

Question Number : 35 Question Id : 533543861 Question Type : MCQ Option Shuffling : Yes 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 particle is placed at the point A of a frictionless track ABC as shown in figure. It is gently pushed towards right. The speed of the particle when it reaches the point B is : (Take $g = 10 \text{ m/s}^2$).



Options :

5335432817. 10 m/s

5335432818. $\sqrt{10} \text{ m/s}$

5335432819. $2\sqrt{10} \text{ m/s}$

5335432820. 20 m/s

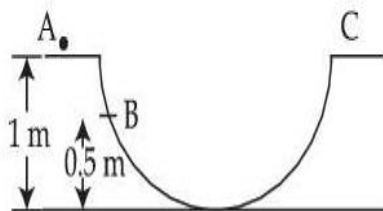
Question Number : 35 Question Id : 533543861 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

एक कण चित्र में प्रदर्शित एक घर्षणरहित पथ ABC के बिन्दु A पर स्थित है। यह हल्के से दाहिनी ओर धकेला जाता है। जब कण बिन्दु B पर पहुँचता है तब इसकी चाल है : (दिया है, $g = 10$ मी/से²)



Options :

5335432817. 10 m/s

5335432818. $\sqrt{10}$ m/s

5335432819. $2\sqrt{10}$ m/s

5335432820. 20 m/s

Question Number : 36 Question Id : 533543862 Question Type : MCQ Option Shuffling : Yes 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 gravitational potential at a point above the surface of earth is -5.12×10^7 J/kg and the acceleration due to gravity at that point is 6.4 m/s². Assume that the mean radius of earth to be 6400 km. The height of this point above the earth's surface is :

Options :

5335432821.

5335432822. 1000 km

5335432823. 540 km

5335432824. 1200 km

Question Number : 36 Question Id : 533543862 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

पृथ्वी तल से ऊपर किसी बिन्दु पर गुरुत्वीय विभव -5.12×10^7 J/kg है तथा उस बिन्दु पर गुरुत्वीय त्वरण 6.4 मी/से² है। पृथ्वी की त्रिज्या औसतन 6400 किमी. मानी जाये तब पृथ्वी तल के ऊपर इस बिन्दु की ऊँचाई है :

Options :

5335432821. 1600 किमी.

5335432822. 1000 किमी.

5335432823. 540 किमी.

5335432824. 1200 किमी.

Question Number : 37 Question Id : 533543863 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Young's modules of material of a wire of length 'L' and cross-sectional area A is Y. If the length of the wire is doubled and cross-sectional area is halved then Young's modules will be :

Options :

5335432825. $4Y$

5335432826. $\frac{Y}{4}$

5335432827. Y

5335432828. $2Y$

Question Number : 37 Question Id : 533543863 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

L लम्बाई व A अनुप्रस्थ परिच्छेद क्षेत्रफल के एक तार के पदार्थ का यंग प्रत्यास्थता गुणांक Y है। यदि तार की लम्बाई दोगुनी तथा अनुप्रस्थपरिच्छेद क्षेत्रफल आधा कर दिया जाय तो यंग प्रत्यास्थता गुणांक होगा :

Options :

5335432825. $4Y$

5335432826. $\frac{Y}{4}$

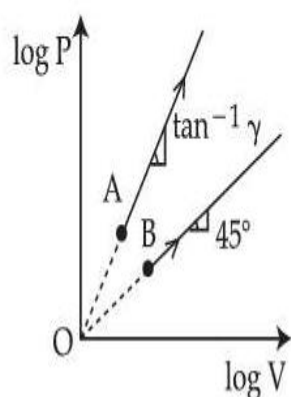
5335432827. Y

5335432828. 2Y

Question Number : 38 Question Id : 533543864 Question Type : MCQ Option Shuffling : Yes 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 thermodynamical processes are shown in the figure. The molar heat capacity for process A and B are C_A and C_B . The molar heat capacity at constant pressure and constant volume are represented by C_P and C_V , respectively. Choose the correct statement.



Options :

5335432829. $C_A > C_P > C_V$ 5335432830. $C_P > C_V > C_A = C_B$ 5335432831. $C_A = 0$ and $C_B = \infty$

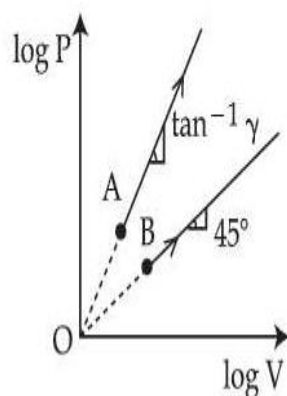
5335432832.

$$C_B = \infty, C_A = 0$$

Question Number : 38 Question Id : 533543864 Question Type : MCQ Option Shuffling : Yes 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 ऊष्मागतिक प्रक्रम चित्र में दिखाए गए हैं। A तथा B प्रक्रम के लिए मोलर ऊष्माधारिता C_A व C_B हैं। स्थिर दाब व स्थिर आयतन पर मोलर ऊष्मा धारिताएँ क्रमशः C_P व C_V हैं। सही कथन चुनिए।



Options :

5335432829. $C_A > C_P > C_V$

5335432830. $C_P > C_V > C_A = C_B$

5335432831. $C_A = 0$ तथा $C_B = \infty$

5335432832. $C_B = \infty, C_A = 0$

Question Number : 39 Question Id : 533543865 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

At which temperature the r.m.s. velocity of a hydrogen molecule equal to that of an oxygen molecule at 47°C ?

Options :

5335432833. 20 K

5335432834. 80 K

5335432835. -73°C

5335432836. 4 K

Question Number : 39 Question Id : 533543865 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

किस तापमान पर एक हाइड्रोजन अणु का वर्ग माध्य मूल वेग 47°C पर एक आक्सीजन अणु के वर्ग माध्य मूल वेग के बराबर होगा ?

Options :

5335432833. 20 K

5335432834. 80 K

5335432835. -73°C

5335432836. 4 K

Question Number : 40 Question Id : 533543866 Question Type : MCQ Option Shuffling : Yes 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 electrostatic potential due to an electric dipole at a distance 'r' varies as :

Options :

5335432837. $\frac{1}{r}$ 5335432838. $\frac{1}{r^2}$ 5335432839. $\frac{1}{r^3}$

5335432840. r

Question Number : 40 Question Id : 533543866 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

वैद्युत द्विध्रुव के कारण किसी 'r' दूरी पर स्थित वैद्युत विभव किस प्रकार बदलता है ?

Options :

5335432837. $\frac{1}{r}$

5335432838. $\frac{1}{r^2}$

5335432839. $\frac{1}{r^3}$

5335432840. r

Question Number : 41 Question Id : 533543867 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

An electric toaster has resistance of $60\ \Omega$ at room temperature (27°C). The toaster is connected to a $220\ \text{V}$ supply. If the current flowing through it reaches $2.75\ \text{A}$, the temperature attained by toaster is around : (if $\alpha = 2 \times 10^{-4}/^\circ\text{C}$)

Options :

5335432841. 694°C

5335432842. 1667°C

5335432843. 1694°C

5335432844. 1235°C

Question Number : 41 Question Id : 533543867 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No 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 विद्युत टोस्टर का प्रतिरोध $60\ \Omega$ है। टोस्टर को $220\ \text{V}$ के स्रोत से जोड़ा गया है। इसमें प्रवाहित धारा $2.75\ \text{A}$ मान तक पहुँचती है। टोस्टर का तापमान लगभग किस मान तक पहुँचता है?

(यदि $\alpha = 2 \times 10^{-4}/^{\circ}\text{C}$)

Options :

5335432841. 694°C

5335432842. 1667°C

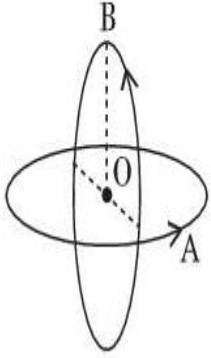
5335432843. 1694°C

5335432844. 1235°C

Question Number : 42 Question Id : 533543868 Question Type : MCQ Option Shuffling : Yes 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 insulated circular loop A and B of radius 'a' carrying a current of 'I' in the anti clockwise direction as shown in the figure. The magnitude of the magnetic induction at the centre will be :



Options :

5335432845. $\frac{\mu_0 I}{\sqrt{2} a}$

5335432846. $\frac{\sqrt{2} \mu_0 I}{a}$

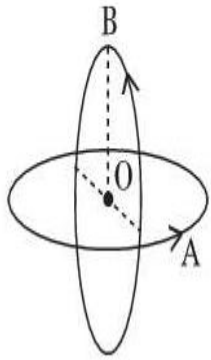
5335432847. $\frac{2 \mu_0 I}{a}$

5335432848. $\frac{\mu_0 I}{2 a}$

Question Number : 42 Question Id : 533543868 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

प्रदर्शित चित्र में 'a' त्रिज्या के दो (insulated) वृत्ताकार लूप A व B लिये गये हैं जिनमें 'I' धारा बामावर्त दिशा में प्रवाहित होती है। केन्द्र पर चुम्बकीय क्षेत्र का परिमाण होगा :



Options :

5335432845. $\frac{\mu_0 I}{\sqrt{2} a}$

5335432846. $\frac{\sqrt{2} \mu_0 I}{a}$

5335432847. $\frac{2 \mu_0 I}{a}$

5335432848. $\frac{\mu_0 I}{2 a}$

Question Number : 43 Question Id : 533543869 Question Type : MCQ Option Shuffling : Yes 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 series L.R circuit connected with an ac source $E = (25 \sin 1000 t) \text{ V}$ has a power factor of $\frac{1}{\sqrt{2}}$. If the source of emf is changed to $E = (20 \sin 2000 t) \text{ V}$, the new power factor of the circuit will be :

5335432849. $\frac{1}{\sqrt{2}}$

5335432850. $\frac{1}{\sqrt{3}}$

5335432851. $\frac{1}{\sqrt{5}}$

5335432852. $\frac{1}{\sqrt{7}}$

Question Number : 43 Question Id : 533543869 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

$E = 25 \sin 1000 t$ वोल्ट के प्रत्यावर्ती स्रोत से जुड़े एक श्रेणी LR परिपथ का शक्ति गुणांक $\frac{1}{\sqrt{2}}$ है। यदि स्रोत का वि.वा.

बल बदलकर $E = 20 \sin 2000 t$ वोल्ट कर दिया जाता है। परिपथ का नया शक्ति गुणांक होगा :

Options :

5335432849. $\frac{1}{\sqrt{2}}$

5335432850. $\frac{1}{\sqrt{3}}$

5335432851. $\frac{1}{\sqrt{5}}$

5335432852. $\frac{1}{\sqrt{7}}$

Question Number : 44 Question Id : 533543870 Question Type : MCQ Option Shuffling : Yes 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 electric field of an electromagnetic wave in free space is represented as $\vec{E} = E_0 \cos(\omega t - kz) \hat{i}$.
The corresponding magnetic induction vector will be :

Options :

5335432853. $\vec{B} = \frac{E_0}{C} \cos(\omega t - kz) \hat{j}$

5335432854. $\vec{B} = E_0 C \cos(\omega t - kz) \hat{j}$

5335432855. $\vec{B} = \frac{E_0}{C} \cos(\omega t + kz) \hat{j}$

5335432856. $\vec{B} = E_0 C \cos(\omega t + kz) \hat{j}$

Question Number : 44 Question Id : 533543870 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Correct Marks : 4 Wrong Marks : 1

मुक्त आकाश में एक विद्युत चुम्बकीय तरंग का विद्युत क्षेत्र $\vec{E} = E_0 \hat{i} \cos(\omega t - kz)$ द्वारा प्रदर्शित किया गया है। संगत चुम्बकीय क्षेत्र सदिश होगा :

Options :

5335432853. $\vec{B} = \frac{E_0}{C} \hat{j} \cos(\omega t - kz)$

5335432854. $\vec{B} = E_0 C \hat{j} \cos(\omega t - kz)$

5335432855. $\vec{B} = \frac{E_0}{C} \hat{j} \cos(\omega t + kz)$

5335432856. $\vec{B} = E_0 C \hat{j} \cos(\omega t + kz)$

Question Number : 45 Question Id : 533543871 Question Type : MCQ Option Shuffling : Yes 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 diffraction pattern of a light of wavelength 400 nm diffracting from a slit of width 0.2 mm is focused on the focal plane of a convex lens of focal length 100 cm. The width of the 1st secondary maxima will be :

Options :

5335432857. 2 mm

5335432858. 0.2 mm

5335432859. 0.02 mm

5335432860. 2 cm

Question Number : 45 Question Id : 533543871 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

400 nm तरंगदैर्घ्य के प्राश 0.2 mm चौड़ाई की एक झिरी से विवर्तित होकर 100 सेमी फोकस दूरी के एक उत्तल लेंस के फोकस तल पर विवर्तन पैटर्न प्राप्त होता है। प्रथम द्वितीयक उच्चिष्ठ की चौड़ाई होगी :

Options :

5335432857. 2 mm

5335432858. 0.2 mm

5335432859. 0.02 mm

5335432860. 2 cm

Question Number : 46 Question Id : 533543872 Question Type : MCQ Option Shuffling : Yes 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 work function of a substance is 3.0 eV. The longest wavelength of light that can cause the emission of photoelectrons from this substance is approximately;

Options :

5335432861. 400 nm

5335432862. 414 nm

5335432863. 200 nm

5335432864. 215 nm

Question Number : 46 Question Id : 533543872 Question Type : MCQ Option Shuffling : Yes 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 पदार्थ का कार्यफलन 3.0 eV है। इस पदार्थ से प्रकाश इलेक्ट्रॉनों के उत्सर्जन के लिए आवश्यक अधिकतम तरंगदैर्घ्य लगभग है :

Options :

5335432861. 400 nm

5335432862. 414 nm

5335432863. 200 nm

5335432864. 215 nm

Question Number : 47 Question Id : 533543873 Question Type : MCQ Option Shuffling : Yes 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 ratio of the magnitude of the kinetic energy to the potential energy of an electron in the 5th excited state of a hydrogen atom is :

Options :

5335432865. 1

5335432866. $\frac{1}{2}$

5335432867. $\frac{1}{4}$

5335432868. 4

Question Number : 47 Question Id : 533543873 Question Type : MCQ Option Shuffling : Yes 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 की पाँचवीं उत्तेजित अवस्था में एक इलेक्ट्रॉन की गतिज ऊर्जा व स्थितिज ऊर्जा के परिमाण का अनुपात है :

Options :

5335432865. 1

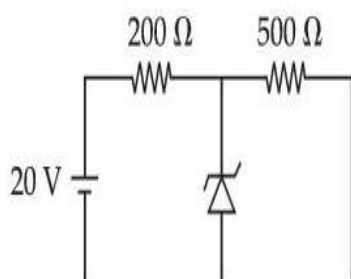
5335432866. $\frac{1}{2}$ 5335432867. $\frac{1}{4}$

5335432868. 4

Question Number : 48 Question Id : 533543874 Question Type : MCQ Option Shuffling : Yes 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 Zener diode of breakdown voltage 10 V is used as a voltage regulator as shown in the figure. The current through the Zener diode is :



Options :

5335432869. 0

5335432870. 20 mA

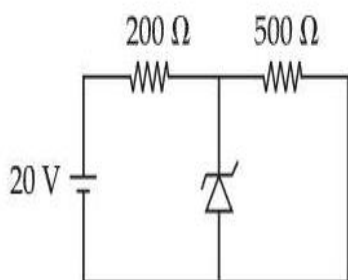
5335432871. 30 mA

5335432872. 50 mA

Question Number : 48 Question Id : 533543874 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

प्रदर्शित चित्र में 10 V भंजन (Breakdown) वोल्टेज के एक झेनर डायोड एक वोल्टेज रेगुलेटर के रूप में प्रयोग किया गया है। झेनर डायोड में बहने वाली धारा है :



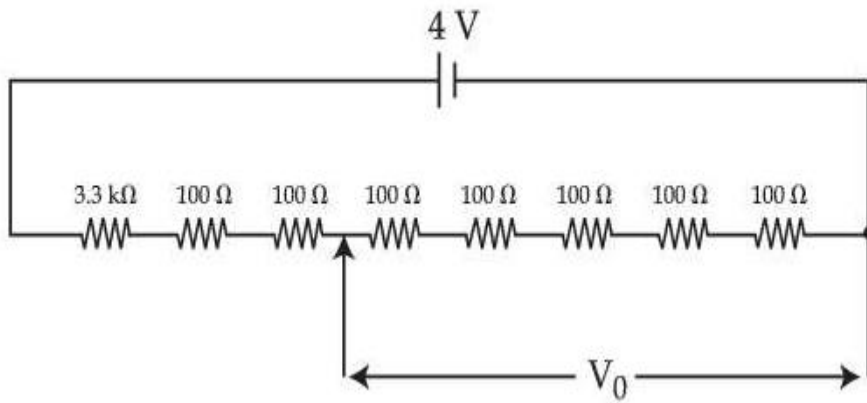
Options :

5335432869. 0
5335432870. 20 mA
5335432871. 30 mA
5335432872. 50 mA

Question Number : 49 Question Id : 533543875 Question Type : MCQ Option Shuffling : Yes 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 potential divider circuit is shown in figure. The output voltage V_0 is :



Options :

5335432873. 12 mV

5335432874. 2 mV

5335432875. 0.5 V

5335432876. 4 V

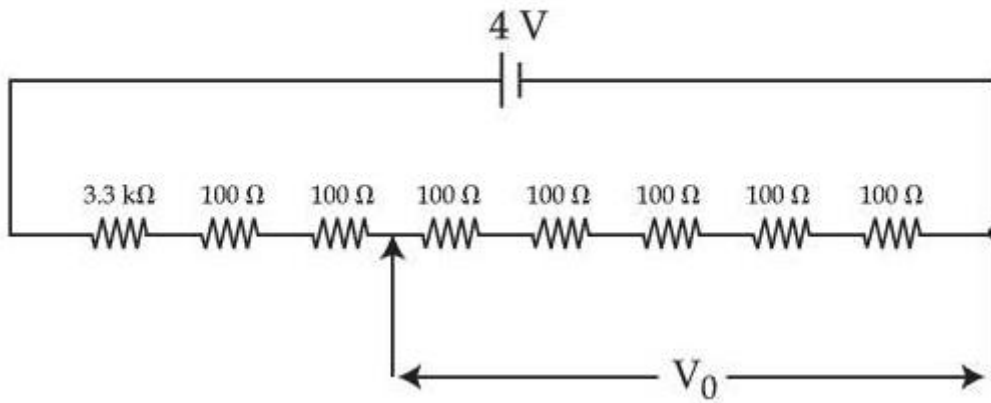
Question Number : 49 Question Id : 533543875 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

एक विभव विभाजक चित्र में दर्शाया गया है। निर्गत वोल्टेज V_0 है :



Options :

5335432873. 12 mV

5335432874. 2 mV

5335432875. 0.5 V

5335432876. 4 V

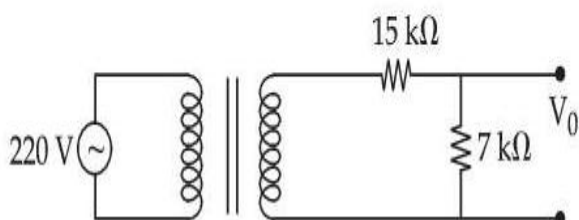
Question Number : 50 Question Id : 533543876 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Primary coil of a transformer is connected to 220 V ac. Primary and secondary turns of the transforms are 100 and 10 respectively. Secondary coil of transformer is connected to two series resistances shown in figure. The output voltage (V_0) is :



5335432877. 22 V

5335432878. 7 V

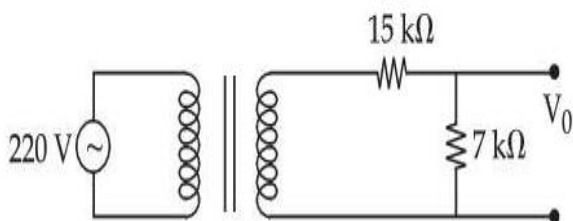
5335432879. 15 V

5335432880. 44 V

Question Number : 50 Question Id : 533543876 Question Type : MCQ Option Shuffling : Yes 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 ट्रांसफार्मर की प्राथमिक कुंडली 220 V के प्रत्यावर्ती स्रोत से जोड़ी गई गयी है। प्राथमिक तथा द्वितीयक कुंडली में फेरों की संख्या क्रमशः 100 व 10 हैं। ट्रांसफार्मर की द्वितीयक कुंडली को दो श्रेणीक्रम में जुड़े प्रतिरोधों से चित्र अनुसार जोड़ा गया है। निर्गत वोल्टेज (V_0) है :



Options :

5335432877. 22 V

5335432878. 7 V

5335432879. 15 V

5335432880. 44 V

Physics Section B

Section Id :	53354351
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 :	53354351
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 51 Question Id : 533543877 Question Type : SA Calculator : None Response

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

Correct Marks : 4 Wrong Marks : 1

The displacement and the increase in the velocity of a moving particle in the time interval of t to $(t+1)$ s are 125 m and 50 m/s, respectively. The distance travelled by the particle in $(t+2)^{\text{th}}$ s is _____ m.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Text Areas : PlainText

Possible Answers :

1

Question Number : 51 Question Id : 533543877 Question Type : SA Calculator : None Response

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

Correct Marks : 4 Wrong Marks : 1

t से $(t+1)$ से के समयान्तराल के समय में एक गतिमान कण का विस्थापन तथा वेग में वृद्धि क्रमशः 125 मी. व 50 मी/से हैं। $(t+2)$ वें सेकंड में कण द्वारा तय की गई दूरी _____ मी है।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

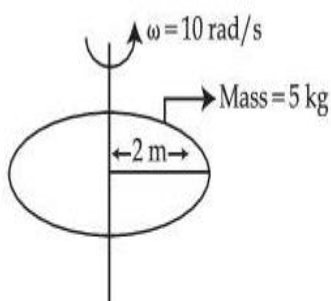
Possible Answers :

1

Question Number : 52 Question Id : 533543878 Question Type : SA Calculator : None Response

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

Correct Marks : 4 Wrong Marks : 1



Consider a Disc of mass 5 kg, radius 2 m, rotating with angular velocity of 10 rad/s about an axis perpendicular to the plane of rotation. An identical disc is kept gently over the rotating disc along the same axis. The energy dissipated so that both the discs continue to rotate together without slipping is _____ J.

Response Type : Numeric

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

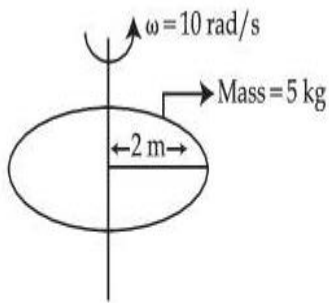
Possible Answers :

1

Question Number : 52 Question Id : 533543878 Question Type : SA Calculator : None Response

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

Correct Marks : 4 Wrong Marks : 1



माना 5 किग्रा द्रव्यमान तथा 2 मी त्रिज्या की एक (डिस्क) चकती घूर्णन तल के लम्बवत अक्ष के परितः 10 रेडियन/से के कोणीय वेग से घूर्णन कर रही है। समान अक्ष के साथ एक दूसरी समान चकती धीरे से घूर्णित चकती पर रखी दी जाती है। ऊर्जा क्षय _____ जूल है जिसके लिए दोनों चकतियाँ बिना फिसले एक साथ घूमती हैं।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

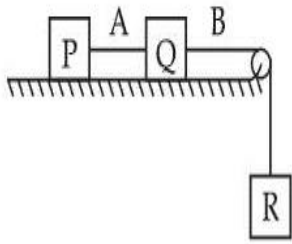
1

Question Number : 53 Question Id : 533543879 Question Type : SA Calculator : None Response

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

Correct Marks : 4 Wrong Marks : 1

Each of three blocks P, Q and R shown in figure has a mass of 3 kg. Each of the wires A and B has cross-sectional area 0.005 cm^2 and Young's modulus $2 \times 10^{11} \text{ N m}^{-2}$. Neglecting friction, the longitudinal strain on wire B is $\text{_____} \times 10^{-4}$. (Take $g = 10 \text{ m/s}^2$)



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

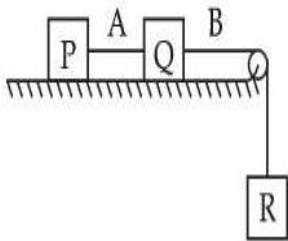
1

Question Number : 53 **Question Id :** 533543879 **Question Type :** SA **Calculator :** None **Response**

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

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

चित्र में दिखाए गये प्रत्येक तीनों गुटकों P, Q व R का द्रव्यमान 3 किग्रा है। प्रत्येक तार A व B का अनुप्रस्थ परिच्छेद क्षेत्रफल 0.005 सेमी^2 तथा यंग प्रत्यास्थता गुणांक $2 \times 10^{11} \text{ N m}^{-2}$ है। घर्षण को नगण्य मानकर, तार B में अदैर्घ्य विकृति $\text{_____} \times 10^{-4}$ है। (दिया है, $g = 10 \text{ मी/से}^2$)



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

1

Question Number : 54 Question Id : 533543880 Question Type : SA Calculator : None Response

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

Correct Marks : 4 Wrong Marks : 1

In a closed organ pipe, the frequency of fundamental note is 30 Hz. A certain amount of water is now poured in the organ pipe so that the fundamental frequency is increased to 110 Hz. If the organ pipe has a cross-sectional area of 2 cm^2 , the amount of water poured in the organ tube is _____ g. (Take speed of sound in air is 330 m/s)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 54 Question Id : 533543880 Question Type : SA Calculator : None Response

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

Correct Marks : 4 Wrong Marks : 1

एक बन्द आर्गन पाइप में मूल स्तरक की आवृत्ति 30 Hz है। अब पानी की एक निश्चित मात्रा को आर्गन पाइप में छिड़क दिया जाता है ताकि मूल आवृत्ति बढ़कर 110 Hz हो जाती है। यदि आर्गन पाइप के अनुप्रस्थ परिच्छेद का क्षेत्रफल 2 सेमी^2 हो तो आर्गन पाइप में छिड़के गये पानी की मात्रा (ग्राम में) _____ है।
(यदि वायु में ध्वनि की चाल = 330 मी/से)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

1

Question Number : 55 Question Id : 533543881 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 capacitance C and potential V has energy E . It is connected to another capacitor of capacitance $2C$ and potential $2V$. Then the loss of energy is $\frac{x}{3}E$, where 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 : 55 Question Id : 533543881 Question Type : SA Calculator : None Response

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

Correct Marks : 4 Wrong Marks : 1

C धारिता तथा V विभव के एक संधारित्र की ऊर्जा E है। इसे $2C$ धारिता तथा $2V$ विभव के दूसरे संधारित्र से जोड़ा जाता है। तब ऊर्जा ह्रास $\frac{x}{3} \times \frac{x}{3} E$ है, जहाँ x का मान _____ है।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

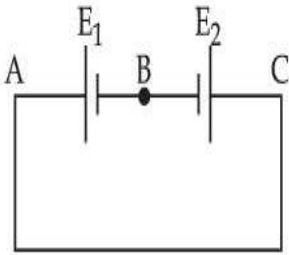
1

Question Number : 56 Question Id : 533543882 Question Type : SA Calculator : None Response

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

Correct Marks : 4 Wrong Marks : 1

Two cells are connected in opposition as shown. Cell E_1 is of 8 V emf and $2\ \Omega$ internal resistance; the cell E_2 is of 2 V emf and $4\ \Omega$ internal resistance. The terminal potential difference of cell E_2 is _____ V.



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

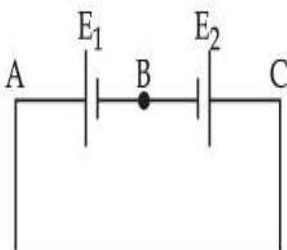
1

Question Number : 56 Question Id : 533543882 Question Type : SA Calculator : None Response

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

Correct Marks : 4 Wrong Marks : 1

दो सेलों को चित्रानुसार विपरीत अवस्था में जोड़ा गया है। E_1 सेल 8 V वि.वा.बल व $2\ \Omega$ आन्तरिक प्रतिरोध एवं E_2 सेल 2 V वि.वा. बल व $4\ \Omega$ आन्तरिक प्रतिरोध बल है। E_2 सेल का टर्मिनल विभवान्तर _____ वोल्ट है।



Response Type : Numeric

Evaluation Required For SA : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 57 Question Id : 533543883 Question Type : SA Calculator : None Response

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

Correct Marks : 4 Wrong Marks : 1

The horizontal component of earth's magnetic field at a place is 3.5×10^{-5} T. A very long straight conductor carrying current of $\sqrt{2}$ A in the direction from South east to North West is placed. The force per unit length experienced by the conductor is _____ $\times 10^{-6}$ N/m.

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 : 533543883 Question Type : SA Calculator : None Response

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

Correct Marks : 4 Wrong Marks : 1

किसी स्थान पर पृथ्वी के चुम्बकीय क्षेत्र का क्षैतिज घटक 3.5×10^{-5} T है। एक सीधे बहुत लम्बे चालक को जिसमें $\sqrt{2}$ A की धारा दक्षिण पूरब से उत्तर पश्चिम दिशा में बहती है, इसमें रखा गया है। चालक पर प्रति एकांक लम्बाई पर लगने वाला बल _____ $\times 10^{-6}$ N/m है।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Possible Answers :

1

Question Number : 58 Question Id : 533543884 Question Type : SA Calculator : None Response**Time : N.A Think Time : N.A Minimum Instruction Time : 0****Correct Marks : 4 Wrong Marks : 1**

A ceiling fan having 3 blades of length 80 cm each is rotating with an angular velocity of 1200 rpm. The magnetic field of earth in that region is 0.5 G and angle of dip is 30° . The emf induced across the blades is $N \pi \times 10^{-5}$ V. The value of N is _____.

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

1

Question Number : 58 Question Id : 533543884 Question Type : SA Calculator : None Response**Time : N.A Think Time : N.A Minimum Instruction Time : 0****Correct Marks : 4 Wrong Marks : 1**

80 सेमी लम्बाई के ती पंखों के छत वाला पंखा 1200 rpm कोणीय वेग से घूम रहा है। उस परिवेश में पृथ्वी का चुम्बकीय क्षेत्र 0.5 G तथा नमन कोण 30° है। पंखों के सिरों के बीच उत्पन्न वि.वा. बल $N \pi \times 10^{-5}$ V है। N का मान _____ है।

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

Question Number : 59 Question Id : 533543885 Question Type : SA Calculator : None Response

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

Correct Marks : 4 Wrong Marks : 1

The distance between object and its two times magnified real image as produced by a convex lens is 45 cm. The focal length of the lens used is _____ cm.

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 : 533543885 Question Type : SA Calculator : None Response

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

Correct Marks : 4 Wrong Marks : 1

एक उत्तल लेंस द्वारा किसी वस्तु की दो गुनी आवर्धित प्रतिबिम्ब तथा वस्तु के बीच की दूरी 45 सेमी है। प्रयुक्त लेंस की फोकस दूरी _____ सेमी है।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 60 Question Id : 533543886 Question Type : SA Calculator : None Response

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

Correct Marks : 4 Wrong Marks : 1

A electron of hydrogen atom on an excited state is having energy $E_n = -0.85 \text{ eV}$. The maximum number of allowed transitions to lower energy level is _____.

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 : 533543886 Question Type : SA Calculator : None Response

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

Correct Marks : 4 Wrong Marks : 1

हाइड्रोजन परमाणु की किसी उत्तेजित अवस्था में इलेक्ट्रॉन की ऊर्जा $E_n = -0.85 \text{ eV}$ है। निम्न ऊर्जा स्तर की ओर अधिकतम अनुमोदित संक्रमणों की संख्या _____ है।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Chemistry Section A

Section Id : 53354352

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 :

53354352

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 61 Question Id : 533543887 Question Type : MCQ Option Shuffling : Yes Is**Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0****Correct Marks : 4 Wrong Marks : 1**

Given below are two statements :

Statement (I) : The orbitals having same energy are called as degenerate orbitals.**Statement (II) :** In hydrogen atom, 3p and 3d orbitals are not degenerate orbitals.In the light of the above statements, choose the **most appropriate** answer from the options given below :**Options :**5335432891. **Both Statement I and Statement II are true**5335432892. **Both Statement I and Statement II are false**5335432893. **Statement I is true but Statement II is false**

5335432894.

Statement I is false but Statement II is true

Question Number : 61 Question Id : 533543887 Question Type : MCQ Option Shuffling : Yes 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) : समान उर्जा वाले कक्षकों को डिजेनेरेट कक्षक कहा जाता है।

कथन (II) : हाइड्रोजन परमाणु में 3p एवं 3d कक्षक डिजेनेरेट कक्षक नहीं हैं।

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

Options :

5335432891. दोनों कथन I एवं कथन II सही हैं।

5335432892. दोनों कथन I एवं कथन II गलत हैं।

5335432893. कथन I सही है परंतु कथन II गलत है।

5335432894. कथन I गलत है परंतु कथन II सही है।

Question Number : 62 Question Id : 533543888 Question Type : MCQ Option Shuffling : Yes 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
Molecule	Shape
(A) BrF_5	(I) T-shape
(B) H_2O	(II) See saw
(C) ClF_3	(III) Bent
(D) SF_4	(IV) Square pyramidal

Choose the correct answer from the options given below :

Options :

5335432895. (A)-(II), (B)-(I), (C)-(III), (D)-(IV)

5335432896. (A)-(III), (B)-(IV), (C)-(I), (D)-(II)

5335432897. (A)-(IV), (B)-(III), (C)-(I), (D)-(II)

5335432898. (A)-(I), (B)-(II), (C)-(IV), (D)-(III)

Question Number : 62 Question Id : 533543888 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

सूची - I का मिलान सूची - II से करें :

सूची - I
(अणु)

सूची - II
(आकृति)

(A) BrF_5

(I) T-आकृति

(B) H_2O

(II) सी-सॉ

(C) ClF_3

(III) मुड़ा हुआ

(D) SF_4

(IV) वर्ग पिरामिड

नीचे दिए गए विकल्पों से सही उत्तर चुने :

Options :

5335432895. (A)-(II), (B)-(I), (C)-(III), (D)-(IV)

5335432896. (A)-(III), (B)-(IV), (C)-(I), (D)-(II)

5335432897. (A)-(IV), (B)-(III), (C)-(I), (D)-(II)

5335432898. (A)-(I), (B)-(II), (C)-(IV), (D)-(III)

Question Number : 63 Question Id : 533543889 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

What happens to freezing point of benzene when small quantity of naphthalene is added to benzene ?

Options :

5335432899. Increases

5335432900. Decreases

5335432901. Remains unchanged

5335432902. First decreases and then increases

Question Number : 63 Question Id : 533543889 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

जब बेन्जीन से थोड़ी मात्रा में नैफ्थलीन मिलायी जाती है तो बेन्जीन के हिमांक पर क्या प्रभाव पड़ता है?

Options :

5335432899. बढ़ता है

5335432900. घटता है

5335432901. अपरिवर्तित रहता है

5335432902. पहले घटता है फिर बढ़ता है

Question Number : 64 Question Id : 533543890 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Aluminium chloride in acidified aqueous solution forms an ion having geometry

Options :

5335432903. Tetrahedral

5335432904. Octahedral

5335432905. Square planar

5335432906. Trigonal bipyramidal

Question Number : 64 Question Id : 533543890 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

ऐलुमीनियम क्लोराइड अम्लीकृत जलीय विलयन में एक आयन बनाता है जिसकी ज्यामिती होती है :

Options :

5335432903. चतुष्फलकीय

5335432904. अष्टफलकीय

5335432905. वर्ग समतलीय

5335432906.

Question Number : 65 Question Id : 533543891 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Given below are two statements : one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A) : There is a considerable increase in covalent radius from N to P. However from As to Bi only a small increase in covalent radius is observed.

Reason (R) : Covalent and ionic radii in a particular oxidation state increases down the group. In the light of the above statements, choose the **most appropriate** answer from the options given below :

Options :

5335432907. Both **(A)** and **(R)** are true and **(R)** is the correct explanation of **(A)**

5335432908. Both **(A)** and **(R)** are true but **(R)** is **not** the correct explanation of **(A)**

5335432909. **(A)** is true but **(R)** is false

5335432910. **(A)** is false but **(R)** is true

Question Number : 65 Question Id : 533543891 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

नीचे दो कथन दिए गए हैं: एक को अभिकथन (A) तथा दूसरे को कारण (R) दर्शाया गया है :

अभिकथन (A) : N से P जाने पर सहसंयोजी त्रिज्या में बड़ी वृद्धि होती है। जबकि As से Bi जाने पर सहसंयोजी त्रिज्या में केवल छोटी वृद्धि देखी गई है।

कारण (R) : समूह में नीचे आने पर किसी विशेष ऑक्सीकरण अवस्था में सहसंयोजी एवं आयनिक त्रिज्याओं में वृद्धि होती है।

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

Options :

5335432907. (A) एवं (R) दोनों सही हैं तथा (A) की सही व्याख्या (R) है।

5335432908. (A) एवं (R) दोनों सही हैं लेकिन (A) की सही व्याख्या (R) नहीं है।

5335432909. (A) सही है लेकिन (R) गलत है।

5335432910. (A) गलत है लेकिन (R) सही है।

Question Number : 66 Question Id : 533543892 Question Type : MCQ Option Shuffling : Yes 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

Species

List - II

Electronic distribution

(A) Cr^{+2}

(I) $3d^8$

(B) Mn^{+}

(II) $3d^3 4s^1$

(C) Ni^{+2}

(III) $3d^4$

(D) V^{+}

(IV) $3d^5 4s^1$

Choose the correct answer from the options given below :

5335432911. (A)-(IV), (B)-(III), (C)-(I), (D)-(II)

5335432912. (A)-(I), (B)-(II), (C)-(III), (D)-(IV)

5335432913. (A)-(II), (B)-(I), (C)-(IV), (D)-(III)

5335432914. (A)-(III), (B)-(IV), (C)-(I), (D)-(II)

Question Number : 66 Question Id : 533543892 Question Type : MCQ Option Shuffling : Yes 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

(स्पीशीज़)

(A) Cr^{+2}

(B) Mn^{+}

(C) Ni^{+2}

(D) V^{+}

सूची - II

(इलेक्ट्रॉनिक विन्यास)

(I) $3d^8$

(II) $3d^3 4s^1$

(III) $3d^4$

(IV) $3d^5 4s^1$

नीचे दिए गए विकल्पों से सही उत्तर चुने :

Options :

5335432911. (A)-(IV), (B)-(III), (C)-(I), (D)-(II)

5335432912. (A)-(I), (B)-(II), (C)-(III), (D)-(IV)

5335432913. (A)-(II), (B)-(I), (C)-(IV), (D)-(III)

5335432914. (A)-(III), (B)-(IV), (C)-(I), (D)-(II)

Question Number : 67 Question Id : 533543893 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Diamagnetic Lanthanoid ions are :

Options :

5335432915. Nd^{3+} & Ce^{4+}

5335432916. La^{3+} & Ce^{4+}

5335432917. Lu^{3+} & Eu^{3+}

5335432918. Nd^{3+} & Eu^{3+}

Question Number : 67 Question Id : 533543893 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

प्रतिचुम्बकीय लैन्थेनॉयड आयन हैं :

5335432915. Nd^{3+} एवं Ce^{4+}

5335432916. La^{3+} एवं Ce^{4+}

5335432917. Lu^{3+} एवं Eu^{3+}

5335432918. Nd^{3+} एवं Eu^{3+}

Question Number : 68 Question Id : 533543894 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Choose the correct statements from the following :

- (A) Ethane-1, 2-diamine is a chelating ligand.
- (B) Metallic aluminium is produced by electrolysis of aluminium oxide in presence of cryolite.
- (C) Cyanide ion is used as ligand for leaching of silver.
- (D) Phosphine act as a ligand in Wilkinson catalyst.
- (E) The stability constants of Ca^{2+} and Mg^{2+} are similar with EDTA complexes.

Choose the correct answer from the options given below :

Options :

5335432919. (B), (C), (E) only

5335432920. (C), (D), (E) only

5335432921.

(A), (B), (C) only

5335432922. (A), (D), (E) only

Question Number : 68 Question Id : 533543894 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

निम्न पर विचार करें। सही कथन हैं :

- (A) ऐथेन-1, 2- डाइऐमीन एक कीलेटिंग लिगण्ड है।
- (B) क्रायोलाइट की उपस्थिति में ऐलुमीनियम ऑक्साइड के विद्युत अपघटन से धात्विक ऐलुमीनियम उत्पादित होता है।
- (C) सिल्वर के निक्षालन हेतु लिगण्ड के रूप में साइनाइड आयन का उपयोग किया जाता है।
- (D) विलकिन्सन उत्प्रेरक में फ़ॉस्फीन एक लिगण्ड के रूप में कार्य करता है।
- (E) Ca^{2+} एवं Mg^{2+} के EDTA संकुलों के स्थायित्व स्थिरांक समान होते हैं।

नीचे दिए गए विकल्पों से सही उत्तर चुने :

Options :

5335432919. केवल (B), (C), (E)

5335432920. केवल (C), (D), (E)

5335432921. केवल (A), (B), (C)

5335432922. केवल (A), (D), (E)

Question Number : 69 Question Id : 533543895 Question Type : MCQ Option Shuffling : Yes 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 Lassaigne's extract is boiled with dil HNO_3 before testing for halogens because,

Options :

5335432923. Silver halides are soluble in HNO_3 .

5335432924. Na_2S and NaCN are decomposed by HNO_3 .

5335432925. Ag_2S is soluble in HNO_3 .

5335432926. AgCN is soluble in HNO_3 .

Question Number : 69 Question Id : 533543895 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

हेलोजनों के परीक्षण के पूर्व, लैसें निष्कर्ष को तनु HNO_3 के साथ गर्म किया जाता है, क्योंकि :

Options :

5335432923. सिल्वर हैलाइड HNO_3 में विलेय होते हैं।

5335432924. HNO_3 के द्वारा Na_2S एवं NaCN का अपघटन होता है

5335432925. Ag_2S HNO_3 में विलेय है।

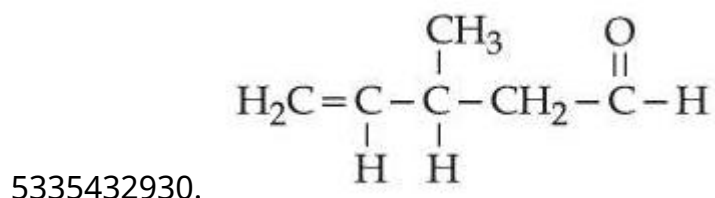
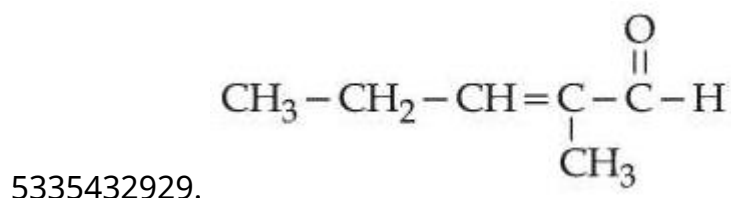
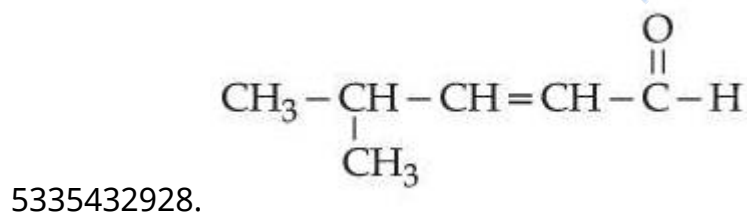
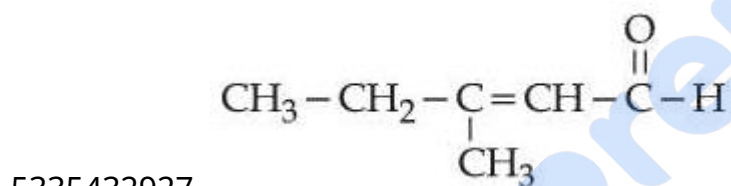
5335432926. AgCN HNO_3 में विलेय है।

Question Number : 70 Question Id : 533543896 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Structure of 4-Methylpent-2-enal is :

Options :

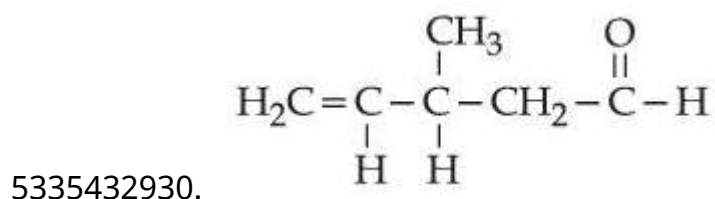
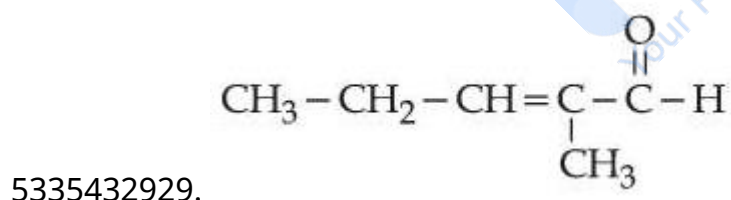
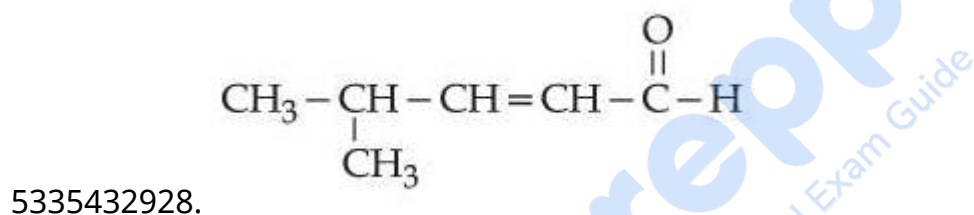
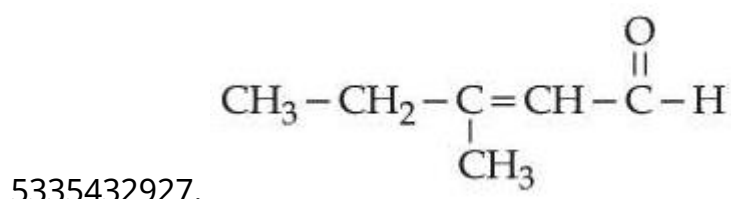


Question Number : 70 Question Id : 533543896 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

4-मेथिलपेंट-2-ईनअल की संरचना है :

Options :



Question Number : 71 Question Id : 533543897 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

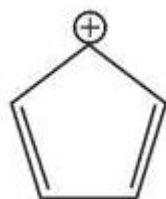
Which of the following molecule/species is most stable ?

Options :

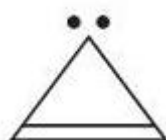
5335432931.



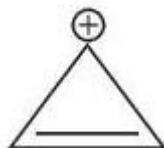
5335432932.



5335432933.



5335432934.



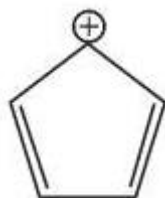
Question Number : 71 Question Id : 533543897 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

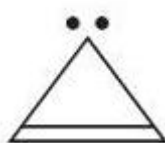
निम्न में से कौन-सा अणु/स्पीशीज़ सर्वाधिक स्थायी है ?

Options :

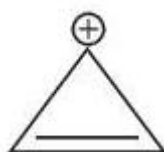
5335432931.



5335432932.



5335432933.



5335432934.

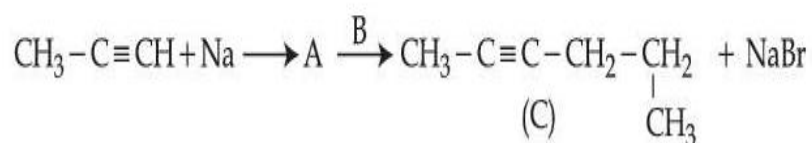
Question Number : 72 Question Id : 533543898 Question Type : MCQ Option Shuffling : Yes Is

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

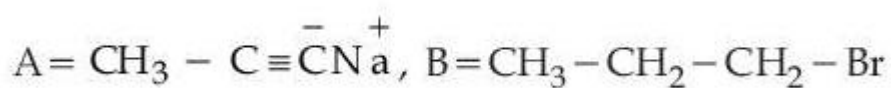
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

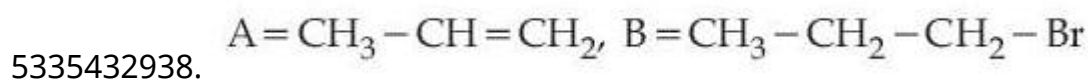
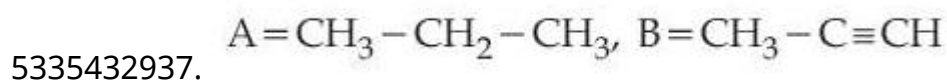
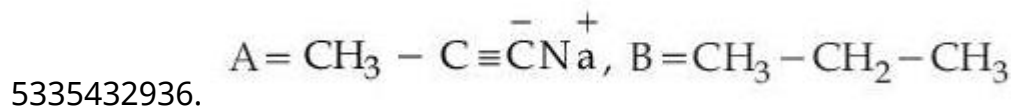
Compound A formed in the following reaction reacts with B gives the product C. Find out A and B.



Options :



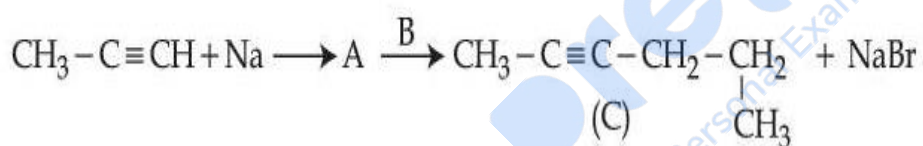
5335432935.



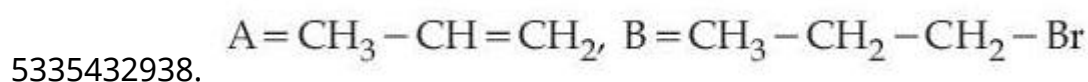
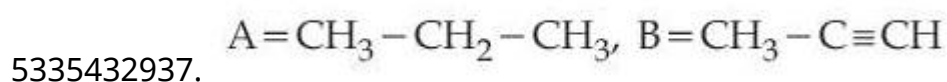
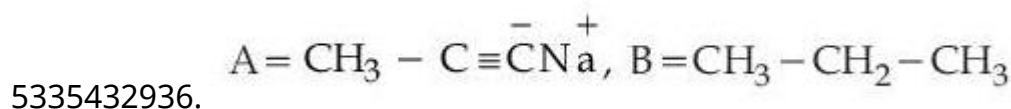
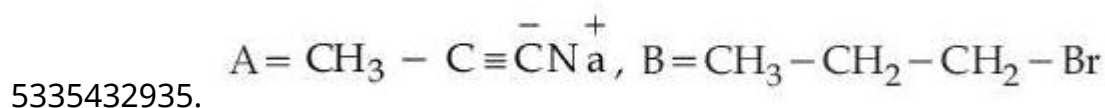
Question Number : 72 Question Id : 533543898 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

निम्न अभिक्रिया में निर्मित उत्पाद A, B के साथ अभिक्रिया कर उत्पाद C देता है। A एवं B को पहचानें :



Options :



Question Number : 73 Question Id : 533543899 Question Type : MCQ Option Shuffling : Yes Is

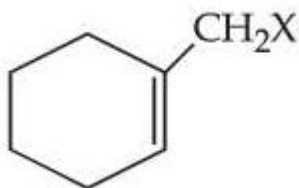
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

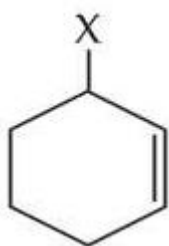
Correct Marks : 4 Wrong Marks : 1

Example of vinylic halide is :

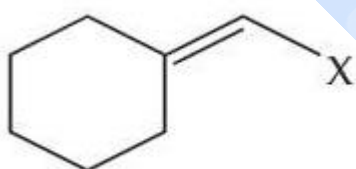
Options :



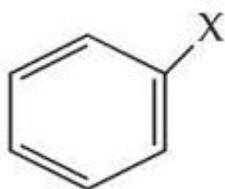
5335432939.



5335432940.



5335432941.



5335432942.

Question Number : 73 Question Id : 533543899 Question Type : MCQ Option Shuffling : Yes Is

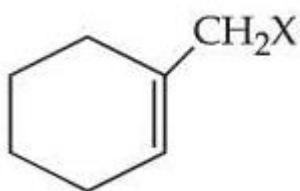
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

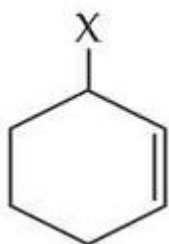
Correct Marks : 4 Wrong Marks : 1

वाइनिलिक हैलाइड का उदाहरण है :

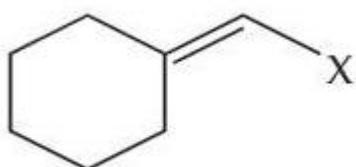
Options :



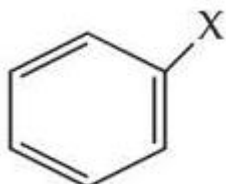
5335432939.



5335432940.



5335432941.



5335432942.

Question Number : 74 Question Id : 533543900 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Given below are two statements : one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A) : $\text{CH}_2=\text{CH}-\text{CH}_2-\text{Cl}$ is an example of allyl halide.

Reason (R) : Allyl halides are the compounds in which the halogen atom is attached to sp^2 hybridised carbon atom.

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

Options :

5335432943. Both (A) and (R) are true and (R) is the correct explanation of (A)

5335432944. Both (A) and (R) are true but (R) is **not** the correct explanation of (A)

5335432945. (A) is true but (R) is false

5335432946. (A) is false but (R) is true

Question Number : 74 Question Id : 533543900 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

नीचे दो कथन दिए गए हैं : एक को **अभिकथन (A)** तथा दूसरे को **कारण (R)** दर्शाया गया है :

अभिकथन (A) : $\text{CH}_2=\text{CH}-\text{CH}_2-\text{Cl}$ ऐलिलिक हैलाइड का एक उदाहरण है।

कारण (R) : ऐलिलिक हैलाइड वे यौगिक होते हैं जिनमें हैलोजन परमाणु sp^2 संकरित कार्बन परमाणु से जुड़ा होता है।

उपर्युक्त कथनों के संदर्भ में, नीचे दिए गए विकल्पों में से **सही** उत्तर चुने :

Options :

5335432943. (A) एवं (R) दोनों सही हैं तथा (A) की सही व्याख्या (R) है।

5335432944. (A) एवं (R) दोनों सही हैं लेकिन (A) की सही व्याख्या (R) नहीं है

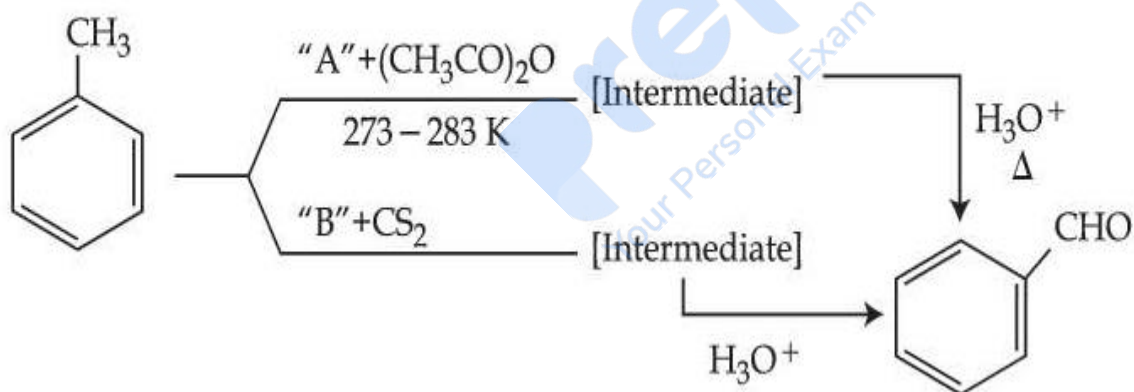
5335432945. (A) सही है लेकिन (R) गलत है।

5335432946. (A) गलत है लेकिन (R) सही है।

Question Number : 75 Question Id : 533543901 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

In the given reactions, identify the reagent A and reagent B.



Options :

5335432947. A- CrO_3 B- CrO_3

5335432948. A- CrO_3 B- CrO_2Cl_2

5335432949. A- CrO_2Cl_2 B- CrO_3

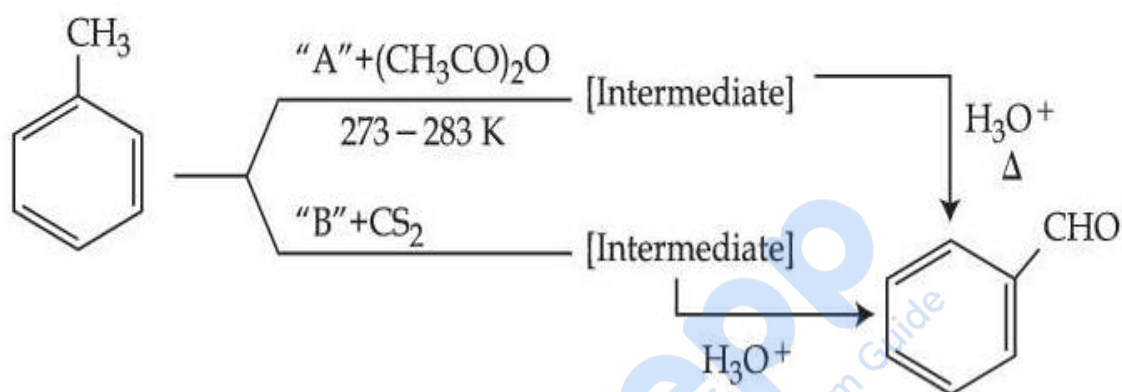
5335432950.

A-CrO₂Cl₂B-CrO₂Cl₂

Question Number : 75 Question Id : 533543901 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

दिए गए अभिक्रिया में अभिकर्मक A एवं अभिकर्मक B को पहचानें :



Options :

5335432947.

A-CrO₃B-CrO₃

5335432948.

A-CrO₃B-CrO₂Cl₂

5335432949.

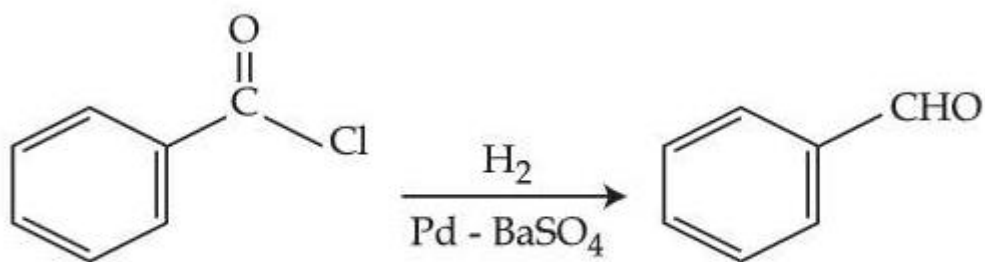
A-CrO₂Cl₂B-CrO₃

5335432950.

A-CrO₂Cl₂B-CrO₂Cl₂

Question Number : 76 Question Id : 533543902 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Correct Marks : 4 Wrong Marks : 1



This reduction reaction is known as :

Options :

5335432951. Etard reduction

5335432952. Wolff-Kishner reduction

5335432953. Stephen reduction

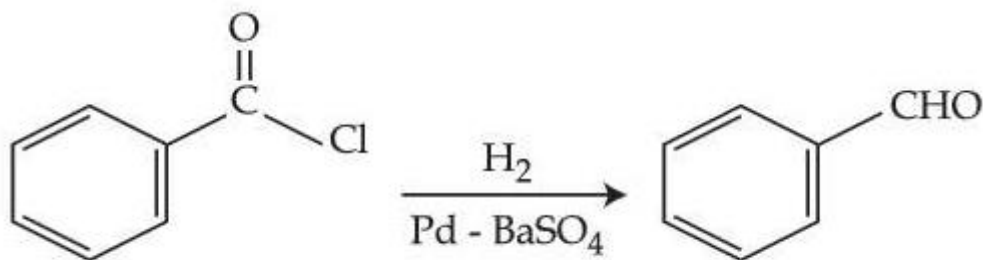
5335432954. Rosenmund reduction

Question Number : 76 Question Id : 533543902 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1



यह अपचयन अभिक्रिया कहलाती है :

Options :

5335432951. ईटार्ड अपचयन

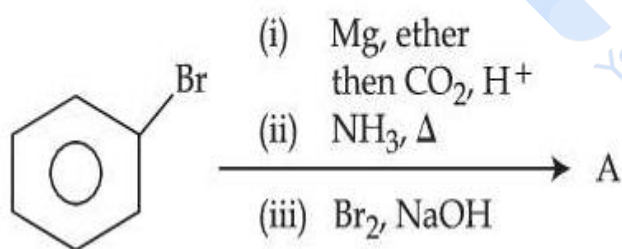
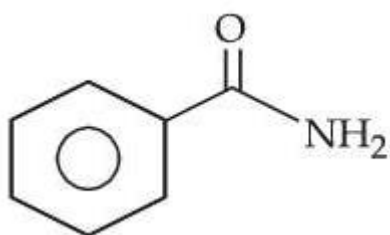
5335432952. वोल्फ-किश्नर अपचयन

5335432953. स्टीफैन अपचयन

5335432954. रोजेनमुंड अपचयन

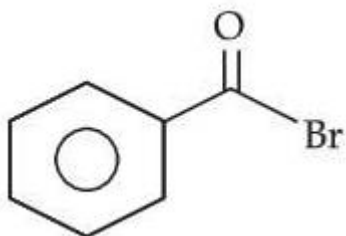
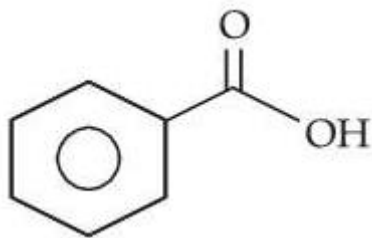
Question Number : 77 Question Id : 533543903 Question Type : MCQ Option Shuffling : Yes Is**Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum****Instruction Time : 0****Correct Marks : 4 Wrong Marks : 1**

The final product A, formed in the following multistep reaction sequence is :

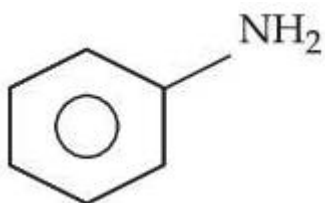
**Options :**

5335432955.

5335432956.



5335432957.

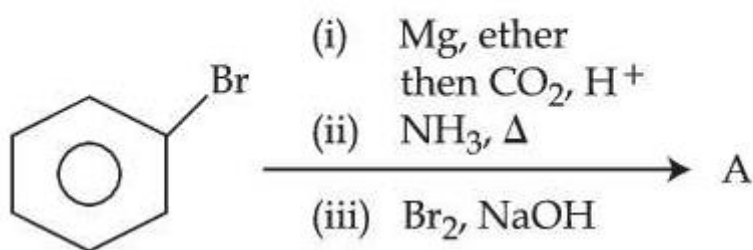


5335432958.

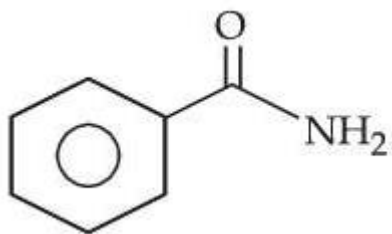
Question Number : 77 Question Id : 533543903 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

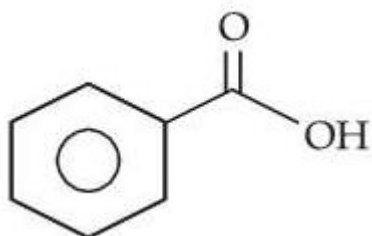
निम्न बहुपदीय अभिक्रिया क्रम में निर्मित अंतिम उत्पाद A है :



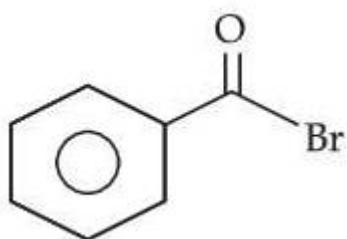
Options :



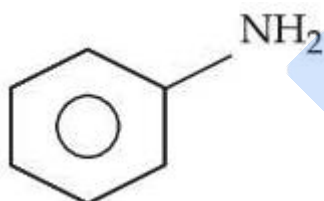
5335432955.



5335432956.



5335432957.



5335432958.

Question Number : 78 Question Id : 533543904 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Sugar which does not give reddish brown precipitate with Fehling's reagent, is :

Options :

5335432959. Glucose

5335432960. Maltose

5335432961. Lactose

5335432962. Sucrose

Question Number : 78 Question Id : 533543904 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

वह शर्करा जो फेलिंग विलयन के साथ लाल-भूरा अवक्षेप नहीं देता है, है :

Options :

5335432959. ग्लूकोस

5335432960. माल्टोस

5335432961. लैक्टोस

5335432962. सुक्रोस

Question Number : 79 Question Id : 533543905 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Given below are two statements :

Statement (I) : The gas liberated on warming a salt with dil H_2SO_4 turns a piece of paper dipped in lead acetate into black, it is a confirmatory test for sulphide ion.

Statement (II) : In statement-I the colour of paper turns black because of formation of lead sulphite.

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

Options :

5335432963. Both Statement I and Statement II are true

5335432964. Both Statement I and Statement II are false

5335432965. Statement I is true but Statement II is false

5335432966. Statement I is false but Statement II is true

Question Number : 79 Question Id : 533543905 Question Type : MCQ Option Shuffling : Yes 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) : एक लवण जो तनु H_2SO_4 के साथ गर्म करने पर एक गैस को निर्मुक्त करता है जो लेड ऐसीटेट से भीगे पत्र को काला कर देता है। यह सल्फाइड आयन का पुष्टि परीक्षण है।

कथन (II) : कथन-I में, पत्र का रंग लेड सल्फाइड के बनने के कारण काला हो जाता है।

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

Options :

5335432963. कथन I और कथन II दोनों सत्य हैं।

5335432964. कथन I और कथन II दोनों असत्य हैं।

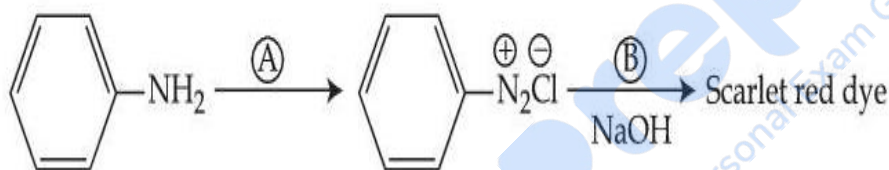
5335432965. कथन I सत्य है परंतु कथन II असत्य है।

5335432966. कथन I असत्य है परंतु कथन II सत्य है।

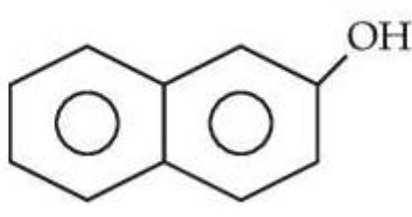
Question Number : 80 Question Id : 533543906 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

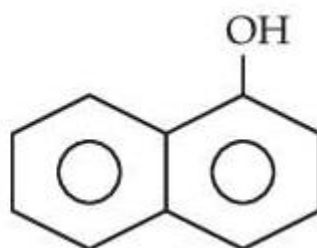
Correct Marks : 4 Wrong Marks : 1

Following is a confirmatory test for aromatic primary amines. Identify reagent (A) and (B).

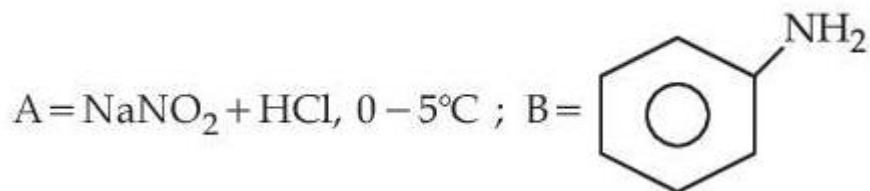
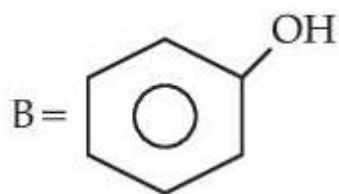
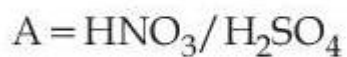


Options :

5335432967. A = $\text{NaNO}_2 + \text{HCl}$, $0 - 5^\circ\text{C}$; B = 

5335432968. A = $\text{NaNO}_2 + \text{HCl}$, $0 - 5^\circ\text{C}$; B = 

5335432969.

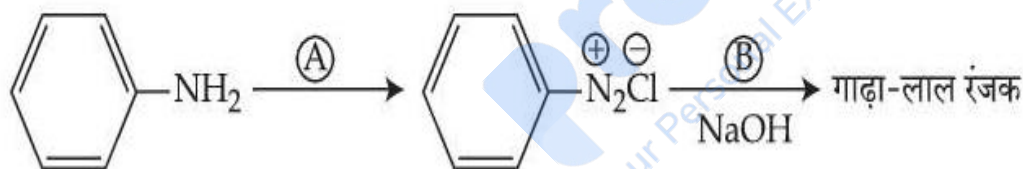


5335432970.

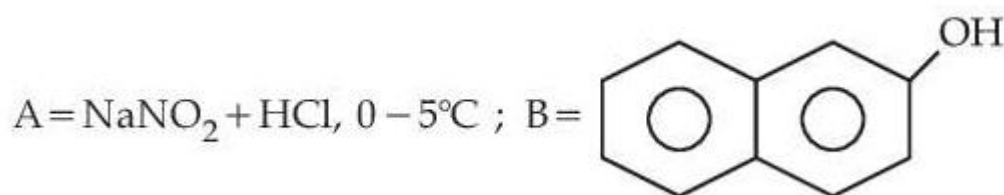
Question Number : 80 Question Id : 533543906 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

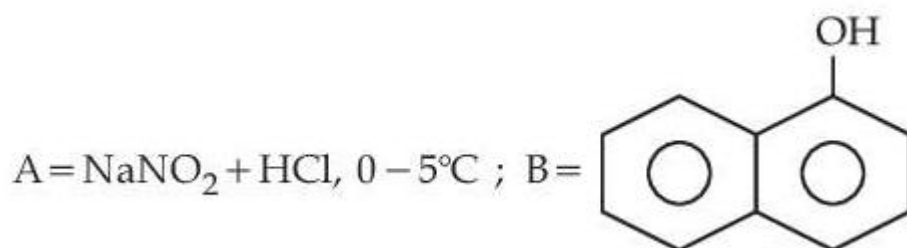
ऐरोमैटिक प्राथमिक ऐमीन का निम्नलिखित एक पुष्टि परीक्षण है। निम्न अभिक्रिया को पूर्ण करें :



Options :

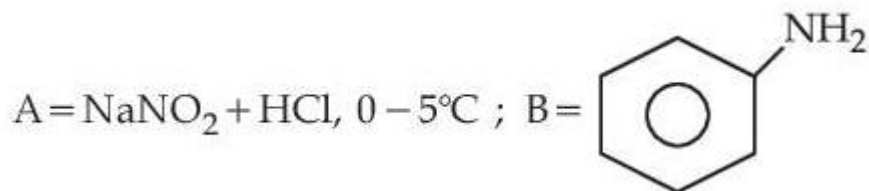
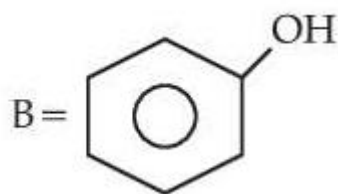
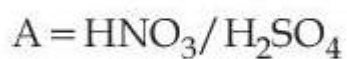


5335432967.



5335432968.

5335432969.



5335432970.

Chemistry Section B

Section Id :	53354353
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 :	53354353
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 81 Question Id : 533543907 Question Type : SA Calculator : None Response

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

Correct Marks : 4 Wrong Marks : 1

The mass of sodium acetate (CH_3COONa) required to prepare 250 mL of 0.35 M aqueous solution is _____ g. (Molar mass of CH_3COONa is 82.02 g mol^{-1})

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 81 **Question Id :** 533543907 **Question Type :** SA **Calculator :** None **Response**

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

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

सोडियम ऐसीटेट (CH_3COONa) का आवश्यक द्रव्यमान जिससे उसका 0.35 M जलीय विलयन के 250 mL बनाए जा सकें : _____ g।

(CH_3COONa का मोलर द्रव्यमान 82.02 g mol^{-1} है)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 82 **Question Id :** 533543908 **Question Type :** SA **Calculator :** None **Response**

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

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

The total number of molecular orbitals formed from 2s and 2p atomic orbitals of a diatomic molecule 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 :** 533543908 **Question Type :** SA **Calculator :** None **Response**

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

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

किसी द्विपरमाण्विक अणु के 2s एवं 2p परमाणु कक्षकों से निर्मित आण्विक कक्षकों की कुल संख्या है : _____।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

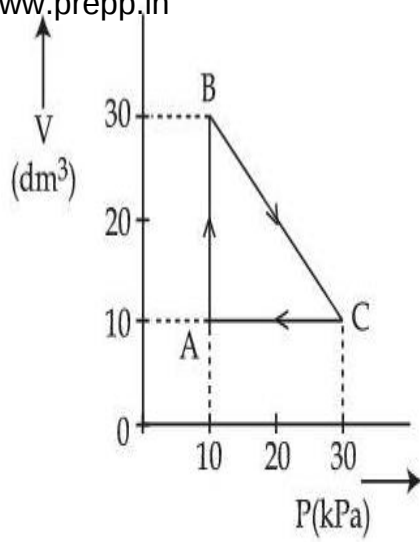
Possible Answers :

1

Question Number : 83 **Question Id :** 533543909 **Question Type :** SA **Calculator :** None **Response**

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

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



An ideal gas undergoes a cyclic transformation starting from the point A and coming back to the same point by tracing the path $A \rightarrow B \rightarrow C \rightarrow A$ as shown in the diagram above. The total work done in the process is _____ J.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

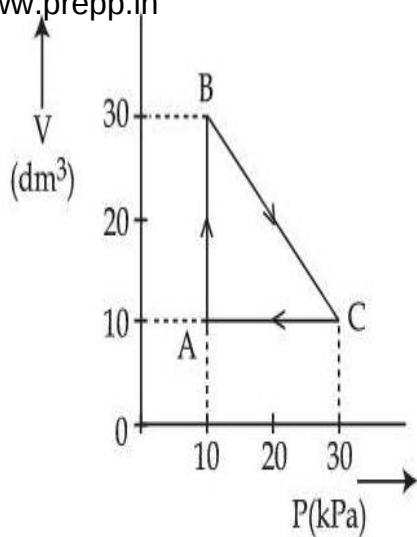
Possible Answers :

1

Question Number : 83 **Question Id :** 533543909 **Question Type :** SA **Calculator :** None **Response**

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

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



एक आदर्श गैस बिन्दु A से प्रारम्भ होकर तथा पथ $A \rightarrow B \rightarrow C \rightarrow A$ होती हुई वापस उसी बिंदु पर आकर एक चक्रीय परिवर्तन प्रदर्शित करती है (जैसा चित्र में दिखाया गया है)। इस प्रक्रम में कुल किया गया कार्य है : _____ J।

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 :** 533543910 **Question Type :** SA **Calculator :** None **Response**

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

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

The pH at which $\text{Mg}(\text{OH})_2$ [$K_{sp} = 1 \times 10^{-11}$] begins to precipitate from a solution containing 0.10 M Mg^{2+} ions is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

Question Number : 84 Question Id : 533543910 Question Type : SA Calculator : None Response

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

Correct Marks : 4 Wrong Marks : 1

वह pH जिस पर 0.10 M Mg^{2+} आयनों वाले विलयन से $\text{Mg}(\text{OH})_2$ [$K_{\text{sp}} = 1 \times 10^{-11}$] अवक्षेपित होना शुरू होता है :

_____।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

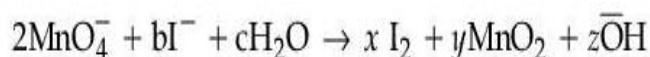
Possible Answers :

1

Question Number : 85 Question Id : 533543911 Question Type : SA Calculator : None Response

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

Correct Marks : 4 Wrong Marks : 1



If the above equation is balanced with integer coefficients, the value of z is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

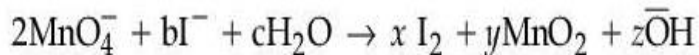
Possible Answers :

1

Question Number : 85 Question Id : 533543911 Question Type : SA Calculator : None Response

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

Correct Marks : 4 Wrong Marks : 1



यदि उपर्युक्त समीकरण को पूर्णांक गुणांकों द्वारा सतुलित किया जाए तो z का मान है : _____।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 86 Question Id : 533543912 Question Type : SA Calculator : None Response

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

Correct Marks : 4 Wrong Marks : 1

0.05 cm thick coating of silver is deposited on a plate of 0.05 m^2 area. The number of silver atoms deposited on plate are _____ $\times 10^{23}$. (At mass Ag = 108, $d = 7.9\text{ g cm}^{-3}$)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 86 Question Id : 533543912 Question Type : SA Calculator : None Response

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

Correct Marks : 4 Wrong Marks : 1

0.05 m² क्षेत्रफल वाले प्लेट को सिल्वर की 0.05 सेमी मोटी परत के द्वारा निक्षेपित किया जाता है। प्लेट पर निक्षेपित सिल्वर परमाणुओं की संख्या है : _____ $\times 10^{23}$. (Ag का परमाणु द्रव्यमान=108, $d=7.9 \text{ g cm}^{-3}$)

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 :** 533543913 **Question Type :** SA **Calculator :** None **Response**

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

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

The rate of First order reaction is $0.04 \text{ mol L}^{-1} \text{ s}^{-1}$ at 10 minutes and $0.03 \text{ mol L}^{-1} \text{ s}^{-1}$ at 20 minutes after initiation. Half life of the reaction is _____ minutes. (Given $\log 2 = 0.3010$, $\log 3 = 0.4771$)

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 :** 533543913 **Question Type :** SA **Calculator :** None **Response**

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

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

किसी प्रथम कोटि की अभिक्रिया का वेग प्रारम्भ होने के 10 मिनट बाद $0.04 \text{ mol L}^{-1} \text{ s}^{-1}$ एवं 20 मिनट बाद $0.03 \text{ mol L}^{-1} \text{ s}^{-1}$ है। इस अभिक्रिया की अर्ध आयु है : _____ मिनट (दिया गया है : $\log 2 = 0.3010$, $\log 3 = 0.4771$)

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 : 533543914 Question Type : SA Calculator : None Response

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

Correct Marks : 4 Wrong Marks : 1

If IUPAC name of an element is "Unununnium" then the element belongs to n^{th} group of Periodic table. The value of n is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 88 Question Id : 533543914 Question Type : SA Calculator : None Response

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

Correct Marks : 4 Wrong Marks : 1

यदि किसी तत्व का IUPAC नाम "Unununnium" है तो वह तत्व आवर्त सारणी के n^{th} समूह का सदस्य है। n का मान है: _____।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

1

Question Number : 89 Question Id : 533543915 Question Type : SA Calculator : None Response**Time : N.A Think Time : N.A Minimum Instruction Time : 0****Correct Marks : 4 Wrong Marks : 1**

On a thin layer chromatographic plate, an organic compound moved by 3.5 cm, while the solvent moved by 5 cm. The retardation factor of the organic compound is _____ $\times 10^{-1}$.

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 : 533543915 Question Type : SA Calculator : None Response**Time : N.A Think Time : N.A Minimum Instruction Time : 0****Correct Marks : 4 Wrong Marks : 1**

किसी पतली परत वर्णलेखन प्लेट पर कोई कार्बनिक यौगिक 3.5 सेमी बढ़ता है जबकि विलायक 5 सेमी बढ़ता है। कार्बनिक यौगिक के लिए मंदन-गुणक (रिटार्डेशन फैक्टर) है : _____ $\times 10^{-1}$.

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 : 533543916 Question Type : SA Calculator : None Response

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

Correct Marks : 4 Wrong Marks : 1

The compound formed by the reaction of ethanal with semicarbazide contains _____ number of nitrogen atoms.

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 : 533543916 Question Type : SA Calculator : None Response

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

Correct Marks : 4 Wrong Marks : 1

एथेनैल एवं सेमीकार्बोजाइड की अभिक्रिया से बने यौगिक में _____ नाइट्रोजन परमाणु हैं।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1