

National Testing Agency

Question Paper Name :	B Tech 31st Jan 2024 Shift 2 SET16
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B. Tech

Group Number :	1
Group Id :	40585914
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 :	40585974
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 :	40585974
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 1 Question Id : 4058591195 Question Type : MCQ Option Shuffling : Yes 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 function $f: (-\infty, -1] \rightarrow (a, b]$ defined by $f(x) = e^{x^3-3x+1}$ is one - one and onto, then the distance of the point $P(2b + 4, a + 2)$ from the line $x + e^{-3}y = 4$ is :

Options :

4058593771. $4\sqrt{1+e^6}$

4058593772. $3\sqrt{1+e^6}$

4058593773. $2\sqrt{1+e^6}$

4058593774. $\sqrt{1+e^6}$

Question Number : 1 Question Id : 4058591195 Question Type : MCQ Option Shuffling : Yes 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 $f(x) = e^{x^3 - 3x + 1}$ द्वारा परिभाषित फलन $f: (-\infty, -1] \rightarrow (a, b]$ एकैकी तथा आच्छादी है, तो रेखा $x + e^{-3}y = 4$ से बिंदु $P(2b + 4, a + 2)$ की दूरी है।

Options :

4058593771. $4\sqrt{1+e^6}$

4058593772. $3\sqrt{1+e^6}$

4058593773. $2\sqrt{1+e^6}$

4058593774. $\sqrt{1+e^6}$

Question Number : 2 Question Id : 4058591196 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The number of solutions, of the equation $e^{\sin x} - 2e^{-\sin x} = 2$, is :

Options :

4058593775. 0

4058593776. 1

4058593777. 2

4058593778. more than 2

Question Number : 2 Question Id : 4058591196 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

समीकरण $e^{\sin x} - 2e^{-\sin x} = 2$ के हलों की संख्या है।

Options :

4058593775. 0

4058593776. 1

4058593777. 2

4058593778. 2 से अधिक

Question Number : 3 Question Id : 4058591197 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Let z_1 and z_2 be two complex numbers such that $z_1 + z_2 = 5$ and $z_1^3 + z_2^3 = 20 + 15i$.

Then, $|z_1^4 + z_2^4|$ equals -

Options :

4058593779. $30\sqrt{3}$

4058593780. $15\sqrt{15}$

4058593781. $25\sqrt{3}$

4058593782. 75

Question Number : 3 Question Id : 4058591197 Question Type : MCQ Option Shuffling : Yes 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 सामिश्र संख्याओं z_1 तथा z_2 के लिए $z_1 + z_2 = 5$ तथा $z_1^3 + z_2^3 = 20 + 15i$ हैं। तो
 $|z_1^4 + z_2^4|$ बराबर है।

Options :

4058593779. $30\sqrt{3}$

4058593780. $15\sqrt{15}$

4058593781. $25\sqrt{3}$

4058593782. 75

Question Number : 4 Question Id : 4058591198 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Let A be a 3×3 real matrix such that

$$A \begin{pmatrix} 1 \\ 0 \\ 1 \end{pmatrix} = 2 \begin{pmatrix} 1 \\ 0 \\ 1 \end{pmatrix}, A \begin{pmatrix} -1 \\ 0 \\ 1 \end{pmatrix} = 4 \begin{pmatrix} -1 \\ 0 \\ 1 \end{pmatrix}, A \begin{pmatrix} 0 \\ 1 \\ 0 \end{pmatrix} = 2 \begin{pmatrix} 0 \\ 1 \\ 0 \end{pmatrix}.$$

Then, the system $(A - 3I) \begin{pmatrix} x \\ y \\ z \end{pmatrix} = \begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix}$ has

Options :

4058593783. no solution

4058593784. infinitely many solutions

4058593785. unique solution

4058593786. exactly two solutions

Question Number : 4 Question Id : 4058591198 Question Type : MCQ Option Shuffling : Yes 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 3×3 वास्तविक आव्यूह A के लिए $A \begin{pmatrix} 1 \\ 0 \\ 1 \end{pmatrix} = 2 \begin{pmatrix} 1 \\ 0 \\ 1 \end{pmatrix}$, $A \begin{pmatrix} -1 \\ 0 \\ 1 \end{pmatrix} = 4 \begin{pmatrix} -1 \\ 0 \\ 1 \end{pmatrix}$, $A \begin{pmatrix} 0 \\ 1 \\ 0 \end{pmatrix} = 2 \begin{pmatrix} 0 \\ 1 \\ 0 \end{pmatrix}$ हैं। तो

निकाय $(A-3I) \begin{pmatrix} x \\ y \\ z \end{pmatrix} = \begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix}$

Options :

4058593783. का कोई हल नहीं है

4058593784. के अनंत हल हैं

4058593785. का अद्वितीय हल है।

4058593786. के मात्र दो हल हैं।

Question Number : 5 Question Id : 4058591199 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The number of ways in which 21 identical apples can be distributed among three children such that each child gets at least 2 apples, is

Options :

4058593787. 130

4058593788. 136

4058593789. 142

4058593790. 406

Question Number : 5 Question Id : 4058591199 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

21 सर्वसम सेव को तीन बच्चों में बाँटने के तरीकों, जब की प्रत्येक बच्चे को कम से कम दो सेव मिलें, की संख्या है।

Options :

4058593787. 130

4058593788. 136

4058593789. 142

4058593790. 406

Question Number : 6 Question Id : 4058591200 Question Type : MCQ Option Shuffling : Yes 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 for some m, n ; ${}^6C_m + 2({}^6C_{m+1}) + {}^6C_{m+2} > {}^8C_3$ and ${}^{n-1}P_3 : {}^nP_4 = 1 : 8$, then ${}^nP_{m+1} + {}^{n+1}C_m$ is equal to

Options :

4058593791. 372

4058593792. 376

4058593793. 380

4058593794. 384

Question Number : 6 Question Id : 4058591200 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

यदि किसी m, n के लिए ${}^6C_m + 2({}^6C_{m+1}) + {}^6C_{m+2} > {}^8C_3$ तथा ${}^{n-1}P_3 : {}^nP_4 = 1 : 8$ हैं, तो ${}^nP_{m+1} + {}^{n+1}C_m$ बराबर है।

Options :

4058593791. 372

4058593792. 376

4058593793. 380

4058593794. 384

Question Number : 7 Question Id : 4058591201 Question Type : MCQ Option Shuffling : Yes 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 2nd, 8th and 44th terms of a non-constant A. P. be respectively the 1st, 2nd and 3rd terms of a G. P. If the first term of the A. P. is 1, then the sum of its first 20 terms is equal to -

Options :

4058593795. 960

4058593796. 970

4058593797. 980

4058593798. 990

Question Number : 7 Question Id : 4058591201 Question Type : MCQ Option Shuffling : Yes 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 भिन्न पदों की A. P. का दूसरा, आठवाँ तथा चवालिसवाँ पद, एक G. P. के क्रमशः पहला, दूसरा तथा तीसरा पद हैं। यदि A. P. का प्रथम पद 1 है, तो इसके प्रथम 20 पदों का योग है।

Options :

4058593795. 960

4058593796. 970

4058593797. 980

4058593798. 990

Question Number : 8 Question Id : 4058591202 Question Type : MCQ Option Shuffling : Yes 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 function $f: (0, \infty) \rightarrow \mathbb{R}$ defined by $f(x) = e^{-|\log_e x|}$. If m and n be respectively the number of points at which f is **not** continuous and f is **not** differentiable, then $m + n$ is

Options :

4058593799. 0

4058593800. 1

4058593801. 2

4058593802. 3

Question Number : 8 Question Id : 4058591202 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

$f(x) = e^{-|\log_e x|}$ द्वारा परिभाषित फलन $f: (0, \infty) \rightarrow \mathbb{R}$ का विचार की जिए। यदि उन बिंदुओं की संख्या, जहां f संतत **नहीं** है तथा अवकलनीय **नहीं** हैं क्रमशः m तथा n है, तो $m + n$ बराबर है।

Options :

4058593799. 0

4058593800. 1

4058593801. 2

4058593802. 3

Question Number : 9 Question Id : 4058591203 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Let $f: \mathbb{R} \rightarrow (0, \infty)$ be strictly increasing function such that $\lim_{x \rightarrow \infty} \frac{f(7x)}{f(x)} = 1$. Then,

the value of $\lim_{x \rightarrow \infty} \left[\frac{f(5x)}{f(x)} - 1 \right]$ is equal to

Options :

4058593803. 1

4058593804. $7/5$

4058593805. 4

4058593806. 0

Question Number : 9 Question Id : 4058591203 Question Type : MCQ Option Shuffling : Yes 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 $f: \mathbb{R} \rightarrow (0, \infty)$ निरंतर वर्धमान फलन है तथा $\lim_{x \rightarrow \infty} \frac{f(7x)}{f(x)} = 1$ है। तो

$\lim_{x \rightarrow \infty} \left[\frac{f(5x)}{f(x)} - 1 \right]$ का मान बराबर है।

Options :

4058593803. 1

4058593804. $7/5$

4058593805. 4

4058593806. 0

Question Number : 10 Question Id : 4058591204 Question Type : MCQ Option Shuffling : Yes 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 variable line passing through the centre of the circle

$x^2 + y^2 - 16x - 4y = 0$, meet the positive co-ordinate axes at the points A and B .

Then the minimum value of $OA + OB$, where O is the origin, is equal to

Options :

4058593807. 12

4058593808. 18

4058593809. 20

4058593810. 24

Question Number : 10 Question Id : 4058591204 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

माना वृत्त $x^2 + y^2 - 16x - 4y = 0$ के केन्द्र से होकर जाने वाली एक चर रेखा धनात्मक निर्देशांक अक्षों को बिंदुओं A तथा B पर मिलती है। तो $OA + OB$, जहाँ O मूलबिंदु है, का न्यूनतम मान है।

Options :

4058593807. 12

4058593808. 18

4058593809. 20

4058593810. 24

Question Number : 11 Question Id : 4058591205 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The area of the region enclosed by the parabolas $y = 4x - x^2$ and $3y = (x - 4)^2$ is equal to

Options :

4058593811. $\frac{14}{3}$

4058593812. 6

4058593813. $\frac{32}{9}$

4058593814. 4

Question Number : 11 Question Id : 4058591205 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

परवलयों $y = 4x - x^2$ तथा $3y = (x - 4)^2$ से धिरे क्षेत्र का क्षेत्रफल है।

Options :

4058593811. $\frac{14}{3}$

4058593812. 6

4058593813. $\frac{32}{9}$

4058593814. 4

Question Number : 12 Question Id : 4058591206 Question Type : MCQ Option Shuffling : Yes 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 $f, g: (0, \infty) \rightarrow \mathbb{R}$ be two functions defined by $f(x) = \int_{-x}^x (|t| - t^2) e^{-t^2} dt$ and
 $g(x) = \int_0^{x^2} t^{1/2} e^{-t} dt$. Then, the value of $9\left(f\left(\sqrt{\log_e 9}\right) + g\left(\sqrt{\log_e 9}\right)\right)$ is equal to

Options :

4058593815. 8

4058593816. 6

4058593817. 9

4058593818. 10

Question Number : 12 Question Id : 4058591206 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

माना $f(x) = \int_{-x}^x (|t| - t^2) e^{-t^2} dt$ तथा $g(x) = \int_0^{x^2} t^{1/2} e^{-t} dt$ द्वारा परिभाषित दो फलन
 $f, g: (0, \infty) \rightarrow \mathbb{R}$ हैं। तो $9\left(f\left(\sqrt{\log_e 9}\right) + g\left(\sqrt{\log_e 9}\right)\right)$ का मान बराबर है।

Options :

4058593815. 8

4058593816. 6

4058593817. 9

4058593818. 10

Question Number : 13 Question Id : 4058591207 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The temperature $T(t)$ of a body at time $t = 0$ is 160°F and it decreases continuously as per the differential equation $\frac{dT}{dt} = -K(T - 80)$, where K is a positive constant. If $T(15) = 120^\circ \text{F}$, then $T(45)$ is equal to

Options :

4058593819. 80°F

4058593820. 85°F

4058593821. 90°F

4058593822. 95°F

Question Number : 13 Question Id : 4058591207 Question Type : MCQ Option Shuffling : Yes 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 वस्तु का तापमान $T(t)$, समय $t = 0$ पर 160°F है तथा यह अवकल समीकरण $\frac{dT}{dt} = -K(T - 80)$ के अनुसार लगातार कम हो रहा है, जहाँ K धनात्मक अचर है। यदि $T(15) = 120^\circ \text{F}$ है, तो $T(45)$ बराबर है।

Options :

4058593819. 80°F

4058593820. 85°F

4058593821. 90° F

4058593822. 95° F

Question Number : 14 Question Id : 4058591208 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Let P be a parabola with vertex $(2, 3)$ and directrix $2x + y = 6$. Let an ellipse $E: \frac{x^2}{a^2} + \frac{y^2}{b^2} = 1, a > b$, of eccentricity $\frac{1}{\sqrt{2}}$ pass through the focus of the parabola P . Then, the square of the length of the latus rectum of E , is

Options :

4058593823. $\frac{512}{25}$

4058593824. $\frac{385}{8}$

4058593825. $\frac{656}{25}$

4058593826. $\frac{347}{8}$

Question Number : 14 Question Id : 4058591208 Question Type : MCQ Option Shuffling : Yes 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 परवलय P का शीर्ष $(2, 3)$ है तथा नियता $2x + y = 6$ है। माना $\frac{1}{\sqrt{2}}$ उत्केन्द्रता का

एक दीर्घवृत्त $E : \frac{x^2}{a^2} + \frac{y^2}{b^2} = 1, a > b$, परवलय P की नाभि से होकर जाता है। तो E

की नाभिलंब जीवा की लंबाई का वर्ग बराबर है।

Options :

4058593823. $\frac{512}{25}$

4058593824. $\frac{385}{8}$

4058593825. $\frac{656}{25}$

4058593826. $\frac{347}{8}$

Question Number : 15 Question Id : 4058591209 Question Type : MCQ Option Shuffling : Yes 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 $A(a, b)$, $B(3, 4)$ and $C(-6, -8)$ respectively denote the centroid, circumcentre and orthocentre of a triangle. Then, the distance of the point $P(2a + 3, 7b + 5)$ from the line $2x + 3y - 4 = 0$ measured parallel to the line $x - 2y - 1 = 0$ is

Options :

4058593827. $\frac{\sqrt{5}}{17}$

4058593828. $\frac{17\sqrt{5}}{7}$

4058593829. $\frac{15\sqrt{5}}{7}$

4058593830. $\frac{17\sqrt{5}}{6}$

Question Number : 15 Question Id : 4058591209 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

माना $A(a, b)$, $B(3, 4)$ तथा $C(-6, -8)$ एक त्रिभुज के केन्द्रक, परिकेन्द्र तथा लम्बकेन्द्र है। तो बिंदु $P(2a + 3, 7b + 5)$ की रेखा $2x + 3y - 4 = 0$ से, रेखा $x - 2y - 1 = 0$ के समांतर नापी गई दूरी है।

Options :

4058593827. $\frac{\sqrt{5}}{17}$

4058593828. $\frac{17\sqrt{5}}{7}$

4058593829. $\frac{15\sqrt{5}}{7}$

4058593830. $\frac{17\sqrt{5}}{6}$

Question Number : 16 Question Id : 4058591210 Question Type : MCQ Option Shuffling : Yes 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 mirror image of the point $(2, 3, 5)$ in the line $\frac{x-1}{2} = \frac{y-2}{3} = \frac{z-3}{4}$. Then, $2\alpha + 3\beta + 4\gamma$ is equal to

Options :

4058593831. 31

4058593832. 32

4058593833. 33

4058593834. 34

Question Number : 16 Question Id : 4058591210 Question Type : MCQ Option Shuffling : Yes 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 $(2, 3, 5)$ का रेखा $\frac{x-1}{2} = \frac{y-2}{3} = \frac{z-3}{4}$ में दर्पण प्रतिबिंब (α, β, γ) है। तो $2\alpha + 3\beta + 4\gamma$ बराबर है।

Options :

4058593831. 31

4058593832. 32

4058593833. 33

4058593834. 34

Question Number : 17 Question Id : 4058591211 Question Type : MCQ Option Shuffling : Yes 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 shortest distance, between lines L_1 and L_2 , where $L_1 : \frac{x-1}{2} = \frac{y+1}{-3} = \frac{z+4}{2}$ and L_2 is the line, passing through the points $A(-4, 4, 3)$, $B(-1, 6, 3)$ and perpendicular to the line $\frac{x-3}{-2} = \frac{y}{3} = \frac{z-1}{1}$, is

Options :

4058593835. $\frac{24}{\sqrt{117}}$

4058593836. $\frac{42}{\sqrt{117}}$

4058593837. $\frac{121}{\sqrt{221}}$

4058593838. $\frac{141}{\sqrt{221}}$

Question Number : 17 Question Id : 4058591211 Question Type : MCQ Option Shuffling : Yes 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 रेखा $L_1 : \frac{x-1}{2} = \frac{y+1}{-3} = \frac{z+4}{2}$ है तथा बिंदुओं $A(-4, 4, 3)$, $B(-1, 6, 3)$ से होकर जाने वाली और रेखा $\frac{x-3}{-2} = \frac{y}{3} = \frac{z-1}{1}$ के लंबवत रेखा L_2 है, तो L_1 तथा L_2 के बीच न्यूनतम दूरी है।

Options :

4058593835. $\frac{24}{\sqrt{117}}$

4058593836. $\frac{42}{\sqrt{117}}$

4058593837. $\frac{121}{\sqrt{221}}$

4058593838. $\frac{141}{\sqrt{221}}$

Question Number : 18 Question Id : 4058591212 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Let the mean and the variance of 6 observations $a, b, 68, 44, 48, 60$ be 55 and 194, respectively. If $a > b$, then $a + 3b$ is

Options :

4058593839. 180

4058593840. 190

4058593841. 200

4058593842. 210

Question Number : 18 Question Id : 4058591212 Question Type : MCQ Option Shuffling : Yes 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 6 प्रेक्षणों $a, b, 68, 44, 48, 60$ के माध्य तथा प्रसरण क्रमशः 55 तथा 194 हैं। यदि $a > b$ है। तो $a + 3b$ बराबर है।

Options :

4058593839. 180

4058593840. 190

4058593841. 200

4058593842. 210

Question Number : 19 Question Id : 4058591213 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

A coin is biased so that a head is twice as likely to occur as a tail. If the coin is tossed 3 times, then the probability of getting two tails and one head is

Options :

4058593843. $\frac{1}{27}$

4058593844. $\frac{2}{27}$

4058593845. $\frac{1}{9}$

4058593846. $\frac{2}{9}$

Question Number : 19 Question Id : 4058591213 Question Type : MCQ Option Shuffling : Yes 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 पासा इस प्रकार अभिनत है कि चित के आने की संभावना, पट के आने की संभावना की दो गुनी है। यदि इस सिक्के को 3 बार उछाला जाता है, तो दो पट और एक चित आने की प्रायिकता है।

Options :

4058593843. $\frac{1}{27}$

4058593844. $\frac{2}{27}$

4058593845. $\frac{1}{9}$

4058593846. $\frac{2}{9}$

Question Number : 20 Question Id : 4058591214 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

If $a = \sin^{-1}(\sin(5))$ and $b = \cos^{-1}(\cos(5))$, then $a^2 + b^2$ is equal to

Options :

4058593847. 25

4058593848. $4\pi^2 + 25$

4058593849. $4\pi^2 - 20\pi + 50$

4058593850. $8\pi^2 - 40\pi + 50$

Question Number : 20 Question Id : 4058591214 Question Type : MCQ Option Shuffling : Yes 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 $a = \sin^{-1}(\sin(5))$ तथा $b = \cos^{-1}(\cos(5))$, तो $a^2 + b^2$ बराबर है।

Options :

4058593847. 25

4058593848. $4\pi^2 + 25$

4058593849. $4\pi^2 - 20\pi + 50$

4058593850. $8\pi^2 - 40\pi + 50$

Mathematics Section B

Section Id :	40585975
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 :	40585975
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 21 Question Id : 4058591215 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Let $A = \{1, 2, 3, \dots, 100\}$. Let R be a relation on A defined by $(x, y) \in R$ if and only if $2x = 3y$. Let R_1 be a symmetric relation on A such that $R \subset R_1$ and the number of elements in R_1 is n . Then, the minimum value of n is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 21 Question Id : 4058591215 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

माना $A = \{1, 2, 3, \dots, 100\}$ है। माना A पर, $(x, y) \in R$ यदि और केवल यदि $2x = 3y$ है, द्वारा परिभाषित एक संबंध R है। माना A पर एक सममित संबंध R_1 है, जिससे लिए $R \subset R_1$ है तथा R_1 में अवयवों की संख्या n है। तो n का न्यूनतम मान है _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 22 Question Id : 4058591216 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 be a 3×3 matrix and $\det(A) = 2$. If $n = \det \left(\underbrace{\text{adj} \left(\text{adj} \left(\dots \left(\text{adj} A \right) \right) \right)}_{2024\text{-times}} \right)$, then the remainder when n is divided by 9 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 : 4058591216 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 एक 3×3 का आव्यूह है तथा $\det(A)=2$ है। यदि $n = \det \left(\underbrace{\text{adj} \left(\text{adj} \left(\dots \left(\text{adj} A \right) \right) \right)}_{2024\text{-times}} \right)$

है, तो n को 9 से विभाजित करने पर शेषफल है _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 23 Question Id : 4058591217 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 coefficient of x^r in the expansion of $(x+3)^{n-1} + (x+3)^{n-2}(x+2) + (x+3)^{n-3}(x+2)^2 + \dots + (x+2)^{n-1}$ be α_r . If $\sum_{r=0}^n \alpha_r = \beta^n - \gamma^n$, $\beta, \gamma \in \mathbb{N}$, then the value of $\beta^2 + \gamma^2$ equals _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 23 Question Id : 4058591217 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

माना $(x+3)^{n-1} + (x+3)^{n-2}(x+2) + (x+3)^{n-3}(x+2)^2 + \dots + (x+2)^{n-1}$ के प्रसार में x^r का गुणांक α_r है। यदि $\sum_{r=0}^n \alpha_r = \beta^n - \gamma^n$, $\beta, \gamma \in \mathbb{N}$ है, तो $\beta^2 + \gamma^2$ 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 : 24 Question Id : 4058591218 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Let a, b, c be the lengths of three sides of a triangle satisfying the condition $(a^2 + b^2)x^2 - 2b(a+c)x + (b^2 + c^2) = 0$. If the set of all possible values of x is the interval (α, β) , then $12(a^2 + \beta^2)$ is equal to _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 24 Question Id : 4058591218 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

माना एक त्रिभुज की तीन भुजाओं की लंबाईयाँ a, b, c हैं, जो $(a^2+b^2)x^2-2b(a+c)x+(b^2+c^2)=0$ के संतुष्ट करती हैं। यदि x के सभी संभव मानों का समुच्चय, अंतराल (α, β) है, तो $12(\alpha^2 + \beta^2)$ 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 : 25 Question Id : 4058591219 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

If $\lim_{x \rightarrow 0} \frac{ax^2e^x - b \log_e(1+x) + cxe^{-x}}{x^2 \sin x} = 1$, then $16(a^2 + b^2 + c^2)$ 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 : 25 Question Id : 4058591219 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

यदि $\lim_{x \rightarrow 0} \frac{ax^2e^x - b \log_e(1+x) + cxe^{-x}}{x^2 \sin x} = 1$ है, तो $16(a^2 + b^2 + c^2)$ 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 : 26 **Question Id :** 4058591220 **Question Type :** SA **Calculator :** None

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

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

$\left| \frac{120}{\pi^3} \int_0^{\pi} \frac{x^2 \sin x \cos x}{\sin^4 x + \cos^4 x} dx \right|$ 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 :** 4058591220 **Question Type :** SA **Calculator :** None

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

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

$\left| \frac{120}{\pi^3} \int_0^{\pi} \frac{x^2 \sin x \cos x}{\sin^4 x + \cos^4 x} dx \right|$ 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 :** 4058591221 **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

$\sec^2 x \, dx + \left(e^{2y} \tan^2 x + \tan x \right) dy = 0$, $0 < x < \frac{\pi}{2}$, $y\left(\frac{\pi}{4}\right) = 0$. If $y\left(\frac{\pi}{6}\right) = \alpha$, then $e^{8\alpha}$ is equal to _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 27 **Question Id :** 4058591221 **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 $\sec^2 x \, dx + \left(e^{2y} \tan^2 x + \tan x \right) dy = 0$, $0 < x < \frac{\pi}{2}$, $y\left(\frac{\pi}{4}\right) = 0$ का हल $y = y(x)$ है। यदि $y\left(\frac{\pi}{6}\right) = \alpha$ है, तो $e^{8\alpha}$ 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 : 4058591222 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Let $A(-2, -1)$, $B(1, 0)$, $C(\alpha, \beta)$ and $D(\gamma, \delta)$ be the vertices of a parallelogram $ABCD$. If the point C lies on $2x - y = 5$ and the point D lies on $3x - 2y = 6$, then the value of $|\alpha + \beta + \gamma + \delta|$ is equal to _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 28 Question Id : 4058591222 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

माना एक समांतर चतुर्भुज $ABCD$ के शीर्ष $A(-2, -1)$, $B(1, 0)$, $C(\alpha, \beta)$ तथा $D(\gamma, \delta)$ हैं। यदि बिंदु C , रेखा $2x - y = 5$ पर है तथा बिंदु D , रेखा $3x - 2y = 6$ पर है, तो $|\alpha + \beta + \gamma + \delta|$ का मान बराबर है _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 29 Question Id : 4058591223 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

A line passes through $A(4, -6, -2)$ and $B(16, -2, 4)$. The point $P(a, b, c)$, where a, b, c are non-negative integers, on the line AB lies at a distance of 21 units, from the point A . The distance between the points $P(a, b, c)$ and $Q(4, -12, 3)$ is equal to _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 29 **Question Id :** 4058591223 **Question Type :** SA **Calculator :** None

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

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

एक रेखा, बिंदुओं $A(4, -6, -2)$ तथा $B(16, -2, 4)$ से होकर जाती है। रेखा AB पर बिंदु $P(a, b, c)$, जहाँ a, b, c ऋणोत्तर पूर्णांक हैं, बिंदु A से 21 इकाई की दूरी पर है। बिंदुओं $P(a, b, c)$ तथा $Q(4, -12, 3)$ के बीच दूरी है _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 30 **Question Id :** 4058591224 **Question Type :** SA **Calculator :** None

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

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

Let $\vec{a} = 3\hat{i} + 2\hat{j} + \hat{k}$, $\vec{b} = 2\hat{i} - \hat{j} + 3\hat{k}$ and $\vec{c}$ be a vector such that $(\vec{a} + \vec{b}) \times \vec{c} = 2(\vec{a} \times \vec{b}) + 24\hat{j} - 6\hat{k}$ and $(\vec{a} - \vec{b} + \hat{i}) \cdot \vec{c} = -3$. Then $|\vec{c}|^2$ 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 : 30 Question Id : 4058591224 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

माना $\vec{a} = 3\hat{i} + 2\hat{j} + \hat{k}$, $\vec{b} = 2\hat{i} - \hat{j} + 3\hat{k}$ तथा सदिश $\vec{c}$ इस प्रकार हैं कि $(\vec{a} + \vec{b}) \times \vec{c} = 2(\vec{a} \times \vec{b}) + 24\hat{j} - 6\hat{k}$ तथा $(\vec{a} - \vec{b} + \hat{i}) \cdot \vec{c} = -3$ हैं। तो $|\vec{c}|^2$ बराबर है _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Physics Section A

Section Id :	40585976
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 :	40585976
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 31 Question Id : 4058591225 Question Type : MCQ Option Shuffling : Yes 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 two physical quantities A and B related to each other as $E = \frac{B - x^2}{At}$ where E , x and t have dimensions of energy, length and time respectively. The dimension of AB is

Options :

4058593861. $L^0M^{-1}T^1$

4058593862. $L^2M^{-1}T^1$

4058593863. $L^{-2}M^1T^0$

4058593864. $L^{-2}M^{-1}T^1$

Question Number : 31 Question Id : 4058591225 Question Type : MCQ Option Shuffling : Yes 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 भौतिक राशियों A तथा B की परिकल्पना कीजिये जो एक दूसरे से संबन्ध $E = \frac{B-x^2}{At}$ के द्वारा संबंधित हैं जहाँ E , x तथा t की विमाएँ क्रमशः ऊर्जा, लम्बाई तथा समय की विमाओं के समान हैं। की विमा है:

Options :

4058593861. $L^0 M^{-1} T^1$

4058593862. $L^2 M^{-1} T^1$

4058593863. $L^{-2} M^1 T^0$

4058593864. $L^{-2} M^{-1} T^1$

Question Number : 32 Question Id : 4058591226 Question Type : MCQ Option Shuffling : Yes 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 two vectors $\vec{A}$ and $\vec{B}$ having equal magnitude R are inclined at an angle θ , then

Options :

4058593865. $\left| \vec{A} + \vec{B} \right| = 2R \sin\left(\frac{\theta}{2}\right)$

4058593866. $\left| \vec{A} - \vec{B} \right| = 2R \cos\left(\frac{\theta}{2}\right)$

4058593867. $\left| \vec{A} + \vec{B} \right| = 2R \cos\left(\frac{\theta}{2}\right)$

4058593868. $\left| \vec{A} - \vec{B} \right| = \sqrt{2}R \sin\left(\frac{\theta}{2}\right)$

Question Number : 32 Question Id : 4058591226 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

समान परिमाण R के दो सदिशों $\vec{A}$ व $\vec{B}$ के बीच का कोण θ है तब

Options :

4058593865. $\left| \vec{A} + \vec{B} \right| = 2R \sin\left(\frac{\theta}{2}\right)$

4058593866. $\left| \vec{A} - \vec{B} \right| = 2R \cos\left(\frac{\theta}{2}\right)$

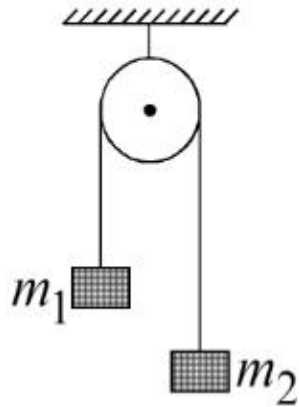
4058593867. $\left| \vec{A} + \vec{B} \right| = 2R \cos\left(\frac{\theta}{2}\right)$

4058593868. $\left| \vec{A} - \vec{B} \right| = \sqrt{2}R \sin\left(\frac{\theta}{2}\right)$

Question Number : 33 Question Id : 4058591227 Question Type : MCQ Option Shuffling : Yes 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 light string passing over a smooth light fixed pulley connects two blocks of masses m_1 and m_2 . If the acceleration of the system is $g/8$, then the ratio of masses is:



Options :

4058593869. $\frac{4}{3}$

4058593870. $\frac{5}{3}$

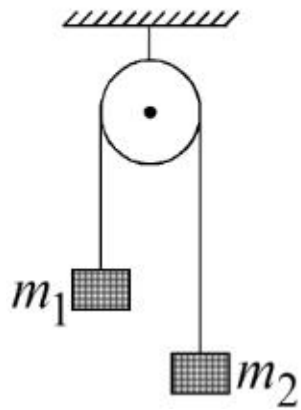
4058593871. $\frac{8}{1}$

4058593872. $\frac{9}{7}$

Question Number : 33 Question Id : 4058591227 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

एक स्थिर हल्की चिकनी पुली से होकर गुजरने वाली एक हल्की डोरी m_1 व m_2 द्रव्यमान के दो गुटकों को जोड़ती है जैसा कि चित्र में दर्शाया गया है। यदि निकाय का त्वरण $g/8$ हो तब द्रवमानों का अनुपात है



Options :

4058593869. $\frac{4}{3}$

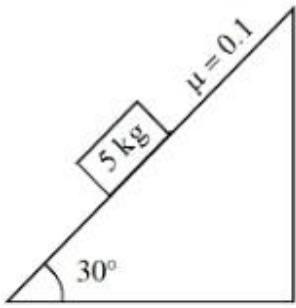
4058593870. $\frac{5}{3}$

4058593871. $\frac{8}{1}$

4058593872. $\frac{9}{7}$

Question Number : 34 Question Id : 4058591228 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1



A block of mass 5 kg is placed on a rough inclined surface as shown in the figure.

If $\vec{F}_1$ is the force required to just move the block up the inclined plane and $\vec{F}_2$ is the force required to just prevent the block from sliding down, then the value of $|\vec{F}_1| - |\vec{F}_2|$ is: [Use $g = 10 \text{ m/s}^2$]

Options :

4058593873. $\frac{5\sqrt{3}}{2} N$

4058593874. $10 N$

4058593875. $25\sqrt{3} N$

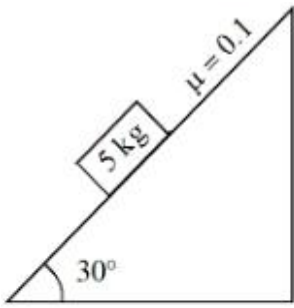
4058593876. $50\sqrt{3} N$

Question Number : 34 Question Id : 4058591228 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1



5 किग्रा का एक गुटका प्रदर्शित चित्र के अनुसार एक खुरदरे आनत तल पर स्थित है। यदि आनत तल पर गुटके को ऊपर की ओर गति कराने के लिए आवश्यक बल $\vec{F}_1$ तथा गुटके को नीचे खिसकने से रोकने के लिए आवश्यक बल $\vec{F}_2$ है। तब $|\vec{F}_1| - |\vec{F}_2|$ का मान है:

[दिया है $g = 10$ मी/से²]

Options :

4058593873. $\frac{5\sqrt{3}}{2} N$

4058593874. $10 N$

4058593875. $25\sqrt{3} N$

4058593876. $50\sqrt{3} N$

Question Number : 35 Question Id : 4058591229 Question Type : MCQ Option Shuffling : Yes 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 body of mass 2 kg begins to move under the action of a time dependent force given by $\vec{F} = (6t\hat{i} + 6t^2\hat{j}) N$. The power developed by the force at the time t is given by:

Options :

4058593877. $(6t^4 + 9t^5) W$

4058593878. $(9t^5 + 6t^3) W$

4058593879. $(3t^3 + 6t^5) \text{ W}$

4058593880. $(9t^3 + 6t^5) \text{ W}$

Question Number : 35 Question Id : 4058591229 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

2 किग्रा का एक पिण्ड एक समयाधारित बल $\vec{F} = (6t\hat{i} + 6t^2\hat{j}) \text{ N}$ के अन्तर्गत गति करना प्रारम्भ करता है। t समय पर बल द्वारा उत्पन्न शक्ति होगी:

Options :

4058593877. $(6t^4 + 9t^5) \text{ W}$

4058593878. $(9t^5 + 6t^3) \text{ W}$

4058593879. $(3t^3 + 6t^5) \text{ W}$

4058593880. $(9t^3 + 6t^5) \text{ W}$

Question Number : 36 Question Id : 4058591230 Question Type : MCQ Option Shuffling : Yes 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 mass of the moon is $\frac{1}{144}$ times the mass of a planet and its diameter is $\frac{1}{16}$ times the diameter of a planet. If the escape velocity on the planet is v , the escape velocity on the moon will be :

Options :

4058593881. $\frac{v}{12}$

4058593882. $\frac{v}{4}$

4058593883. $\frac{v}{6}$

4058593884. $\frac{v}{3}$

Question Number : 36 Question Id : 4058591230 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

चन्द्रमा का द्रव्यमान एक ग्रह के द्रव्यमान का $\frac{1}{144}$ गुना है तथा इसका व्यास ग्रह के व्यास का $\frac{1}{16}$ गुना है। यदि ग्रह पर पलायन वेग v हो तो चन्द्रमा पर पलायन वेग होगा :

Options :

4058593881. $\frac{v}{12}$

4058593882. $\frac{v}{4}$

4058593883. $\frac{v}{6}$

4058593884. $\frac{v}{3}$

Question Number : 37 Question Id : 4058591231 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

A small spherical ball of radius r , falling through a viscous medium of negligible density has terminal velocity ' v '. Another ball of the same mass but of radius $2r$, falling through the same viscous medium will have terminal velocity:

Options :

4058593885. $\frac{v}{2}$

4058593886. $\frac{v}{4}$

4058593887. $2v$

4058593888. $4v$

Question Number : 37 Question Id : 4058591231 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

r त्रिज्या की एक छोटी गोलाकार गेंद नगण्य घनत्व के एक श्यान माध्यम में गिरती है। उसका सीमान्त वेग v है। समान द्रव्यमान तथा $2r$ त्रिज्या की दूसरी गोली समान श्यान माध्यम में गिरती है तो उसका सीमान्त वेग होगा:

Options :

4058593885. $\frac{v}{2}$

4058593886. $\frac{v}{4}$

4058593887. $2v$

4058593888. $4v$

Question Number : 38 Question Id : 4058591232 Question Type : MCQ Option Shuffling : Yes 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 speed of sound in oxygen at S.T.P. will be approximately:

(given, $R = 8.3 \text{ JK}^{-1}$, $\gamma = 1.4$)

Options :

4058593889. 341 m/s

4058593890. 333 m/s

4058593891. 325 m/s

4058593892. 310 m/s

Question Number : 38 Question Id : 4058591232 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

मानक ताप एवं दाब पर आक्सीजन में ध्वनि की चाल लगभग होगी:

(दिया है, $R = 8.3 \text{ JK}^{-1}$ तथा $\gamma = 1.4$)

Options :

4058593889. 341 m/s

4058593890. 333 m/s

4058593891. 325 m/s

4058593892. 310 m/s

Question Number : 39 Question Id : 4058591233 Question Type : MCQ Option Shuffling : Yes 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 gas mixture consists of 8 moles of argon and 6 moles of oxygen at temperature T. Neglecting all vibrational modes, the total internal energy of the system is:

Options :

4058593893. 21 RT

4058593894. 27 RT

4058593895. 29 RT

4058593896. 20 RT

Question Number : 39 Question Id : 4058591233 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

T तापमान पर एक गैस मिश्रण में आर्गन के 8 मोल तथा आक्सीजन के 6 मोल उपस्थित हैं। सभी कम्पन्न अवस्थाओं को नगण्य मानते हुए, निकाय की कुल अन्तरिक ऊर्जा है:

Options :

4058593893. 21 RT

4058593894. 27 RT

4058593895. 29 RT

4058593896. 20 RT

Question Number : 40 Question Id : 4058591234 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Force between two point charges q_1 and q_2 placed in vacuum at ' r ' cm apart is F .
Force between them when placed in a medium having dielectric constant $K=5$ at
' $r/5$ ' cm apart will be:

Options :

4058593897. $F/5$

4058593898. $5F$

4058593899. $F/25$

4058593900. $25F$

Question Number : 40 Question Id : 4058591234 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

निर्वात में ' r ' सेमी की दूरी पर स्थित दो बिन्दु आवेशों q_1 व q_2 के बीच लगने वाला बल F है।
 $K=5$ परावैद्युतांक वाले माध्यम में ' $r/5$ ' सेमी दूरी पर स्थित उन्हीं आवेशों के बीच लगने वाला
बल होगा:

Options :

4058593897. $F/5$

4058593898. $5F$

4058593899. $F/25$

4058593900. 25F

Question Number : 41 Question Id : 4058591235 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

By what percentage will the illumination of the lamp decrease if the current drops by 20%?

Options :

4058593901. 36%

4058593902. 46%

4058593903. 56%

4058593904. 26%

Question Number : 41 Question Id : 4058591235 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

धारा 20% कम हो जाने पर लैम्प की प्रदीप्ति में कितने प्रतिशत कमी होगी:

Options :

4058593901. 36%

4058593902. 46%

4058593903. 56%

4058593904. 26%

Question Number : 42 Question Id : 4058591236 Question Type : MCQ Option Shuffling : Yes 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 uniform magnetic field of $2 \times 10^{-3} \text{ T}$ acts along positive Y -direction. A rectangular loop of sides 20 cm and 10 cm with current of 5 A is in Y - Z plane. The current is in anticlockwise sense with reference to negative X axis. Magnitude and direction of the torque is:

Options :

4058593905. $2 \times 10^{-4} \text{ N-m}$ along positive Z -direction

4058593906. $2 \times 10^{-4} \text{ N-m}$ along negative Z -direction

4058593907. $2 \times 10^{-4} \text{ N-m}$ along positive Y -direction

4058593908. $2 \times 10^{-4} \text{ N-m}$ along positive X -direction

Question Number : 42 Question Id : 4058591236 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

$2 \times 10^{-3} \text{ T}$ का एक एकसमान चुम्बकीय क्षेत्र धनात्मक Y - अक्ष में कार्यरत है। 20 सेमी तथा 10 सेमी भुजाओं का एक आयताकार लूप 5 A धारा के साथ Y - Z तल में है। ऋणात्मक X अक्ष के संदर्भ में धारा वामावर्ती है। बल आघूर्ण का परिमाण एवं दिशा है:

Options :

4058593905. $2 \times 10^{-4} \text{ N-m}$ धनात्मक Z - दिशा के अनुदिश

4058593906. $2 \times 10^{-4} \text{ N-m}$ ऋणात्मक Z - दिशा के अनुदिश

4058593907. $2 \times 10^{-4} \text{ N-m}$ धनात्मक Y - दिशा के अनुदिश

4058593908. $2 \times 10^{-4} \text{ N-m}$ धनात्मक X - दिशा के अनुदिश

Question Number : 43 Question Id : 4058591237 Question Type : MCQ Option Shuffling : Yes 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 AC voltage $V = 20 \sin 200\pi t$ is applied to a series LCR circuit which drives a current $I = 10 \sin \left(200 \pi t + \frac{\pi}{3} \right)$. The average power dissipated is:

Options :

4058593909. 21.6 W

4058593910. 200 W

4058593911. 50 W

4058593912. 173.2 W

Question Number : 43 Question Id : 4058591237 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

एक प्रत्यावर्ती वोल्टेज $V = 20 \sin 200\pi t$ वोल्ट को एक श्रेणीबद्ध LCR परिपथ से जोड़ा गया है। जिससे $I = 10 \sin \left(200 \pi t + \frac{\pi}{3} \right) \text{ A}$ धारा बहती है। औसत शक्ति क्षय है:

Options :

4058593909. 21.6 W

4058593910. 200 W

4058593911. 50 W

4058593912. 173.2 W

Question Number : 44 Question Id : 4058591238 Question Type : MCQ Option Shuffling : Yes 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: Electromagnetic waves carry energy as they travel through space and this energy is equally shared by the electric and magnetic fields.

Statement II: When electromagnetic waves strike a surface, a pressure is exerted on the surface.

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

Options :

4058593913. Both **Statement I** and **Statement II** are correct.

4058593914. Both **Statement I** and **Statement II** are incorrect.

4058593915. **Statement I** is correct but **Statement II** is incorrect.

4058593916. **Statement I** is incorrect but **Statement II** is correct.

Question Number : 44 Question Id : 4058591238 Question Type : MCQ Option Shuffling : Yes 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: विद्युत चुंबकीय तरंगें ऊर्जा का संरक्षण करती हैं जब वह आकाश में गति करती हैं और इस ऊर्जा में विद्युत क्षेत्र तथा चुंबकीय क्षेत्र का बराबर भाग होता है।

कथन II: जब कोई विद्युत चुंबकीय तरंग किसी तल से टकराती है तो तल पर एक दाब आरोपित होता है।

उपरोक्त कथनों के संदर्भ में, नीचे दिए गए विकल्पों में से सबसे उचित उत्तर चुनिए:

Options :

4058593913. दोनों कथन I तथा कथन II सही हैं।

4058593914. दोनों कथन I तथा कथन II गलत हैं।

4058593915. कथन I सही है लेकिन कथन II गलत है।

4058593916. कथन I गलत है लेकिन कथन II सही है।

Question Number : 45 Question Id : 4058591239 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

When unpolarized light is incident at an angle of 60° on a transparent medium from air, the reflected ray is completely polarized. The angle of refraction in the medium is:

Options :

4058593917. 30°

4058593918. 60°

4058593919. 45°

4058593920. 90°

Question Number : 45 Question Id : 4058591239 Question Type : MCQ Option Shuffling : Yes 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 अध्रुवित प्रकाश वायु से किसी पारदर्शी माध्यम पर 60° के कोण पर आपतित होता है तो परावर्तित किरण पूर्णतः ध्रुवित होती है। माध्यम का अपवर्तन कोण है:

Options :

4058593917. 30°

4058593918. 60°

4058593919. 45°

4058593920. 90°

Question Number : 46 Question Id : 4058591240 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

In a photoelectric effect experiment a light of frequency 1.5 times the threshold frequency is made to fall on the surface of photosensitive material. Now if the frequency is halved and intensity is doubled, the number of photo electrons emitted will be:

Options :

4058593921. Zero

4058593922. halved

4058593923. doubled

4058593924. quadrupled

Question Number : 46 Question Id : 4058591240 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

प्रकाश वैद्युतप्रभाव के प्रयोग में देहली आवृत्ति की 1.5 गुनी आवृत्ति का एक प्रकाश किसी प्रकाश सुग्राही पदार्थ के तल पर आपतित होता है। अब यदि आवृत्ति को आधा तथा तीव्रता को दो गुना कर दिया जाये तो उत्सर्जित प्रकाश इलेक्ट्रानों की संख्या होगी:

Options :

4058593921. शून्य

4058593922. आधी

4058593923. दो गुनी

4058593924. एक चौथाई

Question Number : 47 Question Id : 4058591241 Question Type : MCQ Option Shuffling : Yes 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 mass number of nucleus having radius equal to half of the radius of nucleus with mass number 192 is:

Options :

4058593925. 20

4058593926. 32

4058593927. 24

4058593928. 40

Question Number : 47 Question Id : 4058591241 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

192 द्रव्यमान संख्या के नाभिक की त्रिज्या के आधी त्रिज्या वाले नाभिक की द्रव्यमान संख्या है:

Options :

4058593925. 20

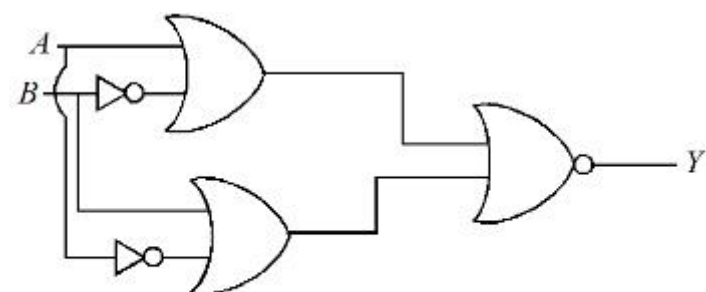
4058593926. 32

4058593927. 24

4058593928. 40

Question Number : 48 Question Id : 4058591242 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1



The output of the given circuit diagram is -

Options :

4058593929.

A	B	Y
0	0	0
1	0	1
0	1	1
1	1	0

4058593930.

A	B	Y
0	0	0
1	0	0
0	1	0
1	1	0

4058593931.

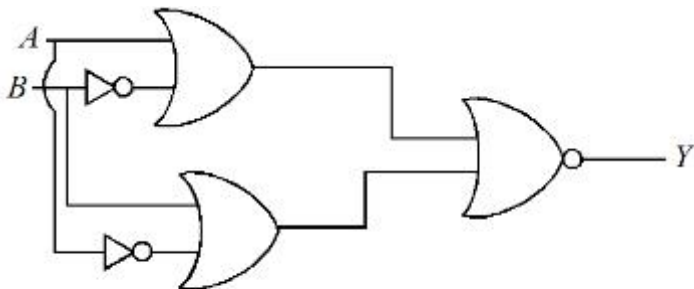
A	B	Y
0	0	0
1	0	0
0	1	1
1	1	0

4058593932.

A	B	Y
0	0	0
1	0	0
0	1	0
1	1	1

Question Number : 48 Question Id : 4058591242 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1



दिये गये परिपथ का निर्गत है -

Options :

4058593929.

A	B	Y
0	0	0
1	0	1
0	1	1
1	1	0

4058593930.

A	B	Y
0	0	0
1	0	0
0	1	0
1	1	0

4058593931.

A	B	Y
0	0	0
1	0	0
0	1	1
1	1	0

4058593932.

A	B	Y
0	0	0
1	0	0
0	1	0
1	1	1

Question Number : 49 Question Id : 4058591243 Question Type : MCQ Option Shuffling : Yes 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 resistance per centimeter of a meter bridge wire is r , with $X \Omega$ resistance in left gap. Balancing length from left end is at 40 cm with 25Ω resistance in right gap. Now the wire is replaced by another wire of $2r$ resistance per centimeter. The new balancing length for same settings will be at

Options :

4058593933. 80 cm

4058593934. 20 cm

4058593935. 10 cm

4058593936. 40 cm

Question Number : 49 Question Id : 4058591243 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

मीटर सेतु के तार का प्रति सेमी प्रतिरोध r है तथा बाँये अन्तराल में $X \Omega$ प्रतिरोध है। दाहिने अन्तराल में 25Ω प्रतिरोध के साथ बाँये सिरे से सन्तुलित लम्बाई 40 सेमी है। अब इस तार को प्रति सेमी $2r$ प्रतिरोध वाले दूसरे तार द्वारा प्रतिस्थापित कर दिया जाता है। समान व्यवस्था के लिए नई सन्तुलित लम्बाई होगी:

Options :

4058593933. 80 cm

4058593934. 20 cm

4058593935. 10 cm

4058593936. 40 cm

Question Number : 50 Question Id : 4058591244 Question Type : MCQ Option Shuffling : Yes 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 measured value of the length of a simple pendulum is 20 cm with 2 mm accuracy. The time for 50 oscillations was measured to be 40 seconds with 1 second resolution. From these measurements, the accuracy in the measurement of acceleration due to gravity is N%. The value of N is:

Options :

4058593937. 6

4058593938. 4

4058593939. 8

4058593940. 5

Question Number : 50 Question Id : 4058591244 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

सरल लोलक की लम्बाई का मान 2 मिमी शुद्धता के साथ 20 सेमी मापा जाता है। 50 दोलों के लिए 1 सेकंड शुद्धता के साथ मापा समय 40 सेकंड है। इस मापन से, गुरुत्वीय त्वरण के मापन की शुद्धता N% है। N का मान है :

Options :

4058593937. 6

4058593938. 4

4058593939. 8

4058593940. 5

Physics Section B

Section Id :	40585977
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 :	40585977
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 51 Question Id : 4058591245 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

A body of mass ' m ' is projected with a speed ' u ' making an angle of 45° with the ground. The angular momentum of the body about the point of projection, at the highest point is expressed as $\frac{\sqrt{2}mu^3}{Xg}$. The value of ' X ' is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 51 Question Id : 4058591245 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

' m ' द्रव्यमान के एक पिण्ड को पृथ्वी तल से 45° के कोण पर ' u ' वेग से प्रक्षेपित किया जाता है। प्रक्षेपण बिन्दु के परितः अधिकतम ऊंचाई के बिन्दु पर पिण्ड का कोणीय संवेग $\frac{\sqrt{2}mu^3}{Xg}$ है। ' X ' का मान _____ है।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 52 **Question Id :** 4058591246 **Question Type :** SA **Calculator :** None

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

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

Two identical spheres each of mass 2 kg and radius 50 cm are fixed at the ends of a light rod so that the separation between the centers is 150 cm. Then, moment of inertia of the system about an axis perpendicular to the rod and passing through its middle point is $\frac{x}{20} \text{ kg m}^2$, where the value of x is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 52 **Question Id :** 4058591246 **Question Type :** SA **Calculator :** None

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

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

2 किग्रा द्रव्यमान तथा 50 सेमी त्रिज्या के दो एकसमान गोले एक हल्की छड़ के दोनों सिरों पर इस प्रकार स्थापित किये गये हैं कि केन्द्रों के बीच की दूरी 150 सेमी है। तब छड़ के मध्य बिन्दु से गुजरने वाली तथा छड़ के लम्बवत अक्ष के परितः निकाय का जड़त्व आघूर्ण $\frac{x}{20}$ किग्रा मी² 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 :

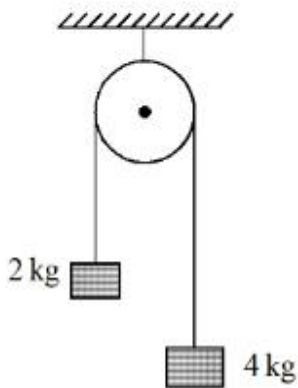
1

Question Number : 53 **Question Id :** 4058591247 **Question Type :** SA **Calculator :** None

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

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

Two blocks of mass 2 kg and 4 kg are connected by a metal wire going over a smooth pulley as shown in figure. The radius of wire is 4.0×10^{-5} m and Young's modulus of the metal is 2.0×10^{11} N/m². The longitudinal strain developed in the wire is $\frac{1}{\alpha\pi}$. The value of α is _____. [Use $g = 10$ m/s²]



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

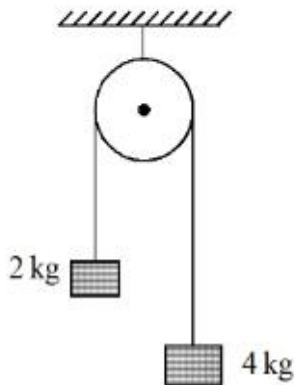
1

Question Number : 53 **Question Id :** 4058591247 **Question Type :** SA **Calculator :** None

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

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

दिये गये चित्र के अनुसार 2 किग्रा व 4 किग्रा द्रव्यमान के दो गुटके एक चिकनी पुली (धिरनी) से होकर जाने वाले एक धातु के तार से जोड़े गये हैं। तार की त्रिज्या $4.0 \times 10^{-5} \text{ m}$ तथा धातु का यंग प्रत्यास्थता गुणांक $2.0 \times 10^{11} \text{ N/m}^2$ है। तार में उत्पन्न अनुदैर्घ्य विकृति $\frac{1}{\alpha\pi}$ है। α का मान _____ 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

Possible Answers :

1

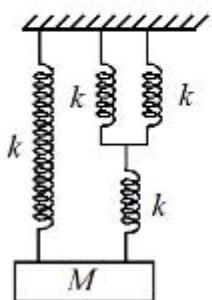
Question Number : 54 **Question Id :** 4058591248 **Question Type :** SA **Calculator :** None

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

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

The time period of simple harmonic motion of mass M in the given figure is

$\pi\sqrt{\frac{\alpha M}{5k}}$, where the value of α is _____.



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

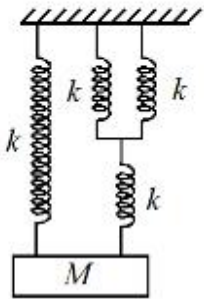
1

Question Number : 54 **Question Id :** 4058591248 **Question Type :** SA **Calculator :** None

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

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

दिये गये चित्र में M द्रव्यमान के गुटके की सरल आवर्त गति का आवर्तकाल $\pi\sqrt{\frac{\alpha M}{5k}}$ है जहाँ α का मान _____ है।



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

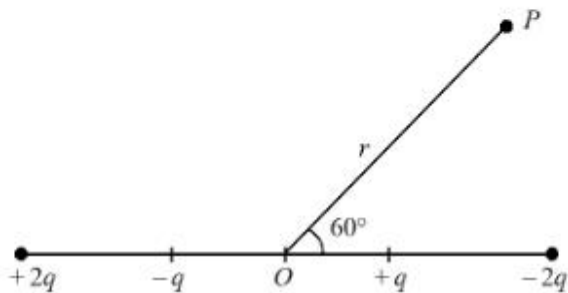
Question Number : 55 **Question Id :** 4058591249 **Question Type :** SA **Calculator :** None

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

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

The distance between charges $+q$ and $-q$ is $2l$ and between $+2q$ and $-2q$ is $4l$. The electrostatic potential at point P at a distance r from center O is $-\alpha \left[\frac{ql}{r^2} \right] \times 10^9 V$,

where the value of α is _____. (Use $\frac{1}{4\pi\epsilon_0} = 9 \times 10^9 \text{ Nm}^2\text{C}^{-2}$)



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 :** 4058591249 **Question Type :** SA **Calculator :** None

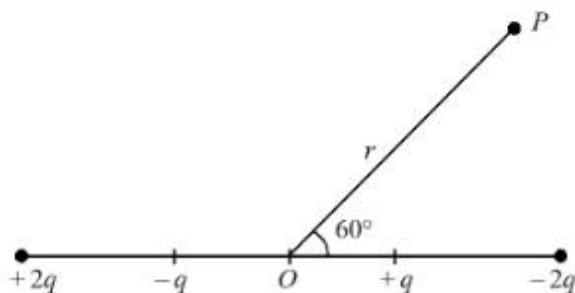
Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

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

$+q$ तथा $-q$ आवेशों के बीच की दूरी $2l$ तथा $+2q$ तथा $-2q$ आवेशों के बीच की दूरी $4l$ है।

केन्द्र O से r दूरी पर बिन्दु P पर स्थिर वैद्युत विभव $-\alpha \left[\frac{ql}{r^2} \right] \times 10^9 V$ है, जहाँ α का मान

_____ है। (दिया है, $\frac{1}{4\pi\epsilon_0} = 9 \times 10^9 \text{ Nm}^2\text{C}^{-2}$)



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

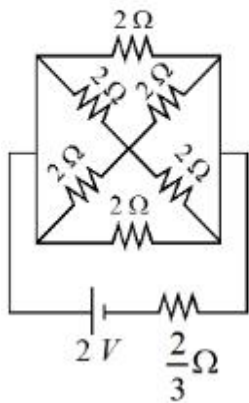
1

Question Number : 56 **Question Id :** 4058591250 **Question Type :** SA **Calculator :** None

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

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

In the following circuit, the battery has an emf of 2V and an internal resistance of $\frac{2}{3}\Omega$. The power consumption in the entire circuit is _____ W.



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

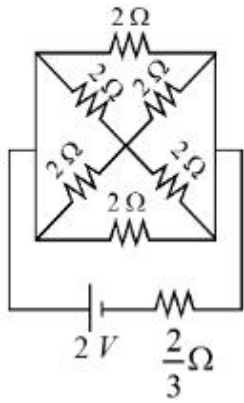
1

Question Number : 56 **Question Id :** 4058591250 **Question Type :** SA **Calculator :** None

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

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

निम्नलिखित चित्र में, बैटरी का वि.वा. बल $2V$ तथा आन्तरिक प्रतिरोध $\frac{2}{3}\Omega$ है। पूरे परिपथ में व्यय शक्ति _____ W है।



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 57 **Question Id :** 4058591251 **Question Type :** SA **Calculator :** None

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

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

Two circular coils P and Q of 100 turns each have same radius of π cm. The currents in P and R are $1A$ and $2A$ respectively. P and Q are placed with their planes mutually perpendicular with their centers coincide. The resultant magnetic field induction at the center of the coils is $\sqrt{x} \text{ mT}$, where $x =$ _____.

[Use $\mu_0 = 4\pi \times 10^{-7} \text{ TmA}^{-1}$]

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 : 4058591251 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

100 फेरों वाली दो समान वृत्ताकार कुंडलियों P व Q की एक समान त्रिज्या π सेमी है। P तथा Q में धारा क्रमशः $1A$ तथा $2A$ है। P तथा Q को उभयनिष्ठ केन्द्र के साथ तथा पारस्परिक लम्बवत तलों के साथ रखा गया है। कुंडलियों के केन्द्र पर परिणामी चुम्बकीय क्षेत्र (magnetic field induction) $\sqrt{x} \text{ mT}$ है, जहाँ $x = \underline{\hspace{2cm}}$ ।

[दिया है, $\mu_0 = 4\pi \times 10^{-7} \text{ TmA}^{-1}$]

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 : 4058591252 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

The magnetic flux ϕ (in weber) linked with a closed circuit of resistance 8Ω varies with time (in seconds) as $\phi = 5t^2 - 36t + 1$. The induced current in the circuit at $t = 2 \text{ s}$ is $\underline{\hspace{2cm}} A$.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 58 Question Id : 4058591252 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

8 Ω प्रतिरोध के एक बन्द परिपथ से परिवद्ध चुम्बकीय फलक्स ϕ (वेबर में) समय (से में) के साथ $\phi = 5t^2 - 36t + 1$ के अनुसार परिवर्तित होता है $t = 2$ से पर परिपथ में प्रेरित धारा _____ A है।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 59 Question Id : 4058591253 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Light from a point source in air falls on a convex curved surface of radius 20 cm and refractive index 1.5. If the source is located at 100 cm from the convex surface, the image will be formed at _____ cm from the object.

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 : 4058591253 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

वायु में एक बिन्दु स्रोत से प्रकाश 1.5 अपवर्तनांक तथा 20 सेमी त्रिज्या के एक उत्तल वक्र तल पर आपतित होता है। यदि स्रोत उत्तल तल से 100 सेमी पर स्थित है तो वस्तु का प्रतिबिम्ब _____ सेमी पर बनेगा ।

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 :** 4058591254 **Question Type :** SA **Calculator :** None

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

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

A nucleus has mass number A_1 and volume V_1 . Another nucleus has mass number A_2 and Volume V_2 . If relation between mass number is $A_2 = 4A_1$, then $\frac{V_2}{V_1} = \underline{\hspace{2cm}}$.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 60 **Question Id :** 4058591254 **Question Type :** SA **Calculator :** None

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

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

एक नाभिक की द्रव्यमान संख्या A_1 तथा आयतन V_1 है। दूसरे नाभिक की द्रव्यमान संख्या A_2 तथा आयतन V_2 है। यदि द्रव्यमान संख्याओं में संबंध $A_2 = 4A_1$ हो तब $\frac{V_2}{V_1} = \underline{\hspace{2cm}}$.

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 :	40585978
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 :	40585978
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 61 Question Id : 4058591255 Question Type : MCQ Option Shuffling : Yes 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 sample of CaCO_3 and MgCO_3 weighed 2.21 g is ignited to constant weight of 1.152 g. The composition of mixture is :

(Given molar mass in g mol^{-1} CaCO_3 : 100, MgCO_3 : 84)

Options :

4058593951. 1.023 g CaCO_3 + 1.187 g MgCO_3

4058593952. 1.187 g CaCO_3 + 1.023 g MgCO_3

4058593953. 1.023 g CaCO_3 + 1.023 g MgCO_3

4058593954. 1.187 g CaCO_3 + 1.187 g MgCO_3

Question Number : 61 Question Id : 4058591255 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

2.21 g वाले CaCO_3 एवं MgCO_3 के एक नमूने को 1.152 g के स्थिर भार तक ज्वलन किया जाता है। मिश्रण का संघटन है:

(दिया गया है: g mol^{-1} में मोलर द्रव्यमान: CaCO_3 : 100, MgCO_3 : 84)

Options :

4058593951. 1.023 g CaCO_3 + 1.187 g MgCO_3

4058593952. 1.187 g CaCO_3 + 1.023 g MgCO_3

4058593953. 1.023 g CaCO_3 + 1.023 g MgCO_3

4058593954. 1.187 g CaCO_3 + 1.187 g MgCO_3

Question Number : 62 Question Id : 4058591256 Question Type : MCQ Option Shuffling : Yes 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 four quantum numbers for the electron in the outer most orbital of potassium (atomic no. 19) are

Options :

4058593955. $n = 2, l = 0, m = 0, s = +\frac{1}{2}$

4058593956. $n = 3, l = 0, m = 1, s = +\frac{1}{2}$

4058593957. $n = 4, l = 0, m = 0, s = +\frac{1}{2}$

4058593958. $n = 4, l = 2, m = -1, s = +\frac{1}{2}$

Question Number : 62 Question Id : 4058591256 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

पोटैशियम (परमाणु क्रमांक 19) के बाह्यतम कक्षक में उपस्थित इलेक्ट्रॉन की चारों क्वांटम संख्याएं हैं:

Options :

4058593955. $n = 2, l = 0, m = 0, s = +\frac{1}{2}$

4058593956. $n = 3, l = 0, m = 1, s = +\frac{1}{2}$

4058593957. $n = 4, l = 0, m = 0, s = +\frac{1}{2}$

4058593958. $n = 4, l = 2, m = -1, s = +\frac{1}{2}$

Question Number : 63 Question Id : 4058591257 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Which of the following is least ionic?

Options :

4058593959. KCl

4058593960. AgCl

4058593961. BaCl_2

4058593962. CoCl_2

Question Number : 63 Question Id : 4058591257 Question Type : MCQ Option Shuffling : Yes 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 निम्नतम आयनिक है?

Options :

4058593959. KCl

4058593960. AgCl

4058593961. BaCl_2

4058593962. CoCl_2

Question Number : 64 Question Id : 4058591258 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

$A_{(g)} \rightleftharpoons B_{(g)} + \frac{C}{2}_{(g)}$ The correct relationship between K_p , α and equilibrium pressure P is

Options :

4058593963.
$$K_p = \frac{\alpha^{3/2} P^{1/2}}{(2 + \alpha)^{1/2} (1 - \alpha)}$$

4058593964.
$$K_p = \frac{\alpha^{1/2} P^{1/2}}{(2 + \alpha)^{1/2}}$$

4058593965.
$$K_p = \frac{\alpha^{1/2} P^{1/2}}{(2 + \alpha)^{3/2}}$$

4058593966.
$$K_p = \frac{\alpha^{1/2} P^{3/2}}{(2 + \alpha)^{3/2}}$$

Question Number : 64 Question Id : 4058591258 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

$A_{(g)} \rightleftharpoons B_{(g)} + \frac{C}{2}_{(g)}$ K_p , α एवं साम्यवस्था दाब P में सही सम्बन्ध है :

Options :

4058593963.
$$K_p = \frac{\alpha^{3/2} P^{1/2}}{(2 + \alpha)^{1/2} (1 - \alpha)}$$

4058593964.
$$K_P = \frac{\alpha^{1/2} P^{1/2}}{(2 + \alpha)^{1/2}}$$

4058593965.
$$K_P = \frac{\alpha^{1/2} P^{1/2}}{(2 + \alpha)^{3/2}}$$

4058593966.
$$K_P = \frac{\alpha^{1/2} P^{3/2}}{(2 + \alpha)^{3/2}}$$

Question Number : 65 Question Id : 4058591259 Question Type : MCQ Option Shuffling : Yes 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 : S_8 solid undergoes disproportionation reaction under alkaline conditions to form S^{2-} and $S_2O_3^{2-}$.

Statement II : ClO_4^- can undergo disproportionation reaction under acidic condition.

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

Options :

4058593967. Both statement I and statement II are correct

4058593968. Both statement I and statement II are incorrect

4058593969. Statement I is correct but statement II is incorrect

4058593970. Statement I is incorrect but statement II is correct

Question Number : 65 Question Id : 4058591259 Question Type : MCQ Option Shuffling : Yes 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 : ठोस S_8 क्षारीय माध्यम में असमानुपातन अभिक्रिया कर S^{2-} एवं $S_2O_3^{2-}$ बनाता है।

कथन II : ClO_4^- अम्लीय माध्यम में असमानुपातन अभिक्रिया कर सकता है।

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

Options :

4058593967. दोनों कथन I तथा कथन II सही हैं।

4058593968. दोनों कथन I तथा कथन II गलत हैं।

4058593969. कथन I सही है परन्तु कथन II गलत है।

4058593970. कथन I गलत है परन्तु कथन II सही है।

Question Number : 66 Question Id : 4058591260 Question Type : MCQ Option Shuffling : Yes 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 following elements.



Which of the following is/are true about A', B', C' and D'?

- A. Order of atomic radii: $B' < A' < D' < C'$
- B. Order of metallic character: $B' < A' < D' < C'$
- C. Size of the element: $D' < C' < B' < A'$
- D. Order of ionic radii: $B'^+ < A'^+ < D'^+ < C'^+$

Choose the correct answer from the options given below :

Options :

4058593971. A, B and D only

4058593972. A and B only

4058593973. B, C and D only

4058593974. A only

Question Number : 66 Question Id : 4058591260 Question Type : MCQ Option Shuffling : Yes 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 तत्वों पर विचार करें:



A', B', C' एवं D' के बारे में निम्न में से कौन सा/से सही है/हैं?

- A. परमाणु त्रिज्या का क्रम: $B' < A' < D' < C'$
- B. धात्विक लक्षण का क्रम: $B' < A' < D' < C'$
- C. तत्व का आकार: $D' < C' < B' < A'$
- D. आयनिक त्रिज्या का क्रम: $B'^+ < A'^+ < D'^+ < C'^+$

नीचे दिए गए विकल्पों में से सही उत्तर चुनें:

Options :

4058593971. केवल A, B एवं D

4058593972. केवल A एवं B

4058593973. केवल B, C एवं D

4058593974. केवल A

Question Number : 67 Question Id : 4058591261 Question Type : MCQ Option Shuffling : Yes 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 : Group 13 trivalent halides get easily hydrolyzed by water due to their covalent nature.

Statement II : $AlCl_3$ upon hydrolysis in acidified aqueous solution forms octahedral $[Al(H_2O)_6]^{3+}$ ion.

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

Options :

4058593975. Both statement I and statement II are true

4058593976. Both statement I and statement II are false

4058593977. Statement I is true but statement II is false

4058593978. Statement I is false but statement II is true

Question Number : 67 Question Id : 4058591261 Question Type : MCQ Option Shuffling : Yes 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 : समूह 13 के त्रिसंयोजी हैलाइड्स अपने सहसंयोजी प्रकृति के कारण आसानी के साथ जल अपघटित हो जाते हैं।

कथन II : AlCl_3 अम्लीकृत जलीय विलयन में जल अपघटित होकर अष्टफलकीय $[\text{Al}(\text{H}_2\text{O})_6]^{3+}$ आयन बनाते हैं।

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

Options :

4058593975. दोनों कथन I तथा कथन II सही हैं।

4058593976. दोनों कथन I तथा कथन II गलत हैं।

4058593977. कथन I सही है परन्तु कथन II गलत है।

4058593978. कथन I गलत है परन्तु कथन II सही है।

Question Number : 68 Question Id : 4058591262 Question Type : MCQ Option Shuffling : Yes 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. All group 16 elements form oxides of general formula EO_2 and EO_3 , where $E = S, Se, Te$ and Po . Both the types of oxides are acidic in nature.
- B. TeO_2 is an oxidising agent while SO_2 is reducing in nature.
- C. The reducing property decreases from H_2S to H_2Te down the group.
- D. The ozone molecule contains five lone pairs of electrons.

Choose the correct answer from the options given below:

Options :

4058593979. B and C only

4058593980. A and B only

4058593981. A and D only

4058593982. C and D only

Question Number : 68 Question Id : 4058591262 Question Type : MCQ Option Shuffling : Yes 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 सही कथन है:

- A. समूह 16 के सभी तत्व EO_2 एवं EO_3 के सामान्य सूत्र वाले ऑक्साइड बनाते हैं जहाँ $E = S, Se, Te$ एवं Po . दोनों ही प्रकार के ऑक्साइड अम्लीय प्रकृति के होते हैं।
- B. TeO_2 ऑक्सीकारक जबकि SO_2 अपचायक प्रकृति का होता है।
- C. समूह में नीचे आने पर H_2S से H_2Te का अपचायक गुण घटता है।
- D. ओजोन अणु में इलेक्ट्रॉनों के पाँच एकाकी युग्म पाए जाते हैं।

नीचे दिए गए विकल्पों में से सही उत्तर चुनें:

Options :

4058593979. केवल B एवं C

4058593980. केवल A एवं B

4058593981. केवल A एवं D

4058593982. केवल C एवं D

Question Number : 69 Question Id : 4058591263 Question Type : MCQ Option Shuffling : Yes 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. Mn_2O_7 is an oil at room temperature
- B. V_2O_4 reacts with acid to give VO_2^{2+}
- C. CrO is a basic oxide
- D. V_2O_5 does not react with acid

Choose the correct answer from the options given below :

Options :

4058593983. B and C only

4058593984. A, B and C only

4058593985. A, B and D only

4058593986. A and C only

Question Number : 69 Question Id : 4058591263 Question Type : MCQ Option Shuffling : Yes 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 सही कथन है:

- A. कमरे के ताप पर Mn_2O_7 तैलीय है
- B. V_2O_4 अम्ल के साथ क्रिया कर VO_2^{2+} देता है।
- C. CrO एक क्षारीय ऑक्साइड है।
- D. V_2O_5 अम्ल के साथ क्रिया नहीं करता है।

नीचे दिए गए विकल्पों में से सही उत्तर चुने:

Options :

4058593983. केवल B एवं C

4058593984. केवल A, B एवं C

4058593985. केवल A, B एवं D

4058593986. केवल A एवं C

Question Number : 70 Question Id : 4058591264 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Select the option with correct property -

Options :

4058593987. $[\text{NiCl}_4]^{2-}$ Diamagnetic, $[\text{Ni}(\text{CO})_4]$ Paramagnetic

4058593988. $[\text{Ni}(\text{CO})_4]$ Diamagnetic, $[\text{NiCl}_4]^{2-}$ Paramagnetic

4058593989. $[\text{Ni}(\text{CO})_4]$ and $[\text{NiCl}_4]^{2-}$ both Diamagnetic

4058593990. $[\text{Ni}(\text{CO})_4]$ and $[\text{NiCl}_4]^{2-}$ both Paramagnetic

Question Number : 70 Question Id : 4058591264 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

सही गुण वाले विकल्प को चुनिए:

Options :

4058593987. $[\text{NiCl}_4]^{2-}$ प्रतिचुम्बकीय, $[\text{Ni}(\text{CO})_4]$ अनुचुम्बकीय

4058593988. $[\text{Ni}(\text{CO})_4]$ प्रतिचुम्बकीय, $[\text{NiCl}_4]^{2-}$ अनुचुम्बकीय

4058593989. $[\text{Ni}(\text{CO})_4]$ एवं $[\text{NiCl}_4]^{2-}$ दोनों प्रतिचुम्बकीय

4058593990. $[\text{Ni}(\text{CO})_4]$ एवं $[\text{NiCl}_4]^{2-}$ दोनों अनुचुम्बकीय

Question Number : 71 Question Id : 4058591265 Question Type : MCQ Option Shuffling : Yes 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 (Complex ion)		LIST II (Electronic Configuration)	
A.	$[\text{Cr}(\text{H}_2\text{O})_6]^{3+}$	I.	$t_{2g}^2 e_g^0$
B.	$[\text{Fe}(\text{H}_2\text{O})_6]^{3+}$	II.	$t_{2g}^3 e_g^0$
C.	$[\text{Ni}(\text{H}_2\text{O})_6]^{2+}$	III.	$t_{2g}^3 e_g^2$
D.	$[\text{V}(\text{H}_2\text{O})_6]^{3+}$	IV.	$t_{2g}^6 e_g^2$

Choose the correct answer from the options given below:

Options :

4058593991. A-II, B-III, C-IV, D-I

4058593992. A-III, B-II, C-IV, D-I

4058593993. A-IV, B-I, C-II, D-III

4058593994. A-IV, B-III, C-I, D-II

Question Number : 71 Question Id : 4058591265 Question Type : MCQ Option Shuffling : Yes 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 (संकुल आयन)		सूची II (इलेक्ट्रॉनिक विन्यास)	
A.	$[\text{Cr}(\text{H}_2\text{O})_6]^{3+}$	I.	$t_{2g}^2 e_g^0$
B.	$[\text{Fe}(\text{H}_2\text{O})_6]^{3+}$	II.	$t_{2g}^3 e_g^0$
C.	$[\text{Ni}(\text{H}_2\text{O})_6]^{2+}$	III.	$t_{2g}^3 e_g^2$
D.	$[\text{V}(\text{H}_2\text{O})_6]^{3+}$	IV.	$t_{2g}^6 e_g^2$

नीचे दिए गए विकल्पों में से सही उत्तर चुने:

Options :

4058593991. A-II, B-III, C-IV, D-I

4058593992. A-III, B-II, C-IV, D-I

4058593993. A-IV, B-I, C-II, D-III

4058593994. A-IV, B-III, C-I, D-II

Question Number : 72 Question Id : 4058591266 Question Type : MCQ Option Shuffling : Yes 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 fragrance of flowers is due to the presence of some steam volatile organic compounds called essential oils. These are generally insoluble in water at room temperature but are miscible with water vapour in vapour phase. A suitable method for the extraction of these oils from the flowers is -

Options :

4058593995. distillation

4058593996. crystallisation

4058593997. distillation under reduced pressure

4058593998. steam distillation

Question Number : 72 Question Id : 4058591266 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

पुष्पों की सुगंध उनमें उपस्थित कुछ भाप-वाष्पशील कार्बनिक पदार्थ, जिन्हें सुगन्धित तेल कहा जाता है, के कारण होती है। ये कमरे के ताप पर प्रायः जल में अविलेय होते हैं परन्तु वाष्प प्रावस्था में जल वाष्प में मिश्रणीय होते हैं। पुष्पों से इन तेलों के निष्कर्षण की एक उपयुक्त विधि है-

Options :

4058593995. आसवन

4058593996. क्रिस्टलीकरण

4058593997. निम्न दाब पर आसवन

4058593998. भाप आसवन

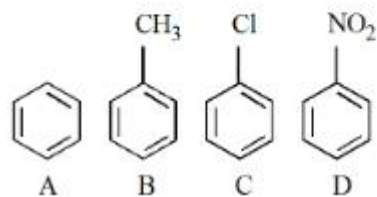
Question Number : 73 Question Id : 4058591267 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The correct order of reactivity in electrophilic substitution reaction of the following compounds is :



Options :

4058593999. A > B > C > D

4058594000. D > C > B > A

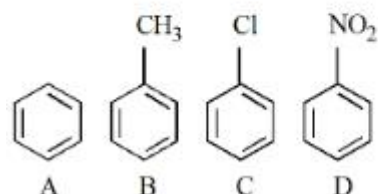
4058594001. B > C > A > D

4058594002. B > A > C > D

Question Number : 73 Question Id : 4058591267 Question Type : MCQ Option Shuffling : Yes 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 यौगिकों के इलेक्ट्रॉनसंख्येही प्रतिस्थापन अभिक्रियाओं के प्रति अभिक्रियाशीलता का क्रम है:



Options :

4058593999. $A > B > C > D$

4058594000. $D > C > B > A$

4058594001. $B > C > A > D$

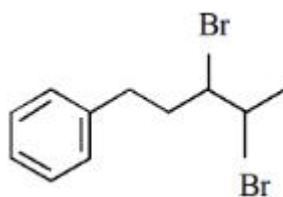
4058594002. $B > A > C > D$

Question Number : 74 Question Id : 4058591268 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

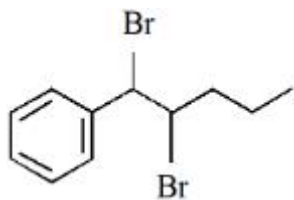
Identify structure of 2,3-dibromo-1-phenylpentane.

Options :

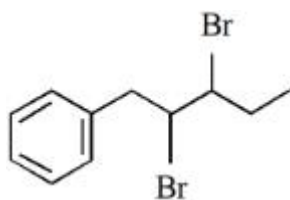


4058594003.

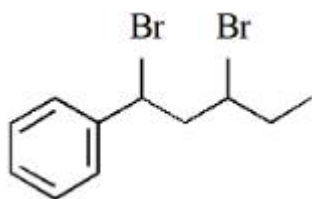
4058594004.



4058594005.



4058594006.



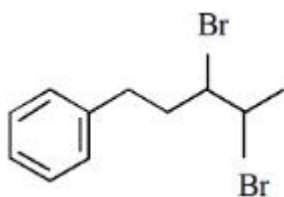
Question Number : 74 Question Id : 4058591268 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

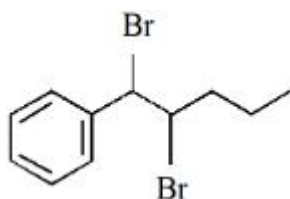
2,3- डाइब्रोमो-1-फेनिल पेन्टन की संरचना है:

Options :

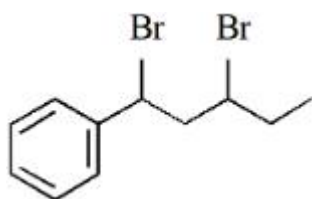
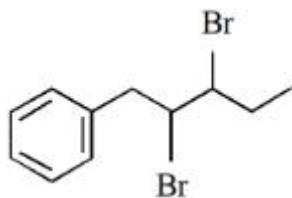
4058594003.



4058594004.



4058594005.



4058594006.

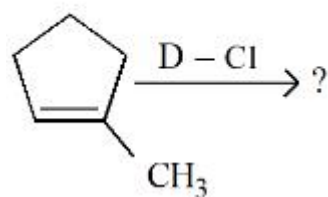
Question Number : 75 Question Id : 4058591269 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

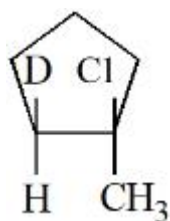
Major product of the following reaction is -



Options :

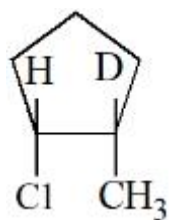


4058594007.

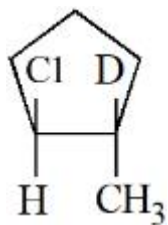


4058594008.

4058594009.



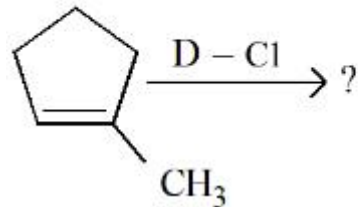
4058594010.



Question Number : 75 Question Id : 4058591269 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

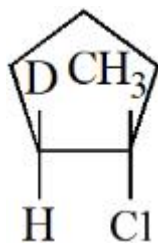
Correct Marks : 4 Wrong Marks : 1

निम्न अभिक्रिया में मुख्य उत्पाद है-

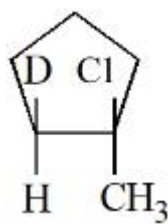


Options :

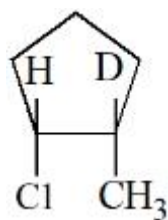
4058594007.



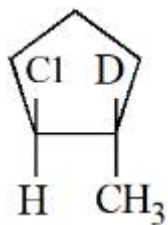
4058594008.



4058594009.



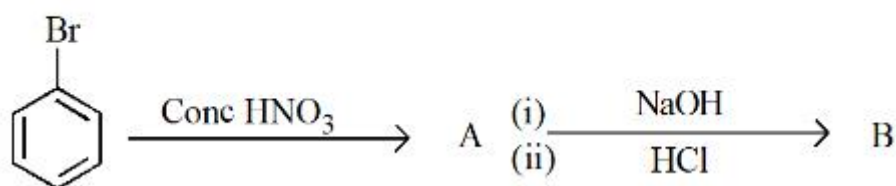
4058594010.



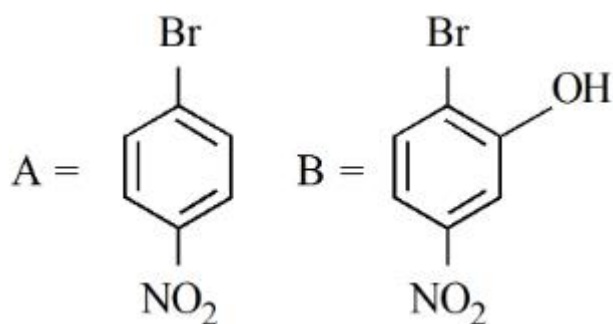
Question Number : 76 Question Id : 4058591270 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

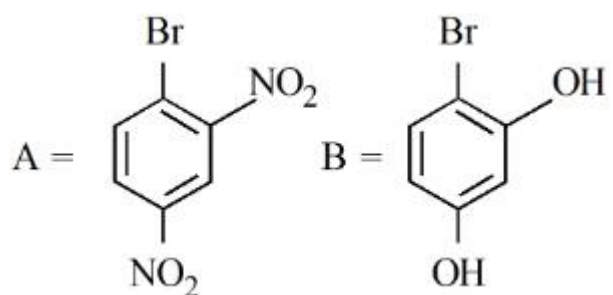
Identify A and B in the following reaction sequence.



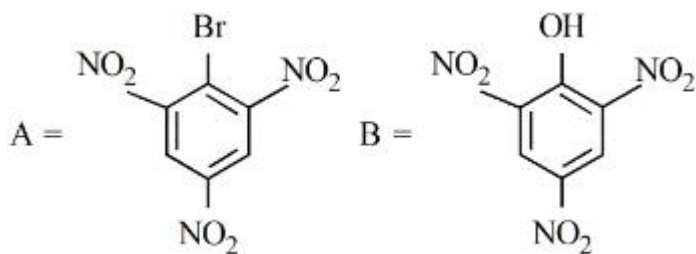
Options :



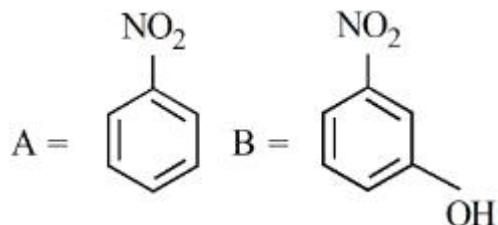
4058594011.



4058594012.



4058594013.

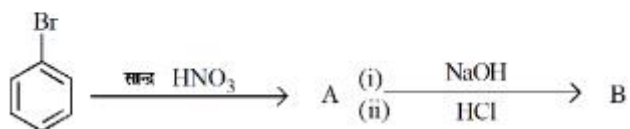


4058594014.

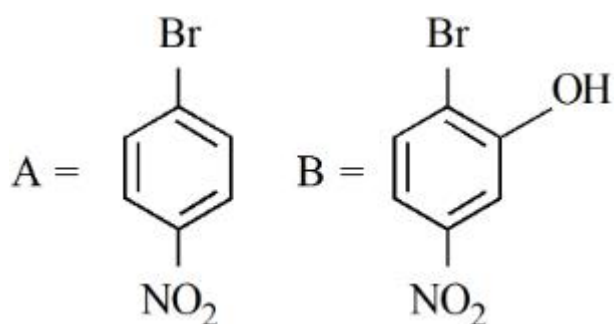
Question Number : 76 **Question Id : 4058591270** **Question Type : MCQ** **Option Shuffling : Yes** **Is Question Mandatory : No** **Calculator : None** **Response Time : N.A** **Think Time : N.A** **Minimum Instruction Time : 0**

Correct Marks : 4 Wrong Marks : 1

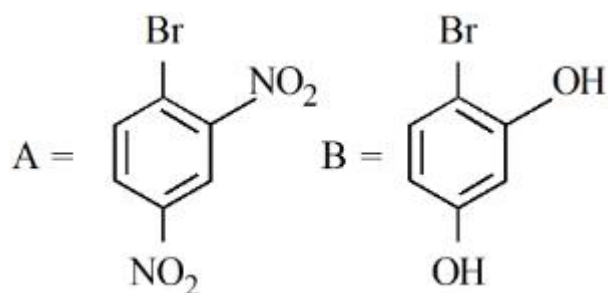
निम्न अभिक्रिया क्रम में A एवं B को पहचानें:



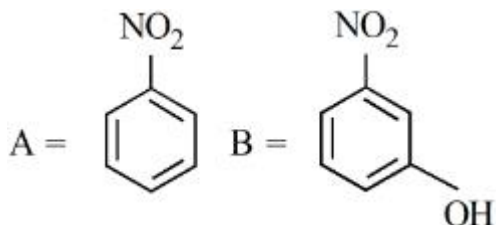
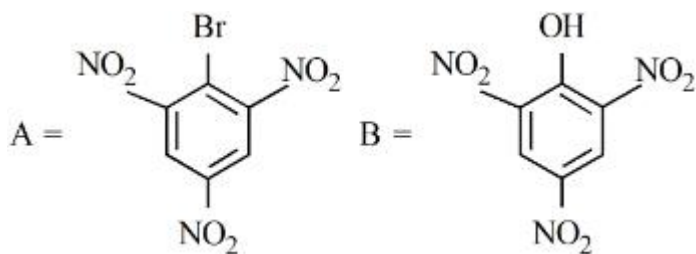
Options :



4058594011.



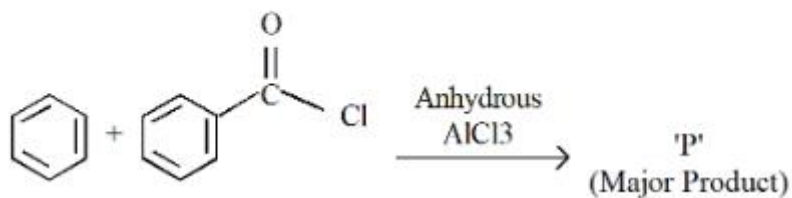
4058594012.



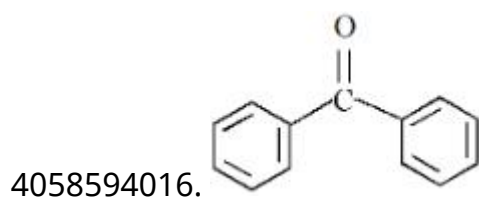
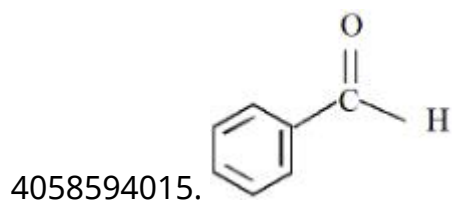
Question Number : 77 Question Id : 4058591271 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

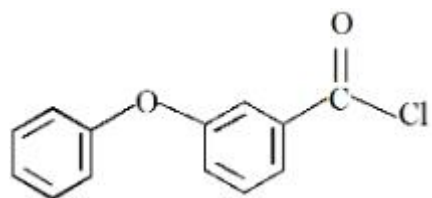
Identify major product 'P' formed in the following reaction.



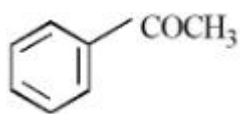
Options :



4058594017.



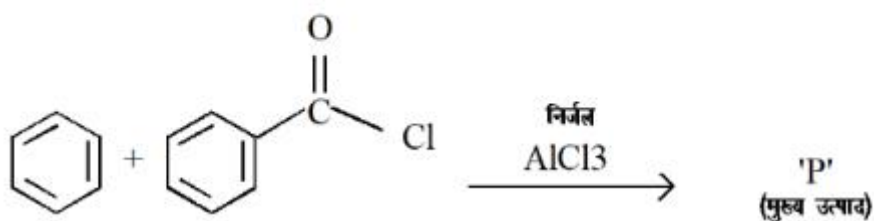
4058594018.



Question Number : 77 Question Id : 4058591271 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

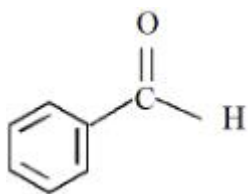
Correct Marks : 4 Wrong Marks : 1

निम्न अभिक्रिया में निर्मित मुख्य उत्पाद 'P' को पहचाने:

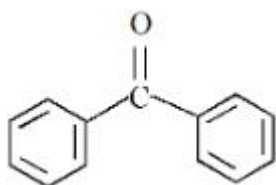


Options :

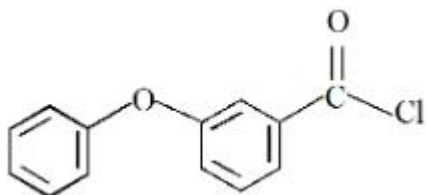
4058594015.

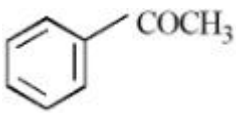


4058594016.



4058594017.

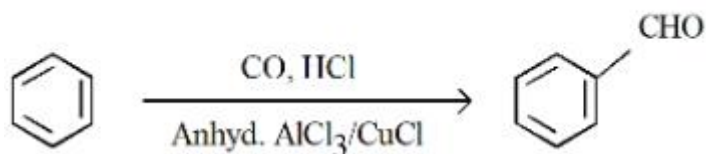


4058594018. 

Question Number : 78 Question Id : 4058591272 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Identify the name reaction.



Options :

4058594019. Etard Reaction

4058594020. Stephen Reaction

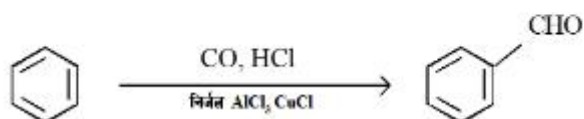
4058594021. Gatterman - Koch Reaction

4058594022. Rosenmund Reduction

Question Number : 78 Question Id : 4058591272 Question Type : MCQ Option Shuffling : Yes 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 नाम अभिक्रिया को पहचानें:



Options :

4058594019. ईटार्ड अभिक्रिया

4058594020. स्टीफैन अभिक्रिया

4058594021. गाटरमान-कॉख अभिक्रिया

4058594022. रोज़ेनमुंड अभिक्रिया

Question Number : 79 Question Id : 4058591273 Question Type : MCQ Option Shuffling : Yes 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 : Aniline reacts with con. H_2SO_4 , followed by heating at 453 - 473 K gives p-aminobenzene sulphonic acid, which gives blood red colour in the 'Lassaigne's test'.

Statement II : In Friedel - Craft's alkylation and acylation reactions, aniline forms salt with the AlCl_3 catalyst. Due to this, nitrogen of aniline acquires a positive charge and acts as deactivating group.

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

Options :

4058594023. Both statement I and statement II are true

4058594024. Both statement I and statement II are false

4058594025. Statement I is true but statement II is false

4058594026. Statement I is false but statement II is true

Question Number : 79 Question Id : 4058591273 Question Type : MCQ Option Shuffling : Yes 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 : ऐनिलीन सान्द्र H_2SO_4 से क्रिया करने तदोपरान्त 453 - 473 K पर गर्म करने पर p-ऐमीनोबेन्जीन सल्फोनिक अम्ल देता है जो 'लैसें परीक्षण' में रक्त जैसा लाल रंग देता है।

कथन II : फ्रीडेल-क्राफ्ट ऐल्किलीकरण एवं ऐसिलीकरण अभिक्रियाओं में, AlCl_3 उत्प्रेरक के साथ, ऐनिलीन एक लवण बनाता है। इसके कारण ऐनिलीन का नाइट्रोजन धनावेश प्राप्त करता है तथा एक निष्क्रियकारी समूह के रूप में कार्य करता है।

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

Options :

4058594023. दोनों कथन I तथा कथन II सही हैं।

4058594024. दोनों कथन I तथा कथन II गलत हैं।

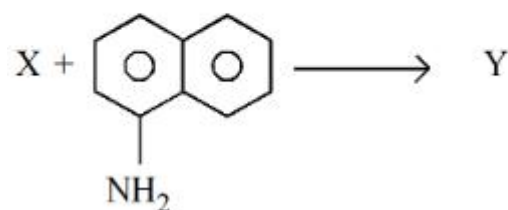
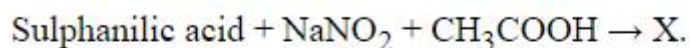
4058594025. कथन I सही है परन्तु कथन II गलत है।

4058594026. कथन I गलत है परन्तु कथन II सही है।

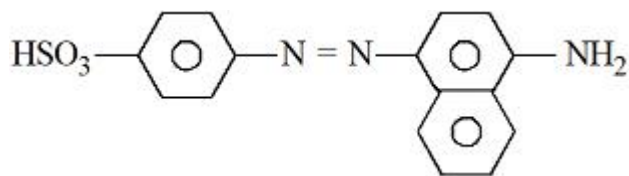
Question Number : 80 Question Id : 4058591274 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

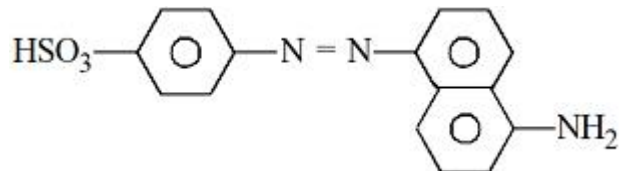
The azo-dye (Y) formed in the following reactions is



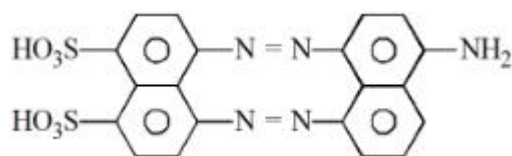
Options :



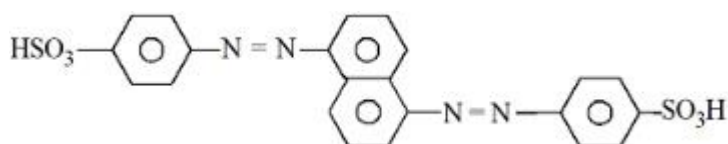
4058594027.



4058594028.



4058594029.

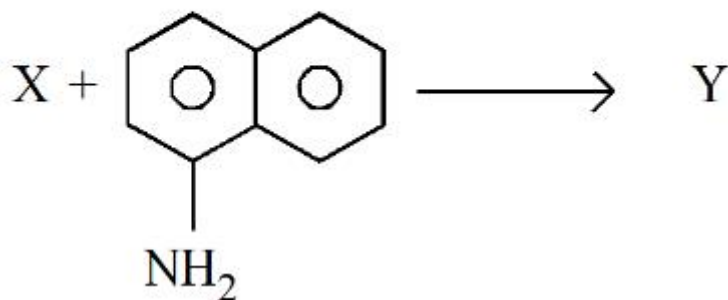
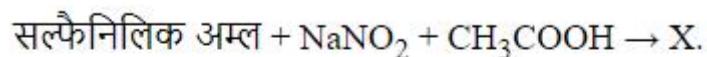


4058594030.

Question Number : 80 Question Id : 4058591274 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

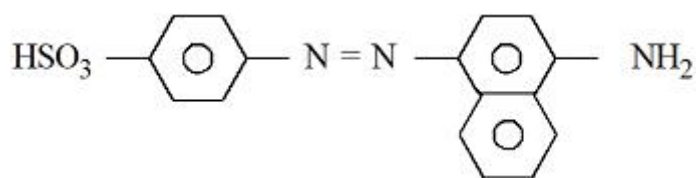
Correct Marks : 4 Wrong Marks : 1

निम्न अभिक्रिया में निर्मित ऐज़ो रंजक (Y) है:

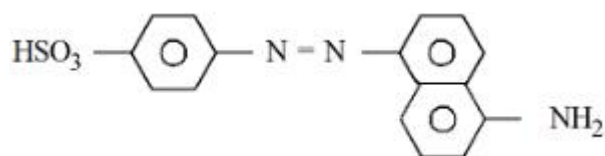


Options :

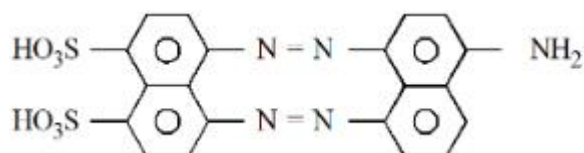
4058594027.



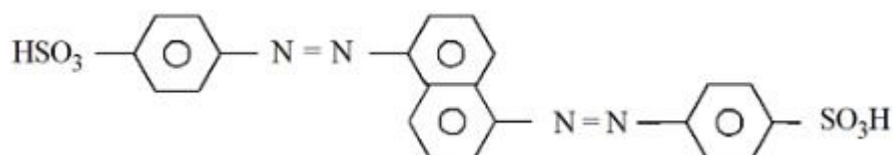
4058594028.



4058594029.



4058594030.



Chemistry Section B

Section Id :	40585979
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 :	40585979

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 81 Question Id : 4058591275 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

A diatomic molecule has a dipole moment of 1.2 D. If the bond distance is $1\text{\AA}$, then fractional charge on each atom is _____ $\times 10^{-1}$ esu.

(Given $1\text{ D} = 10^{-18}$ esucm)

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 : 4058591275 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 का द्विध्रुव आधूर्ण 1.2 D है। यदि आबन्ध दूरी $1\text{\AA}$ है तो प्रत्येक परमाणु पर आंशिक आवेश है: _____ $\times 10^{-1}$ esu.

(दिया गया है: $1\text{ D} = 10^{-18}$ esu cm)

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 : 4058591276 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

If 5 moles of an ideal gas expands from 10 L to a volume of 100 L at 300 K under isothermal and reversible condition then work, w , is $-x$ J. The value of x is _____.

(Given $R = 8.314 \text{ J K}^{-1} \text{ mol}^{-1}$)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 82 Question Id : 4058591276 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 आदर्श गैस के 5 मोल 300 K पर समतापी एवं उत्क्रमणीय परिस्थितियों में 10 L से 100 L आयतन तक विस्तारित होती है तो कार्य $w - x$ J है। x का मान है: _____.

(दिया गया है: $R = 8.314 \text{ J K}^{-1} \text{ mol}^{-1}$)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 83 Question Id : 4058591277 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

The molarity of 1 L orthophosphoric acid (H_3PO_4) having 70% purity by weight (specific gravity 1.54 g cm^{-3}) is _____ M.
(Molar mass of $\text{H}_3\text{PO}_4 = 98 \text{ g mol}^{-1}$)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 83 Question Id : 4058591277 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

1 L आर्थोफ़ॉस्फोरिक अम्ल (H_3PO_4) जिसकी भार के अनुसार शुद्धता 70% है (विशिष्ट घनत्व $= 1.54 \text{ g cm}^{-3}$), की मोलरता है: _____ M.
(H_3PO_4 का मोलर द्रव्यमान $= 98 \text{ g mol}^{-1}$)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 84 Question Id : 4058591278 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

The values of conductivity of some materials at 298.15 K in Sm^{-1} are 2.1×10^3 , 1.0×10^{-16} , 1.2×10 , 3.91, 1.5×10^{-2} , 1×10^{-7} , 1.0×10^3 . The number of conductors among the materials is _____.

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 :** 4058591278 **Question Type :** SA **Calculator :** None

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

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

कुछ पदार्थों के 298.15 K पर Sm^{-1} में चालकता मान हैं: 2.1×10^3 , 1.0×10^{-16} , 1.2×10 , 3.91, 1.5×10^{-2} , 1×10^{-7} , 1.0×10^3 । दिए गए पदार्थों में चालकों 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 : 85 **Question Id :** 4058591279 **Question Type :** SA **Calculator :** None

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

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

$r = k[A]$ for a reaction, 50% of A is decomposed in 120 minutes. The time taken for 90% decomposition of A is _____ minutes.

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 : 4058591279 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

$r = k[A]$ किसी अभिक्रिया में A का 50% 120 मिनटों में अपघटित हो जाता है। A के 90% अपघटन में लगा समय है: _____ मिनट.

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 : 4058591280 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Number of moles of H^+ ions required by 1 mole of MnO_4^- to oxidise oxalate ion to CO_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 : 86 Question Id : 4058591280 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

1 मोल MnO_4^- द्वारा ऑक्सैलेट आयन को CO_2 में ऑक्सीकृत करने में आवश्यक H^+ के मोलों 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 : 87 Question Id : 4058591281 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 isomeric products formed by monochlorination of 2-methylbutane in presence of sunlight is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 87 Question Id : 4058591281 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

2-मेथिलब्यूटेन के सूर्यप्रकाश की उपस्थिति में मोनोक्लोरीनेशन द्वारा निर्मित समावयवी उत्पादों की संख्या है: _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 88 **Question Id :** 4058591282 **Question Type :** SA **Calculator :** None

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

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

A compound (x) with molar mass 108 g mol^{-1} undergoes acetylation to give product with molar mass 192 g mol^{-1} . The number of amino groups in the compound (x) is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 88 **Question Id :** 4058591282 **Question Type :** SA **Calculator :** None

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

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

मोलर द्रव्यमान 108 g mol^{-1} वाला एक यौगिक ऐसीटिलीकरण पर मोलर द्रव्यमान 192 g mol^{-1} वाला उत्पाद देता है। यौगिक (x) में ऐमीनो समूहों की संख्या है: _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 89 Question Id : 4058591283 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

From the vitamins A, B₁, B₆, B₁₂, C, D, E and K, the number of vitamins that can be stored in our body is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 89 Question Id : 4058591283 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

विटामिन A, B₁, B₆, B₁₂, C, D, E एवं K में से अपने शरीर में संग्रहीत किए जा सकने वाले विटामिनों की संख्या है: _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 90 Question Id : 4058591284 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

In the reaction of potassium dichromate, potassium chloride and sulfuric acid (conc.), the oxidation state of the chromium in the product is (+)_____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 90 **Question Id :** 4058591284 **Question Type :** SA **Calculator :** None

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

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

पोटैशियम डाइक्रोमेट, पोटैशियम क्लोराइड एवं सान्द्र सल्फ्यूरिक अम्ल की अभिक्रिया से निर्मित होने वाले उत्पाद में क्रोमियम की ऑक्सीकरण अवस्था है (+) _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1