National Testing Agency

Question Paper Name :	NEW 133 OLD 34 NEW ORDER1
Subject Name :	B TECH
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B E and B Tech

Group Number :	1
Group Id :	36669443
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Show Attended Group? :	No
Edit Attended Group? :	No
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Is this Group for Examiner? :	No
Examiner permission :	Cant View
Show Progress Bar? :	No

Mathematics Section A

Section Id :	366694240
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 :	366694240
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 1 Question Id : 3666944175 Question Type : MCQ Option Shuffling : Yes 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 organization awarded 48 medals in event 'A', 25 in event 'B' and 18 in event 'C'. If these medals went to total 60 men and only five men got medals in all the three events, then, how many received medals in exactly two of three events?

Options :

36669412981. 15

36669412982. 9

36669412983. 10

36669412984. 21

Question Number : 1 Question Id : 3666944175 Question Type : MCQ Option Shuffling : Yes 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 संस्था ने प्रतियोगिता A में 48 पदक, प्रतियोगिता B में 25 पदक तथा प्रतियोगिता C में 18 पदक दिए। यदि यह पदक कुल 60 पुरुषों को मिले तथा केवल पाँच पुरुषों को तीनों प्रतियोगिताओं में पदक मिले, तो कितने पुरुषों को ठीक दो प्रतियोगिताओं में पदक मिले?

Options :

36669412981. 15

36669412982. 9

36669412983. 10

36669412984. 21

Question Number : 2 Question Id : 3666944176 Question Type : MCQ Option Shuffling : Yes 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 image of the point P (2, 3, 5) in the plane $2x + y - 3z = 6$. Then $\alpha + \beta + \gamma$ is equal to

Options :

36669412985. 12

36669412986. 10

36669412987. 9

36669412988. 5

Question Number : 2 Question Id : 3666944176 Question Type : MCQ Option Shuffling : Yes 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 P (2, 3, 5) का समतल $2x + y - 3z = 6$ में प्रतिबिंब (α, β, γ) है । तो $\alpha + \beta + \gamma$ बराबर है:

Options :

36669412985. 12

36669412986. 10

36669412987. 9

36669412988. 5

Question Number : 3 Question Id : 3666944177 Question Type : MCQ Option Shuffling : Yes 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 ellipses $E_k : kx^2 + k^2y^2 = 1$, $k = 1, 2, ..., 20$. Let C_k be the circle which touches the four chords joining the end points (one on minor axis and another on major axis) of the ellipse E_k. If r_k is the radius of the circle C_k, then the value of $\sum_{k=1}^{20} \frac{1}{r_k^2}$ is

Options :

36669412989. 2870

36669412990. 3080

36669412991. 3210

36669412992. 3320

Question Number : 3 Question Id : 3666944177 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

दीर्घवृत्तों $E_k : kx^2 + k^2y^2 = 1, k = 1, 2,..., 20$ का विचार कीजिए । माना C_k वह वृत्त है, जो दीर्घवृत्त E_k के अन्त्य बिंदुओं (एक लघु अक्ष पर तथा दूसरा दीर्घ अक्ष पर) को मिलाने वाली चार जीवाओं को स्पर्श करता है । यदि वृत्त C_k की त्रिज्या r_k है, तो $\sum_{k=1}^{20} \frac{1}{r_k^2}$ का मान है:

Options :

36669412989. 2870

36669412990. 3080

36669412991. 3210

36669412992. 3320

Question Number : 4 Question Id : 3666944178 Question Type : MCQ Option Shuffling : Yes 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 triplets (x, y, z), where x, y, z are distinct non negative integers satisfying $x + y + z = 15$, is

Options :

36669412993. 136

36669412994. 114

36669412995. 92

36669412996. 80

Question Number : 4 Question Id : 3666944178 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

त्रिकों (x, y, z), जहाँ x, y, z भिन्न ऋणेत्तर पूर्णांक हैं तथा $x + y + z = 15$ को संतुष्ट करते हैं,
की संख्या है:

Options :

36669412993. 136

36669412994. 114

36669412995. 92

36669412996. 80

Question Number : 5 Question Id : 3666944179 Question Type : MCQ Option Shuffling : Yes 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 integral solutions x of $\log_{\left(x+\frac{7}{2}\right)}\left(\frac{x-7}{2x-3}\right)^2 \geq 0$ is

Options :

36669412997. 8

36669412998. 7

36669412999. 6

36669413000. 5

Question Number : 5 Question Id : 3666944179 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

$\log_{\left(x+\frac{7}{2}\right)}\left(\frac{x-7}{2x-3}\right)^2 \geq 0$ के पूर्णांक हलों x की संख्या है

Options :

36669412997. 8

36669412998. 7

36669412999. 6

36669413000. 5

Question Number : 6 Question Id : 3666944180 Question Type : MCQ Option Shuffling : Yes 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 2×2 matrix with real entries such that $A' = \alpha A + I$, where $\alpha \in \mathbb{R} - \{-1, 1\}$. If $\det(A^2 - A) = 4$, then the sum of all possible values of α is equal to

Options :

36669413001. $\frac{5}{2}$

36669413002. $\frac{3}{2}$

36669413003. 2

36669413004. 0

Question Number : 6 Question Id : 3666944180 Question Type : MCQ Option Shuffling : Yes 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 वास्तविक अवयवों का एक 2×2 आव्यूह है जिसके लिए $A' = \alpha A + I$ है,
$\alpha \in \mathbb{R} - \{-1, 1\}$ है। यदि $\det(A^2 - A) = 4$ है, तो α के सभी संभव मानों का योग बराबर है

Options :

36669413001. $\frac{5}{2}$

36669413002. $\frac{3}{2}$

36669413003. 2

36669413004. 0

Question Number : 7 Question Id : 3666944181 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Let $f(x) = [x^2 - x] + |-x + [x]|$, where $x \in \mathbb{R}$ and $[t]$ denotes the greatest integer less than or equal to t. Then, f is

Options :

36669413005. not continuous at $x=0$ and $x=1$

36669413006. continuous at $x=0$ and $x=1$

36669413007. continuous at $x=0$, but not continuous at $x=1$

36669413008. continuous at $x=1$, but not continuous at $x=0$

Question Number : 7 Question Id : 3666944181 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

माना $f(x)=[x^2-x]+|-x+[x]|$ है, जहाँ $x \in \mathbb{R}$ है तथा $[t]$ महत्तम पूर्णांक $\leq t$ है । तो f

Options :

36669413005. $x=0$ तथा $x=1$ पर संतत नहीं है

36669413006. $x=0$ तथा $x=1$ पर संतत है

36669413007. $x=0$ पर संतत है, परन्तु $x=1$ पर संतत नहीं है

36669413008. $x=1$ पर संतत है, परन्तु $x=0$ पर संतत नहीं है

Question Number : 8 Question Id : 3666944182 Question Type : MCQ Option Shuffling : Yes 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 equation of the plane that contains the point $(-2,3,5)$ and is perpendicular to each of the planes $2x+4y+5z=8$ and $3x-2y+3z=5$ is $\alpha x+\beta y+\gamma z+97=0$ then $\alpha+\beta+\gamma=$

Options :

36669413009. 15

36669413010. 16

36669413011. 17

36669413012. 18

Question Number : 8 Question Id : 3666944182 Question Type : MCQ Option Shuffling : Yes 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 समतल, जिसमें बिंदु $(-2,3,5)$ स्थित है तथा जो दो समतलों $2x + 4y + 5z = 8$ तथा $3x - 2y + 3z = 5$ के लंबवत है, का समीकरण $\alpha x + \beta y + \gamma z + 97 = 0$ है, तो $\alpha + \beta + \gamma =$

Options :

36669413009. 15

36669413010. 16

36669413011. 17

36669413012. 18

Question Number : 9 Question Id : 3666944183 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Area of the region $\{(x,y) : x^2 + (y-2)^2 \leq 4, x^2 \geq 2y\}$ is

Options :

36669413013.

$\pi - \frac{8}{3}$

36669413014. $2\pi - \frac{16}{3}$

36669413015. $\pi + \frac{8}{3}$

36669413016. $2\pi + \frac{16}{3}$

Question Number : 9 Question Id : 3666944183 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

क्षेत्र$\{(x,y) : x^2 + (y-2)^2 \leq 4, x^2 \geq 2y\}$ का क्षेत्रफल है

Options :

36669413013. $\pi - \frac{8}{3}$

36669413014. $2\pi - \frac{16}{3}$

36669413015. $\pi + \frac{8}{3}$

36669413016. $2\pi + \frac{16}{3}$

Question Number : 10 Question Id : 3666944184 Question Type : MCQ Option Shuffling : Yes 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 $f:[2, 4]\rightarrow\mathbb{R}$ be a differentiable function such that

$(x\log_e x)\, f'(x)+(\log_e x)\, f(x)+f(x)\geq 1, x\in[2,4]$ with $f(2)=\frac{1}{2}$ and

$f(4)=\frac{1}{4}$.

Consider the following two statements :

(A) : $f(x)\leq 1$, for all $x\in[2, 4]$

(B) : $f(x)\geq\frac{1}{8}$, for all $x\in[2, 4]$

Then,

Options :

36669413017. Only statement (A) is true

36669413018. Only statement (B) is true

36669413019. Both the statements (A) and (B) are true

36669413020. Neither statement (A) nor statement (B) is true

Question Number : 10 Question Id : 3666944184 Question Type : MCQ Option Shuffling : Yes 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 $f:[2, 4]\to\mathbb{R}$ एक अवकलनीय फलन है, जिसके लिए

$(x\log_e x) f'(x)+(\log_e x) f(x)+f(x)\geq 1, x\in[2,4]$, $f(2)=\frac{1}{2}$ तथा $f(4)=\frac{1}{4}$ हैं ।

निम्न दो कथनों का विचार कीजिए :

(A) सभी $x\in[2, 4]$ के लिए $f(x)\leq 1$ है ।

(B) सभी $x\in[2, 4]$ के लिए $f(x)\geq\frac{1}{8}$ है ।

तो

Options :

36669413017. केवल कथन (A) सत्य है

36669413018. केवल कथन (B) सत्य है

36669413019. (A) तथा (B) दोनों कथन सत्य हैं

36669413020. न तो कथन (A) न ही कथन (B) सत्य है

Question Number : 11 Question Id : 3666944185 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Let $\vec{a}$ be a non-zero vector parallel to the line of intersection of the two planes described by $\hat{i}+\hat{j}, \hat{i}+\hat{k}$ and $\hat{i}-\hat{j}, \hat{j}-\hat{k}$. If θ is the angle between the vector $\vec{a}$ and the vector $\vec{b}=2\hat{i}-2\hat{j}+\hat{k}$ and $\vec{a}\cdot\vec{b}=6$, then the ordered pair $\left(\theta, \left|\vec{a}\times\vec{b}\right|\right)$ is equal to

Options :

36669413021. $\left(\frac{\pi}{4}, 3\sqrt{6}\right)$

36669413022.

$\left(\frac{\pi}{3},\ 6\right)$

36669413023. $\left(\frac{\pi}{3},\ 3\sqrt{6}\right)$

36669413024. $\left(\frac{\pi}{4},\ 6\right)$

Question Number : 11 Question Id : 3666944185 Question Type : MCQ Option Shuffling : Yes 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 $\hat{i}+\hat{j}, \hat{i}+\hat{k}$ तथा $\hat{i}-\hat{j}, \hat{j}-\hat{k}$ द्वारा दिए गए दो समतलों की प्रतिच्छेदन रेखा के समांतर एक शून्येतर सदिश $\vec{a}$ है। यदि सदिश $\vec{a}$ तथा सदिश $\vec{b}=2\hat{i}-2\hat{j}+\hat{k}$ के बीच कोण θ है तथा $\vec{a}\cdot\vec{b}=6$ है, तो क्रमित युग्म $\left(\theta, \left|\vec{a}\times\vec{b}\right|\right)$ बराबर है

Options :

36669413021. $\left(\frac{\pi}{4},\ 3\sqrt{6}\right)$

36669413022. $\left(\frac{\pi}{3},\ 6\right)$

36669413023. $\left(\frac{\pi}{3},\ 3\sqrt{6}\right)$

36669413024. $\left(\frac{\pi}{4},\ 6\right)$

Question Number : 12 Question Id : 3666944186 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

For any vector $\vec{a} = a_1\hat{i} + a_2\hat{j} + a_3\hat{k}$, with $10|a_i| < 1, i = 1, 2, 3,$

consider the following statements :

(A) : $\max\{|a_1|, |a_2|, |a_3|\} \le |\vec{a}|$

(B) : $|\vec{a}| \le 3\max\{|a_1|, |a_2|, |a_3|\}$

Options :

36669413025. Only (A) is true

36669413026. Only (B) is true

36669413027. Both (A) and (B) are true

36669413028. Neither (A) nor (B) is true

Question Number : 12 Question Id : 3666944186 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

किसी भी सदिश $\vec{a} = a_1\hat{i} + a_2\hat{j} + a_3\hat{k}$, , $10|a_i| < 1, i = 1, 2, 3$ के लिए निम्न कथनों का विचार कीजिएः

(A) : $\max\{|a_1|, |a_2|, |a_3|\} \le |\vec{a}|$ है

(B) : $|\vec{a}| \le 3\max\{|a_1|, |a_2|, |a_3|\}$ है

तो

Options :

36669413025. केवल (A) सत्य है

36669413026. केवल (B) सत्य है

36669413027. (A) तथा (B) दोनों सत्य हैं

36669413028. न तो (A) न ही (B) सत्य है

Question Number : 13 Question Id : 3666944187 Question Type : MCQ Option Shuffling : Yes 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 $x_1, x_2, ..., x_{100}$ be in an arithmetic progression, with $x_1=2$ and their mean equal to 200. If $y_i = i(x_i - i)$, $1 \leq i \leq 100$, then the mean of $y_1, y_2, ..., y_{100}$ is

Options :

36669413029. 10051.50

36669413030. 10049.50

36669413031. 10101.50

36669413032. 10100

Question Number : 13 Question Id : 3666944187 Question Type : MCQ Option Shuffling : Yes 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 $x_1, x_2..., x_{100}$ एक समांतर श्रेणी में हैं, जिनका माध्य 200 है तथा $x_1=2$ है । यदि $y_i = i(x_i - i), 1 \leq i \leq 100$ हैं, तो $y_1, y_2, ..., y_{100}$ का माध्य है

Options :

36669413029. 10051.50

36669413030. 10049.50

36669413031. 10101.50

36669413032. 10100

Question Number : 14 Question Id : 3666944188 Question Type : MCQ Option Shuffling : Yes 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 w_1 be the point obtained by the rotation of $z_1 = 5 + 4i$ about the origin through a right angle in the anticlockwise direction, and w_2 be the point obtained by the rotation of $z_2 = 3+5i$ about the origin through a right angle in the clockwise direction. Then the principal argument of $w_1 - w_2$ is equal to

Options :

36669413033. $\pi - \tan^{-1}\frac{33}{5}$

36669413034. $-\pi + \tan^{-1}\frac{33}{5}$

36669413035. $\pi - \tan^{-1}\frac{8}{9}$

36669413036. $-\pi + \tan^{-1}\frac{8}{9}$

Question Number : 14 Question Id : 3666944188 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

माना $z_1 = 5 + 4i$ को मूल बिंदु के सापेक्ष घड़ी की विपरीत दिशा में एक समकोण तक घुमाने पर बिंदु w_1 प्राप्त होता है तथा $z_2 = 3+5i$ को मूलबिंदु के सापेक्ष घड़ी की दिशा में एक समकोण तक घुमाने पर बिंदु w_2 प्राप्त होता है । तो $w_1 - w_2$ का मुख्य आयाम बराबर है

Options :

36669413033. $\pi - \tan^{-1}\frac{33}{5}$

36669413034. $-\pi + \tan^{-1}\frac{33}{5}$

36669413035. $\pi - \tan^{-1}\frac{8}{9}$

36669413036. $-\pi + \tan^{-1}\frac{8}{9}$

Question Number : 15 Question Id : 3666944189 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The value of the integral $\int_{-\log_e 2}^{\log_e 2} e^x\left(\log_e\left(e^x+\sqrt{1+e^{2x}}\right)\right)dx$ is equal to

Options :

36669413037. $\log_e\left(\frac{(2+\sqrt{5})^2}{\sqrt{1+\sqrt{5}}}\right)+\frac{\sqrt{5}}{2}$

36669413038. $\log_e\left(\frac{\sqrt{2}\left(2+\sqrt{5}\right)^2}{\sqrt{1+\sqrt{5}}}\right)-\frac{\sqrt{5}}{2}$

36669413039. $\log_e\left(\frac{2\left(2+\sqrt{5}\right)}{\sqrt{1+\sqrt{5}}}\right)-\frac{\sqrt{5}}{2}$

36669413040. $\log_e\left(\frac{\sqrt{2}\left(3-\sqrt{5}\right)^2}{\sqrt{1+\sqrt{5}}}\right)+\frac{\sqrt{5}}{2}$

Question Number : 15 Question Id : 3666944189 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

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

Options :

36669413037. $\log_e\left(\frac{\left(2+\sqrt{5}\right)^2}{\sqrt{1+\sqrt{5}}}\right)+\frac{\sqrt{5}}{2}$

36669413038. $\log_e\left(\frac{\sqrt{2}\left(2+\sqrt{5}\right)^2}{\sqrt{1+\sqrt{5}}}\right)-\frac{\sqrt{5}}{2}$

36669413039. $\log_e\left(\frac{2\left(2+\sqrt{5}\right)}{\sqrt{1+\sqrt{5}}}\right)-\frac{\sqrt{5}}{2}$

36669413040.

$\log_e\left(\frac{\sqrt{2}\left(3-\sqrt{5}\right)^2}{\sqrt{1+\sqrt{5}}}\right)+\frac{\sqrt{5}}{2}$

Question Number : 16 Question Id : 3666944190 Question Type : MCQ Option Shuffling : Yes 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 elements in the set

$S=\left\{\theta\in[0,2\pi]:3\cos^4\theta-5\cos^2\theta-2\sin^6\theta+2=0\right\}$ is

Options :

36669413041. 8

36669413042. 9

36669413043. 10

36669413044. 12

Question Number : 16 Question Id : 3666944190 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

समुच्चय $S=\left\{\theta\in[0,2\pi]:3\cos^4\theta-5\cos^2\theta-2\sin^6\theta+2=0\right\}$ में अवयवों की संख्या है

Options :

36669413041. 8

36669413042. 9

36669413043. 10

36669413044. 12

Question Number : 17 Question Id : 3666944191 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Let $S = \{M = [a_{ij}],\ a_{ij} \in \{0, 1, 2\},\ 1 \leq i, j \leq 2\}$ be a sample space and $A = \{M \in S : M$ is invertible$\}$ be an event. Then $P(A)$ is equal to

Options :

36669413045. $\frac{47}{81}$

36669413046. $\frac{16}{27}$

36669413047. $\frac{49}{81}$

36669413048. $\frac{50}{81}$

Question Number : 17 Question Id : 3666944191 Question Type : MCQ Option Shuffling : Yes 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 $S = \{M = [a_{ij}],\ a_{ij} \in \{0, 1, 2\},\ 1 \leq i, j \leq 2\}$ एक प्रतिदर्श समष्टि है तथा $A = \{M \in S : M$ व्युत्क्रमणीय है$\}$, एक घटना है । तो $P(A)$ बराबर है

Options :

36669413045. $\frac{47}{81}$

36669413046. $\frac{16}{27}$

36669413047. $\frac{49}{81}$

36669413048. $\frac{50}{81}$

Question Number : 18 Question Id : 3666944192 Question Type : MCQ Option Shuffling : Yes 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 sets A and B have 5 elements each. Let the mean of the elements in sets A and B be 5 and 8 respectively and the variance of the elements in sets A and B be 12 and 20 respectively. A new set C of 10 elements is formed by subtracting 3 from each element of A and adding 2 to each element of B. Then the sum of the mean and variance of the elements of C is ___________.

Options :

36669413049. 38

36669413050. 32

36669413051. 36

36669413052. 40

Question Number : 18 Question Id : 3666944192 Question Type : MCQ Option Shuffling : Yes 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 समुच्चय A में 5 अवयव है तथा समुच्चय B में भी 5 अवयव हैं। माना समुच्चयों A तथा B के अवयवों के माध्य क्रमश: 5 तथा 8 है और समुच्चयों A तथा B के अवयवों के प्रसरण क्रमश: 12 तथा 20 है। A के प्रत्येक अवयव में से 3 घटा कर तथा B के प्रत्येक अवयव में 2 जोड़ कर 10 अवयवों का एक नया समुच्चय C बनाया जाता है। तो C के अवयवों के माध्य तथा प्रसरण का योग है :

Options :

36669413049. 38

36669413050. 32

36669413051. 36

36669413052. 40

Question Number : 19 Question Id : 3666944193 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Let R be a rectangle given by the lines $x = 0$, $x = 2$, $y = 0$ and $y = 5$. Let A(α, 0) and B (0, β), $\alpha \in [0, 2]$ and $\beta \in [0, 5]$, be such that the line segment AB divides the area of the rectangle R in the ratio 4:1. Then, the mid-point of AB lies on a

Options :

36669413053. straight line

36669413054. parabola

36669413055. hyberbola

36669413056. circle

Question Number : 19 Question Id : 3666944193 Question Type : MCQ Option Shuffling : Yes 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 रेखाओं $x = 0$, $x = 2$, $y = 0$ तथा $y = 5$ द्वारा निर्मित आयत R है । माना A(α, 0) तथा B (0, β), $\alpha \in [0, 2]$, $\beta \in [0, 5]$ इस प्रकार हैं कि रेखाखंड AB आयत R के क्षेत्रफल को 4:1 के अनुपात में बाँटती है । तो AB का मध्य बिंदु एक

Options :

36669413053. सरल रेखा पर है

36669413054. परवलय पर है

36669413055. अतिपरवलय पर है

36669413056. वृत्त पर है

Question Number : 20 Question Id : 3666944194 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

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

$(1 - x^2y^2)\, dx = ydx + xdy.$

If the line $x = 1$ intersects the curve $y = y(x)$ at $y = 2$ and the line $x = 2$ intersects the curve $y = y(x)$ at $y = \alpha$, then a value of α is

Options :

36669413057. $\frac{3e^2}{2(3e^2 - 1)}$

36669413058.

$\frac{1-3e^2}{2(3e^2+1)}$

36669413059. $\frac{1+3e^2}{2(3e^2-1)}$

36669413060. $\frac{3e^2}{2(3e^2+1)}$

Question Number : 20 Question Id : 3666944194 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

माना अवकल समीकरण

$(1-x^2y^2)\, dx = ydx + xdy$

का हल वक्र $y = y(x)$ है । यदि रेखा $x = 1$, वक्र $y = y(x)$ को $y = 2$ पर काटती है तथा रेखा $x = 2$, वक्र $y = y(x)$ को $y = \alpha$ पर काटती है, तो α का एक मान है

Options :

36669413057. $\frac{3e^2}{2(3e^2-1)}$

36669413058. $\frac{1-3e^2}{2(3e^2+1)}$

36669413059. $\frac{1+3e^2}{2(3e^2-1)}$

36669413060. $\frac{3e^2}{2(3e^2+1)}$

Mathematics Section B

Section Id :	366694241
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 :	366694241
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 21 Question Id : 3666944195 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

The mean of the coefficients of $x, x^2, \ldots, x^7$ in the binomial expansion of $(2 + x)^9$ is

_____________.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 21 Question Id : 3666944195 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

$(2+x)^9$ के द्विपद प्रसार में $x, x^2,..., x^7$ के गुणांकों का माध्य ______________ है ।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 22 Question Id : 3666944196 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Let a line l pass through the origin and be perpendicular to the lines

$l_1 : \vec{r} = \left(\hat{i} - 11\hat{j} - 7\hat{k}\right) + \lambda\left(\hat{i} + 2\hat{j} + 3\hat{k}\right), \lambda \in \mathbb{R}$ and

$l_2 : \vec{r} = \left(-\hat{i} + \hat{k}\right) + \mu\left(2\hat{i} + 2\hat{j} + \hat{k}\right), \mu \in \mathbb{R}$.

If P is the point of intersection of l and l_1, and Q $(\propto, \beta, \gamma)$ is the foot of perpendicular from P on l_2, then $9(\propto + \beta + \gamma)$ is equal to ___________.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 22 Question Id : 3666944196 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 रेखा l मूल बिंदु से होकर जाती है तथा रेखाओं

$$l_1 : \vec{r} = \left(\hat{i} - 11\hat{j} - 7\hat{k}\right) + \lambda\left(\hat{i} + 2\hat{j} + 3\hat{k}\right), \lambda \in \mathbb{R},$$

$$l_2 : \vec{r} = \left(-\hat{i} + \hat{k}\right) + \mu\left(2\hat{i} + 2\hat{j} + \hat{k}\right), \mu \in \mathbb{R}$$

के लंबवत है। यदि l तथा l_1 का प्रतिच्छेदन बिंदु P है तथा P से l_2 पर लंब का पाद Q (α, β, γ) है, तो $9(\alpha+\beta+\gamma)$ बराबर ___________ है।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 23 Question Id : 3666944197 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

The number of ordered triplets of the truth values of p, q and r such that the truth value of the statement $(p \vee q) \wedge (p \vee r) \Rightarrow (q \vee r)$ is True, is equal to __________

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 23 Question Id : 3666944197 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

p, q तथा r के सत्यमानों के क्रमित त्रिकों, जिनके लिए कथन $(p \vee q) \wedge (p \vee r) \Rightarrow (q \vee r)$ का सत्यमान True है, की संख्या बराबर ________ है ।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 24 Question Id : 3666944198 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

If a and b are the roots of the equation $x^2 - 7x - 1 = 0$, then the value of $\frac{a^{21} + b^{21} + a^{17} + b^{17}}{a^{19} + b^{19}}$ is equal to __________.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 24 Question Id : 3666944198 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

यदि समीकरण $x^2 - 7x - 1 = 0$ के मूल a तथा b हैं, तो $\frac{a^{21} + b^{21} + a^{17} + b^{17}}{a^{19} + b^{19}}$ का मान बराबर ________ है ।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 25 Question Id : 3666944199 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Let $S = 109 + \frac{108}{5} + \frac{107}{5^2} + ... + \frac{2}{5^{107}} + \frac{1}{5^{108}}$. Then the value of $\left(16S - (25)^{-54}\right)$ is equal to ___________

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 25 Question Id : 3666944199 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

माना $S = 109 + \frac{108}{5} + \frac{107}{5^2} + ... + \frac{2}{5^{107}} + \frac{1}{5^{108}}$ है। तो $\left(16S - (25)^{-54}\right)$ का मान बराबर ___________ है।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 26 Question Id : 3666944200 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

For $m, n > 0$, let $\alpha(m,n) = \int_0^2 t^m (1+3t)^n dt$. If $11\,\alpha(10,6) + 18\,\alpha(11,5) = p\,(14)^6$, then p is equal to _____________.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 26 Question Id : 3666944200 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

$m, n > 0$ के लिए माना $\alpha(m,n) = \int_0^2 t^m (1+3t)^n dt$ है । यदि

$11\,\alpha(10,6) + 18\,\alpha(11,5) = p\,(14)^6$ तो p बराबर _____________ है ।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 27 Question Id : 3666944201 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

The number of integral terms in the expansion of $\left(3^{\frac{1}{2}}+5^{\frac{1}{4}}\right)^{680}$ is equal to

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 27 Question Id : 3666944201 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

$\left(3^{\frac{1}{2}}+5^{\frac{1}{4}}\right)^{680}$ के प्रसार में पूर्णांक पदों की संख्या है ________

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 28 Question Id : 3666944202 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Let $H_n : \frac{x^2}{1+n} - \frac{y^2}{3+n} = 1$, $n \in N$. Let k be the smallest even value of n such that the eccentricity of H_k is a rational number. If l is the length of the latus rectum of H_k, then $21l$ is equal to________________

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 28 Question Id : 3666944202 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

माना $H_n : \frac{x^2}{1+n} - \frac{y^2}{3+n} = 1$, $n \in N$ हैं। माना k, n का वह न्यूनतम सम मान है जिसके लिए H_k की उत्केन्द्रता एक परिमेय संख्या है। यदि H_k की नाभिलंब जीवा की लंबाई l है, तो $21l$ बराबर ________________ है।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 29 Question Id : 3666944203 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Let $A=\begin{bmatrix}0 & 1 & 2\\ a & 0 & 3\\ 1 & c & 0\end{bmatrix}$, where a, c $\in \mathbb{R}$. If $A^3 = A$ and the positive value of a belongs to the interval $(n-1, n]$, where $n \in \mathbb{N}$, then n is equal to ____________.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 29 Question Id : 3666944203 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

माना $A=\begin{bmatrix}0 & 1 & 2\\ a & 0 & 3\\ 1 & c & 0\end{bmatrix}$, a, c $\in \mathbb{R}$ है । यदि $A^3=A$ है तथा a का घनात्मक मान अंतराल $(n-1, n]$ में है, जहाँ $n \in \mathbb{N}$ है, तो n बराबर ____________ है ।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 30 Question Id : 3666944204 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

In an examination, 5 students have been allotted their seats as per their roll numbers. The number of ways, in which none of the students sits on the allotted seat, is______________.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 30 Question Id : 3666944204 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

एक परीक्षा में 5 छात्रों को उनके रोल नंबर के अनुसार सीट दी गई है। उन तरीकों, जिनमें कोई भी छात्र दी गई सीट पर नहीं बैठता है, की संख्या है ______________.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Physics Section A

Section Id :	366694242
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 :	366694242
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 31 Question Id : 3666944205 Question Type : MCQ Option Shuffling : Yes 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 transmitting antenna is kept on the surface of the earth. The minimum height of receiving antenna required to receive the signal in line of sight at 4 km distance from it is $x \times 10^{-2}$ m. The value of x is __________.

(Let, radius of earth R = 6400 km)

Options :

36669413071. 1.25

36669413072. 12.5

36669413073. 125

36669413074. 1250

Question Number : 31 Question Id : 3666944205 Question Type : MCQ Option Shuffling : Yes 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 प्रेषक ऐंटिना को पृथ्वी के तल पर रखा गया है। इससे 4 km की दूरी पर दृष्टि रेखीय सिग्नल प्राप्त करने के लिए ग्राही ऐंटिना टॉवर (इमारत) की आवश्यक न्यूनतम ऊँचाई $x \times 10^{-2}$ m है। x का मान है:

(माना, पृथ्वी की त्रिज्या $R = 6400 \text{ km}$)

Options :

36669413071. 1.25

36669413072. 12.5

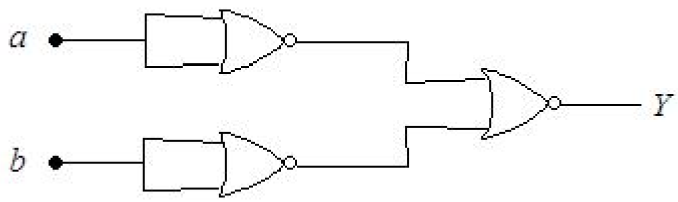
36669413073. 125

36669413074. 1250

Question Number : 32 Question Id : 3666944206 Question Type : MCQ Option Shuffling : Yes 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 logic performed by the circuit shown in figure is equivalent to :



Options :

36669413075. OR

36669413076. NAND

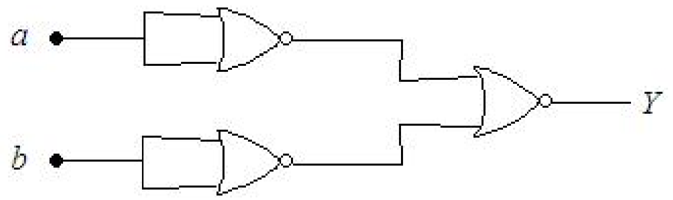
36669413077. AND

36669413078. NOR

Question Number : 32 Question Id : 3666944206 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

चित्र में प्रदर्शित परिपथ द्वारा पूर्ण किया गया तर्क (लॉजिक) निम्न के तुल्य हैः



Options :

36669413075. OR

36669413076. NAND

36669413077. AND

36669413078. NOR

Question Number : 33 Question Id : 3666944207 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Two radioactive elements A and B initially have same number of atoms. The half life of A is same as the average life of B. If λ_A and λ_B are decay constants of A and B respectively, then choose the correct relation from the given options.

Options :

36669413079. $\lambda_A \ln 2 = \lambda_B$

36669413080. $\lambda_A = \lambda_B \ln 2$

36669413081.

$\lambda_A = \lambda_B$

36669413082. $\lambda_A = 2\lambda_B$

Question Number : 33 Question Id : 3666944207 Question Type : MCQ Option Shuffling : Yes 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 रेडियोसक्रिय तत्वों A एवं B के परमाणुओं की संख्या प्रारम्भ में समान है। A की अर्द्धायु, B की औसत आयु के समान है। यदि λ_A एवं λ_B, A एवं B के क्रमशः क्षय नियतांक हैं, तो नीचे दिए गए विकल्पों में से सही सम्बंध चुनिए:

Options :

36669413079. $\lambda_A \ln 2 = \lambda_B$

36669413080. $\lambda_A = \lambda_B \ln 2$

36669413081. $\lambda_A = \lambda_B$

36669413082. $\lambda_A = 2\lambda_B$

Question Number : 34 Question Id : 3666944208 Question Type : MCQ Option Shuffling : Yes 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 metallic surface is illuminated with radiation of wavelength λ, the stopping potential is V_o. If the same surface is illuminated with radiation of wavelength 2λ, the stopping potential becomes $\frac{V_o}{4}$. The threshold wavelength for this metallic surface will be

Options :

36669413083. 4λ

36669413084. $\frac{3}{2}\lambda$

36669413085. 3λ

36669413086. $\frac{\lambda}{4}$

Question Number : 34 Question Id : 3666944208 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

किसी धात्विक तल को λ तरंगदैर्ध्य वाले विकिरण से प्रदीप्त किया जाता है, जिसका रोधी विभव V_o है। यदि इसी तल को 2λ, तरंगदैर्ध्य वाले विकिरण से प्रदीप्त किया जाए तो रोधी विभव $\frac{V_o}{4}$ हो जाता है। इस धात्विक तल के लिए देहली तरंगदैर्ध्य होगीः

Options :

36669413083. 4λ

36669413084. $\frac{3}{2}\lambda$

36669413085. 3λ

36669413086. $\frac{\lambda}{4}$

Question Number : 35 Question Id : 3666944209 Question Type : MCQ Option Shuffling : Yes 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 critical angle for a denser-rarer interface is 45°. The speed of light in rarer medium is 3×10^8 m/s. The speed of light in the denser medium is:

Options :

36669413087. 2.12×10^8 m/s

36669413088. 3.12×10^7 m/s

36669413089. 5×10^7 m/s

36669413090. $\sqrt{2} \times 10^8$ m/s

Question Number : 35 Question Id : 3666944209 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

किसी सघन-विरल अंतरपृष्ठ (interface) के लिए क्रान्तिक कोण 45° है। विरल माध्यम मे प्रकाश की चाल 3×10^8 m/s है। सघन माध्यम में प्रकाश की चाल है:

Options :

36669413087. 2.12×10^8 m/s

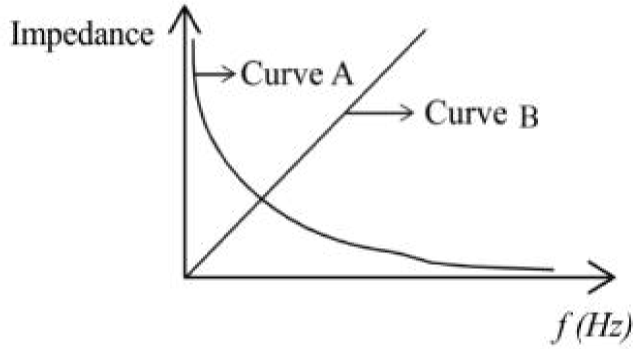
36669413088. 3.12×10^7 m/s

36669413089. 5×10^7 m/s

36669413090. $\sqrt{2} \times 10^8$ m/s

Question Number : 36 Question Id : 3666944210 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1



As per the given graph, choose the correct representation for curve A and curve B.

{Where X_C = reactance of pure capacitive circuit connected with A.C. source

X_L = reactance of pure inductive circuit connected with A.C. source

R = impedance of pure resistive circuit connected with A.C. source.

Z = Impedance of the LCR series circuit}

Options :

36669413091. $A = X_C, B = X_L$

36669413092. $A = X_L, \ B = Z$

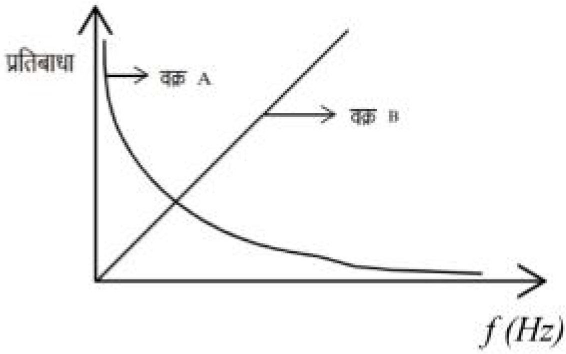
36669413093. $A = X_C, \ B = R$

36669413094. $A = X_L, \ B = R$

Question Number : 36 Question Id : 3666944210 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1



दिए हुए अभिरेख (ग्राफ) के अनुसार, वक्र A एवं वक्र B के लिए सही विकल्प चुनें।

{जहाँ X_C = A.C. (प्रत्यावर्ती) स्रोत से जुडे शुद्ध धारतीय परिपथ का प्रतिघात

X_L = A.C. स्रोत से जुडे हुए शुद्ध प्रेरकीय परिपथ का प्रतिघात

R = A.C. स्रोत से जुडे हुए शुद्ध प्रतिरोधकीय परिपथ की प्रतिबाधा

Z = श्रेणीबद्ध LCR परिपथ की प्रतिबाधा}

Options :

36669413091. $A = X_C, B = X_L$

36669413092. $A = X_L, \; B = Z$

36669413093. $A = X_C, \; B = R$

36669413094. $A = X_L, \; B = R$

Question Number : 37 Question Id : 3666944211 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The electric field in an electromagnetic wave is given as

$$\vec{E} = 20 \sin \omega\left(t - \frac{x}{c}\right)\vec{j}\ NC^{-1}$$

where ω and c are angular frequency and velocity of electromagnetic wave respectively. The energy contained in a volume of $5 \times 10^{-4}\ m^3$ will be

(Given $\varepsilon_0 = 8{\cdot}85 \times 10^{-12}\ C^2/Nm^2$)

Options :

36669413095. $8{\cdot}85 \times 10^{-13}\ J$

36669413096. $88{\cdot}5 \times 10^{-13}\ J$

36669413097. $28{\cdot}5 \times 10^{-13}\ J$

36669413098. $17{\cdot}7 \times 10^{-13}\ J$

Question Number : 37 Question Id : 3666944211 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

किसी विधुत चुम्बकीय तरंग का विधुत क्षेत्र निम्नवत है

$$\vec{E} = 20 \sin \omega\left(t - \frac{x}{c}\right)\vec{j}\ NC^{-1}$$

जहाँ ω एवं c क्रमशः कोणीय आवृत्ति एवं विधुत चुम्बकीय तरंग का वेग हैं। $5 \times 10^{-4}\ m^3$ के आयतन में अंतर्विष्ट (Contained) ऊर्जा होगीः

(दिया है $\varepsilon_0 = 8.85 \times 10^{-12}\ C^2/Nm^2$)

Options :

36669413095. $8{\cdot}85 \times 10^{-13}\ J$

36669413096. $88{\cdot}5 \times 10^{-13}$ J

36669413097. $28{\cdot}5 \times 10^{-13}$ J

36669413098. $17{\cdot}7 \times 10^{-13}$ J

Question Number : 38 Question Id : 3666944212 Question Type : MCQ Option Shuffling : Yes 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 free space inside a current carrying toroid is filled with a material of susceptibility 2×10^{-2}. The percentage increase in the value of magnetic field inside the toroid will be

Options :

36669413099. 2%

36669413100. $0{\cdot}2\%$

36669413101. 1%

36669413102. $0{\cdot}1\%$

Question Number : 38 Question Id : 3666944212 Question Type : MCQ Option Shuffling : Yes 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 धारावाही टॉरॉइड के मध्य के मुक्त स्थान को 2×10^{-2} सस्पटिबिलिटी वाले पदार्थ से भर दिया जाता है। टॉरॉइड के अंदर, चुम्बकीय क्षेत्र के मान में हुई प्रतिशत वृद्धि होगी:

Options :

36669413099. 2%

36669413100. 0·2%

36669413101. 1%

36669413102. 0·1%

Question Number : 39 Question Id : 3666944213 Question Type : MCQ Option Shuffling : Yes 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 current sensitivity of moving coil galvanometer is increased by 25%. This increase is achieved only by changing in the number of turns of coils and area of cross section of the wire while keeping the resistance of galvanometer coil constant. The percentage change in the voltage sensitivity will be:

Options :

36669413103. +25%

36669413104. −25%

36669413105. Zero

36669413106. −50%

Question Number : 39 Question Id : 3666944213 Question Type : MCQ Option Shuffling : Yes 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 चल कुंडली धारामापी की धारा सुग्राहीता 25% बढ़ा दी जाती है। यह वृद्धि, कुंडली के घेरों की संख्या, एवं तार के अनुप्रस्थ काट क्षेत्रफल में परिवर्तन करने से प्राप्त होती है, जबकि धारामापी की कुंडली का प्रतिरोध नियत रखा जाता है । वोल्टेज सुग्राहिता में हुआ प्रतिशत परिवर्तन होगाः

Options :

36669413103. +25%

36669413104. –25%

36669413105. शून्य

36669413106. –50%

Question Number : 40 Question Id : 3666944214 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Two identical heater filaments are connected first in parallel and then in series. At the same applied voltage, the ratio of heat produced in same time for parallel to series will be:

Options :

36669413107. 1 : 4

36669413108. 4 : 1

36669413109. 1 : 2

36669413110. 2 : 1

Question Number : 40 Question Id : 3666944214 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

हीटर के दो समरूप फिलामेंटों को पहले समानान्तर क्रम में फिर श्रेणी क्रम में जोडा जाता है । समान आरोपित विभव के लिए, समान समय में समानान्तर क्रम में उत्पन्न ऊष्मा का श्रेणी क्रम में उत्पन्न ऊष्मा से अनुपात होगाः

Options :

36669413107. 1 : 4

36669413108. 4 : 1

36669413109. 1 : 2

36669413110. 2 : 1

Question Number : 41 Question Id : 3666944215 Question Type : MCQ Option Shuffling : Yes 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 parallel plate capacitor of capacitance 2 F is charged to a potential V, The energy stored in the capacitor is E_1. The capacitor is now connected to another uncharged identical capacitor in parallel combination. The energy stored in the combination is E_2. The ratio E_2/E_1 is :

Options :

36669413111. 1 : 2

36669413112. 2 : 1

36669413113. 2 : 3

36669413114. 1 : 4

Question Number : 41 Question Id : 3666944215 Question Type : MCQ Option Shuffling : Yes 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 F धारिता वाले एक समानान्तर पट्टिका संधारित्र को V विभव तक आवेशित किया जाता है। संधारित्र में संचित ऊर्जा का मान E_1 है। अब इस संधारित्र को किसी दूसरे समरुप अनावेशित संधारित्र के साथ समानान्तर क्रम में जोडा जाता है। संयोजन में संचित ऊर्जा का मान E_2 है। अनुपात E_2/E_1 हैः

Options :

36669413111. 1 : 2

36669413112. 2 : 1

36669413113. 2 : 3

36669413114. 1 : 4

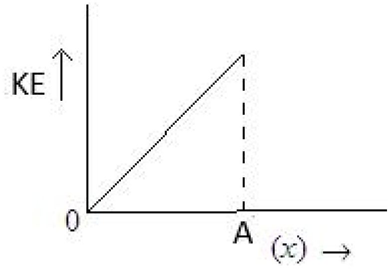
Question Number : 42 Question Id : 3666944216 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

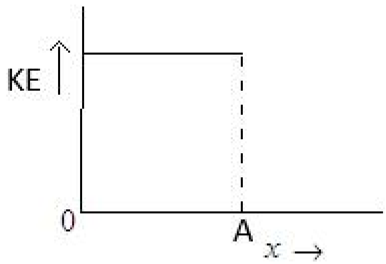
Correct Marks : 4 Wrong Marks : 1

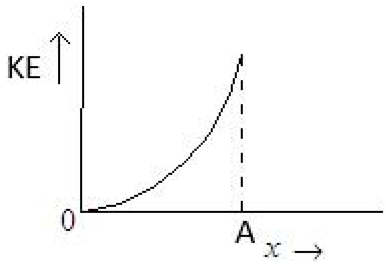
The variation of kinetic energy (KE) of a particle executing simple harmonic motion with the displacement (x) starting from mean position to extreme position (A) is given by

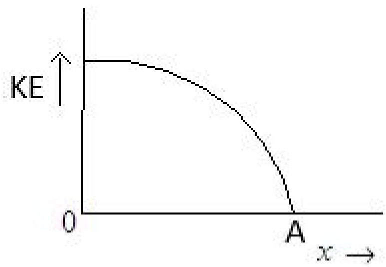
Options :

36669413115.



36669413116. 

36669413117. 

36669413118. 

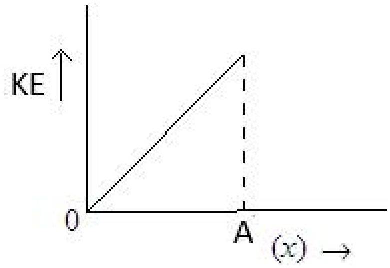
Question Number : 42 Question Id : 3666944216 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

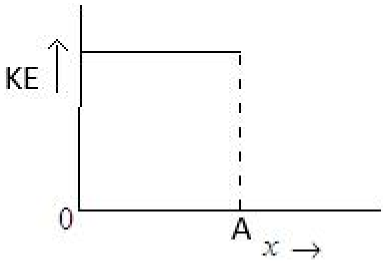
Correct Marks : 4 Wrong Marks : 1

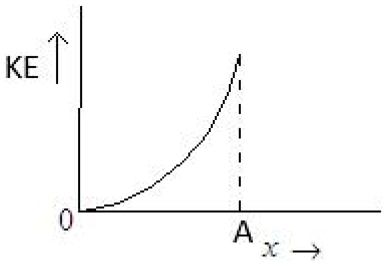
सरल आवर्त गति करते हुए किसी कण के, उसकी माध्य स्थिति से अंतिम (चरम) स्थिति (A) तक, उसके विस्थापन (x) के साथ उसकी गतिज ऊर्जा (KE) में परिवर्तन, निम्नवत दिया गया है:

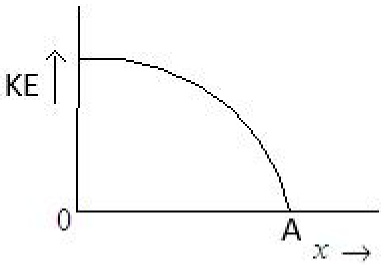
Options :

36669413115.



36669413116. 

36669413117. 

36669413118. 

Question Number : 43 Question Id : 3666944217 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Three vessels of equal volume contain gases at the same temperature and pressure. The first vessel contains neon (monoatomic), the second contains chlorine (diatomic) and third contains uranium hexafloride (polyatomic). Arrange these on the basis of their root mean square speed (v_{rms}) and choose the correct answer from the options given below:

Options :

36669413119. v_{rms} (mono) > v_{rms} (dia) > v_{rms} (poly)

36669413120. v_{rms} (mono) < v_{rms} (dia) < v_{rms} (poly)

36669413121. v_{rms} (mono) = v_{rms} (dia) = v_{rms} (poly)

36669413122. v_{rms} (dia) < v_{rms} (poly) < v_{rms} (mono)

Question Number : 43 Question Id : 3666944217 Question Type : MCQ Option Shuffling : Yes 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 आयतन वाले तीन बर्तनों में समान तापमान एवं दाब पर गैसें रखी हुई हैं। पहले बर्तन में निऑन (एकल परमाणवीय), दूसरे बर्तन में क्लोरीन (द्वीपरमाणवीय), एवं तीसरे बर्तन में यूरेनियम हेक्सा फ्लोराइड (बहुपरमाणवीय) गैस हैं। इन्हें, इनकी वर्ग माध्य मूल चाल (v_{rms}) के आधार पर व्यवस्थित करें एवं नीचे दिए गए विकल्पों में से सही उत्तर चुनें:

Options :

36669413119. v_{rms} (mono) > v_{rms} (dia) > v_{rms} (poly)

36669413120. v_{rms} (mono) < v_{rms} (dia) < v_{rms} (poly)

36669413121. v_{rms} (mono) = v_{rms} (dia) = v_{rms} (poly)

36669413122. v_{rms} (dia) < v_{rms} (poly) < v_{rms} (mono)

Question Number : 44 Question Id : 3666944218 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

1 kg of water at 100°C is converted into steam at 100°C by boiling at atmospheric pressure. The volume of water changes from $1{\cdot}00 \times 10^{-3}$ m^3 as a liquid to $1{\cdot}671$ m^3 as steam. The change in internal energy of the system during the process will be

(Given latent heat of vaporisaiton = 2257 kJ/kg, Atmospheric pressure = 1×10^5 Pa)

Options :

36669413123. – 2090 kJ

36669413124. + 2090 kJ

36669413125. – 2426 kJ

36669413126. + 2476 kJ

Question Number : 44 Question Id : 3666944218 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

100°C पर 1 Kg पानी को उबालकर वायुमण्डलीय दाब पर 100°C की भाप में परिवर्तित किया जाता है । पानी का आयतन. 1.00×10^{-3} m^3 द्रव से $1{\cdot}671$ m^3 भाप में परिवर्तित हो जाता है । इस प्रक्रम के दौरान, निकाय की आंतरिक ऊर्जा में हुए परिवर्तन का लगभग मान होगा

(दिया है, बाष्पीकरण की गुप्त ऊष्मा = 2257 kJ/kg, वायुमण्डलीय दाब = 1×10^5 Pa)

Options :

36669413123. – 2090 kJ

36669413124. + 2090 kJ

36669413125. – 2426 kJ

36669413126. + 2476 kJ

Question Number : 45 Question Id : 3666944219 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

On a temperature scale 'X', the boiling point of water is 65° X and the freezing point is –15°X. Assume that the X scale is linear. The equivalent temperature corresponding to –95° X on the Farenheit scale would be:

Options :

36669413127. –48°F

36669413128. –63°F

36669413129. –112°F

36669413130. –148°F

Question Number : 45 Question Id : 3666944219 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

किसी तापमापी के पैमाने 'X' पर पानी का **क्वथनांक** 65° X एवं हिमांक –15°X है। माना X पैमाना रेखीय है। फारनहाइट पैमाने पर –95° X के संगत, तुल्य तापमान होगाः

Options :

36669413127. –48°F

36669413128. –63°F

36669413129. –112°F

36669413130. $-148°F$

Question Number : 46 Question Id : 3666944220 Question Type : MCQ Option Shuffling : Yes 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 radii of two planets 'A' and 'B' are 'R' and '4R' and their densities are ρ and $\rho/3$ respectively. The ratio of acceleration due to gravity at their surfaces (g_A : g_B) will be:

Options :

36669413131. 3 : 16

36669413132. 4 : 3

36669413133. 3 : 4

36669413134. 1 : 16

Question Number : 46 Question Id : 3666944220 Question Type : MCQ Option Shuffling : Yes 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 ग्रहों 'A' और 'B' की त्रिज्याएँ 'R' एवं '4R' हैं, एवं उनके घनत्व क्रमशः ρ एवं $\rho/3$ हैं। उनके धरातलों पर गुरुत्वीय त्वरणों का अनुपात (g_A: g_B) होगाः

Options :

36669413131. 3 : 16

36669413132. 4 : 3

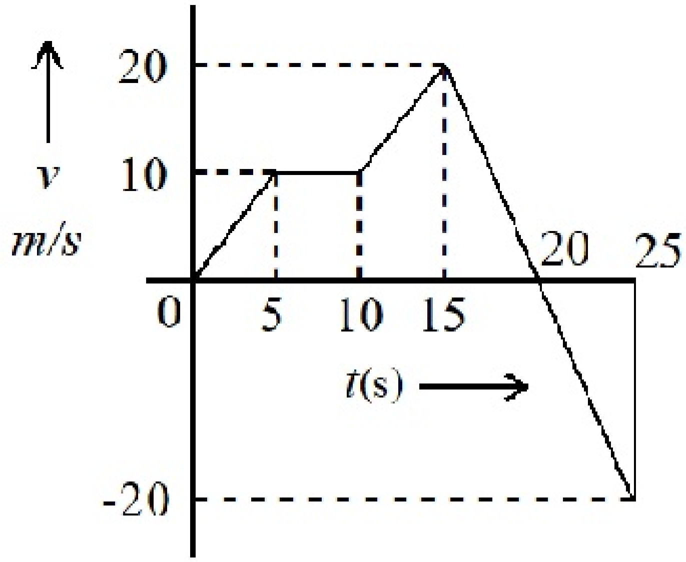
36669413133. 3 : 4

36669413134. 1 : 16

Question Number : 47 Question Id : 3666944221 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

From the v - t graph shown, the ratio of distance to displacement in 25 s of motion is:



Options :

36669413135. 1

36669413136. $\frac{1}{2}$

36669413137. $\frac{5}{3}$

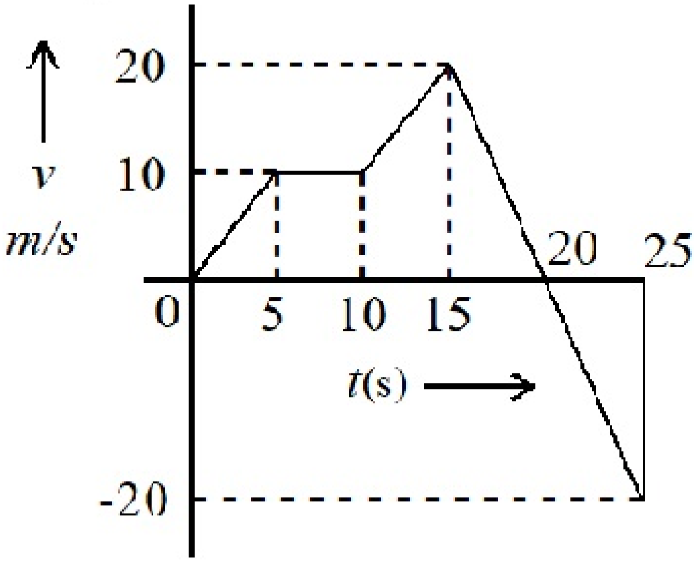
36669413138. $\frac{3}{5}$

Question Number : 47 Question Id : 3666944221 Question Type : MCQ Option Shuffling : Yes Is

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

Correct Marks : 4 Wrong Marks : 1

दर्शाये हुए $v \rightarrow t$ अभिरेख में, 25 सेकण्ड की गति के दौरान तय की गई दूरी एवं विस्थापन का अनुपात हैः



Options :

36669413135. 1

36669413136. $\frac{1}{2}$

36669413137. $\frac{5}{3}$

36669413138. $\frac{3}{5}$

Question Number : 48 Question Id : 3666944222 Question Type : MCQ Option Shuffling : Yes 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 placed on a rotating table just slips when it is placed at a distance of 1 cm from the center. If the angular velocity of the table in halved, it will just slip when placed at a distance of_____ from the centre :

Options :

36669413139. 1 cm

36669413140. 2 cm

36669413141. 4 cm

36669413142. 8 cm

Question Number : 48 Question Id : 3666944222 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

किसी घूमती हुई मेज पर एक सिक्का रखा है, यदि सिक्के को केन्द्र से 1 cm की दूरी पर रखा जाता है, तो यह फिसलने लगता है। यदि मेज का कोणीय वेग आधा कर दिया जाता है, तो सिक्का जिस दूरी पर फिसलना प्रारम्भ कर देगा, वह है

Options :

36669413139. 1 cm

36669413140. 2 cm

36669413141. 4 cm

36669413142. 8 cm

Question Number : 49 Question Id : 3666944223 Question Type : MCQ Option Shuffling : Yes 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 average force of 125 N is applied on a machine gun firing bullets each of mass 10 g at the speed of 250 m/s to keep it in position. The number of bullets fired per second by the machine gun is :

Options :

36669413143. 5

36669413144. 100

36669413145. 50

36669413146. 25

Question Number : 49 Question Id : 3666944223 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

10 g द्रव्यमान वाली गोलियों को 250 m/s की गति से दागती हुई एक मशीन गन (बंदूक) को संतुलित स्थिति में रखने के लिए, इस पर आरोपित औसत बल 125 N है। मशीन गन द्वारा दागी गई प्रति सेकण्ड गोलियों की संख्या हैं:

Options :

36669413143. 5

36669413144. 100

36669413145. 50

36669413146. 25

Question Number : 50 Question Id : 3666944224 Question Type : MCQ Option Shuffling : Yes 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 :

Statements I : Astronomical unit (Au), Parsec (Pc) and Light year (ly) are units for measuring astronomical distances.

Statements II : Au < Parsec (Pc) < ly

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

Options :

36669413147. Both Statements I and Statements II are correct,

36669413148. Both Statements I and Statements II are incorrect.

36669413149. Statements I is correct but Statements II is incorrect.

36669413150. Statements I is incorrect butStatements II is correct.

Question Number : 50 Question Id : 3666944224 Question Type : MCQ Option Shuffling : Yes 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 : खगोलीय इकाई (Au), पारसैक (Pc) एवं प्रकाश वर्ष (ly) खगोलीय दूरियाँ मापने के लिए इकाईयाँ हैं।

कथन II : Au < पारसैक (Pc) < ly

उपरोक्त कथनों के आलोक में, नीचे दिए गए विकल्पों में से सर्वाधिक उपयुक्त उत्तर चुनें।

Options :

36669413147. कथन I एवं कथन II दोनों सही हैं।

36669413148. कथन I एवं कथन II दोनों गलत हैं।

36669413149. कथन I सही है किन्तु कथन II गलत है।

36669413150. कथन I गलत है, किन्तु कथन II सही है।

Physics Section B

Section Id :	366694243
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 :	366694243
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 51 Question Id : 3666944225 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

A monochromatic light is incident on a hydrogen sample in ground state. Hydrogen atoms absorb a fraction of light and subsequently emit radiation of six different wavelengths. The frequency of incident light is $x \times 10^{15}$ Hz. The value of x is ___________.

(Given $h = 4.25 \times 10^{-15}$ eVs)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 51 Question Id : 3666944225 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

हाइड्रोजन नमूने जो कि मूल अवस्था में हैं, पर एकलवर्णीय प्रकाश आपतित होता है। हाइड्रोजन परमाणु प्रकाश का कुछ भाग अवशोषित करता है एवं तत्पश्चात छः अलग-अलग तरंगदैर्ध्यों का विकिरण उत्सर्जित करता है। आपतित प्रकाश की आवृति $x \times 10^{15}$ Hz है। x का मान ___________ है।

(दिया है, $h = 4.25 \times 10^{-15}$ eVs)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 52 Question Id : 3666944226 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

The radius of curvature of each surface of a convex lens having refractive index 1.8 is 20 cm. The lens is now immersed in a liquid of refractive index 1.5. The ratio of power of lens in air to its power in the liquid will be $x : 1$. 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 :

10

Question Number : 52 Question Id : 3666944226 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

1.8 अपवर्तनांक वाले उत्तल लैंस के वक्र की त्रिज्या 20 cm है। अब इस लैंस को 1.5 अपवर्तनांक वाले द्रव में डुबाया जाता है। हवा में लैंस की शक्ति का द्रव में इसकी शक्ति से अनुपात $x : 1$ 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 :

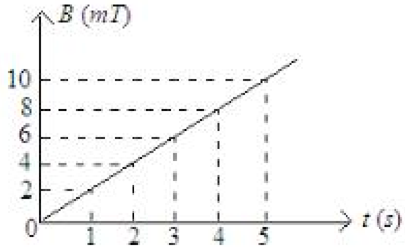
10

Question Number : 53 Question Id : 3666944227 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 field B crossing normally a square metallic plate of area 4 m^2 is changing with time as shown in figure. The magnitude of induced emf in the plate during t = 2*s* to t = 4*s*, is ___________ mV.



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

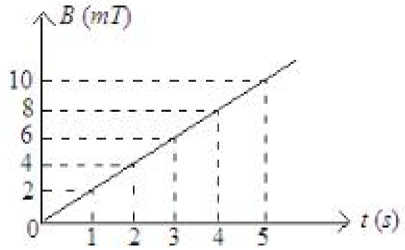
10

Question Number : 53 Question Id : 3666944227 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

4 m^2 क्षेत्रफल वाली धात्विक प्लेट से लम्बवत गुजरने वाले चुम्बकीय क्षेत्र B में समय के साथ परिवर्तन, चित्र में प्रदर्शित हैं। समय t = 2*s* से t = 4*s* के दौरान, प्लेट में प्रेरित विद्युत वाहक बल (emf) का मान ___________ mV है।



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

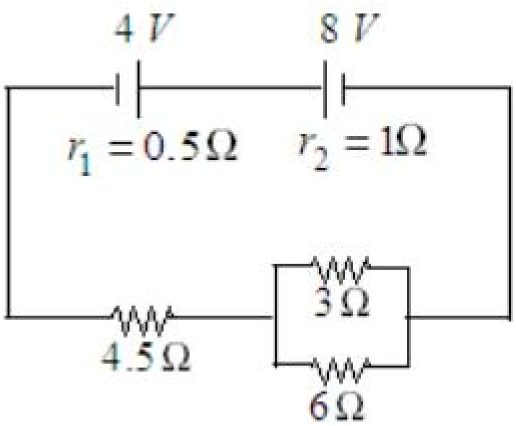
Question Number : 54 Question Id : 3666944228 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

In the circuit diagram shown in figure given below, the current flowing through resistance 3 Ω is $\frac{x}{3}$ A.

The value of x is __________



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

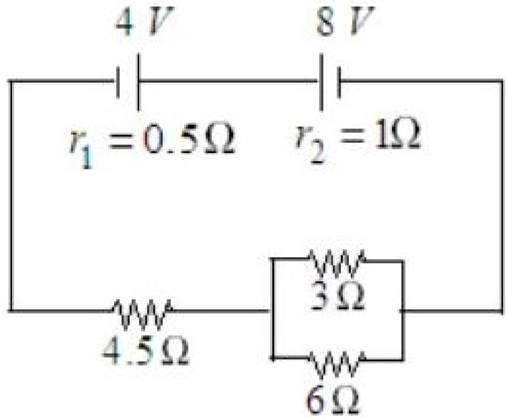
10

Question Number : 54 Question Id : 3666944228 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

नीचे दिये गए चित्र में प्रदर्शित परिपथ में, 3Ω वाले प्रतिरोध में प्रवाहित धारा $\frac{x}{3}$ A 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 :

10

Question Number : 55 Question Id : 3666944229 Question Type : SA Calculator : None

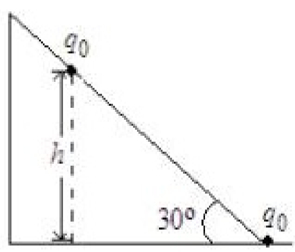
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

As shown in the figure, a configuration of two equal point charges ($q_0 = +2\mu$ C) is placed on an inclined plane. Mass of each point charge is 20 g. Assume that there is no friction between charge and plane. For the system of two point charges to be in equilibrium (at rest) the height $h = x \times 10^{-3}$ m.

The value of x is ________.

(Take $\frac{1}{4\pi\varepsilon_0} = 9 \times 10^9 \text{N m}^2 \text{C}^{-2}, g = 10 \text{ m s}^{-2}$)



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

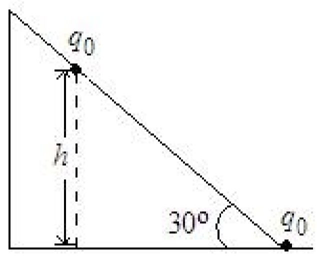
Question Number : 55 Question Id : 3666944229 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

चित्र में दर्शाये अनुसार, 20 g द्रव्यमान वाले दो समान बिन्दु आवेश ($q_0 = +2\mu$ C) एक आनत तल पर रखे हैं। माना आवेशों एवं तल के बीच कोई घर्षण नहीं है। दोनों बिन्दु आवेशों के निकाय की साम्यावस्था स्थिर के लिए, $h = x \times 10^{-3}$ m है। x का मान ________ है।

(यदि $\frac{1}{4\pi\varepsilon_0} = 9 \times 10^9 \text{N m}^2 \text{C}^{-2}, g = 10 \text{ m s}^{-2}$)



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 56 Question Id : 3666944230 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

The equation of wave is given by

$Y = 10^{-2} \sin 2\pi (160t - 0{\cdot}5x + \pi/4)$

where x and Y are in m and t in s. The speed of the wave is ________ km h^{-1}.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 56 Question Id : 3666944230 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

किसी तरंग का समीकरण निम्नवत है

$Y = 10^{-2} \sin 2\pi (160t - 0{\cdot}5x + \pi/4)$

जहाँ x एवं y मीटर में एवं t सेकण्ड में है। तरंग की चाल ________ km/h है।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 57 Question Id : 3666944231 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

The length of a wire becomes l_1 and l_2 when 100 N and 120 N tensions are applied respectively. If $10\,l_2 = 11\,l_1$, the natural length of wire will be $\frac{1}{x}\,l_1$. Here 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 :

10

Question Number : 57 Question Id : 3666944231 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

तार की लम्बाईयाँ l_1 एवं l_2 हो जाती हैं, जब इस पर क्रमशः 100 N एवं 120 N तन्यता आरोपित की जाती हैं। यदि $10\,l_2 = 11\,l_1$ है, तो तार की वास्तविक लम्बाई $\frac{1}{x}\,l_1$ होगी। यहाँ x का मान __________ है।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 58 Question Id : 3666944232 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

A solid sphere of mass 500 g and radius 5 cm is rotated about one of its diameter with angular speed of 10 rad s^{-1}. If the moment of inertia of the sphere about its tangent is $x \times 10^{-2}$ times its angular momentum about the diameter. Then the value of x will be ________

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 58 Question Id : 3666944232 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

500 g द्रव्यमान एवं 5 cm त्रिज्या वाले एक ठोस गोले को इसके एक व्यास के परितः 10 rad s^{-1} की कोणीय चाल से घुमाया जाता है। यदि गोले का अपनी स्पर्शी के सापेक्ष जडत्वाघूर्ण, व्यास के सापेक्ष इसके कोणीय संवेग का $x \times 10^{-2}$ गुना है। तो x का मान _________ होगा ।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 59 Question Id : 3666944233 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

A force $\vec{F} = (2 + 3x)\hat{i}$ acts on a particle in the x direction where F is in newton and x is in meter. The work done by this force during a displacement from $x = 0$ to $x = 4$ m, is _________J.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 59 Question Id : 3666944233 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

किसी कण पर x दिशा में बल $\vec{F} = (2 + 3x)\hat{i}$ आरोपित किया जाता है, जहाँ F न्यूटन में हैं और x मीटर में हैं । विस्थापन $x = 0$ से $x = 4$ मीटर के दौरान बल द्वारा किया गया कार्य ________ J है ।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 60 Question Id : 3666944234 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

A projectile fired at 30° to the ground is observed to be at same height at time 3s and 5s after projection, during its flight. The speed of projection of the projectile is ________ m s^{-1}.

(Given $g = 10$ m s^{-2})

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 60 Question Id : 3666944234 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

धरातल से 30° के कोण पर प्रक्षेपित किया गया प्रक्षेप्य, प्रक्षेपण के पश्चात, उड्डयन के दौरान 3s एवं 5s पर समान ऊँचाई पर पाया जाता है। प्रक्षेप्य की प्रक्षेपण चाल ________ $m\ s^{-1}$ हैं।

(दिया है $g = 10\ m\ s^{-2}$)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Chemistry Section A

Section Id :	366694244
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 : 366694244

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 61 Question Id : 3666944235 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

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

Assertion A : In the photoelectric effect, the electrons are ejected from the metal surface as soon as the beam of light of frequency greater than threshold frequency strikes the surface.

Reason R : When the photon of any energy strikes an electron in the atom, transfer of energy from the photon to the electron takes place.

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

Options :

36669413161. Both A and R are correct and R is the correct explanation of A

36669413162. Both A and R are correct but R is NOT the correct explanation of A

36669413163. A is correct but R is not correct

36669413164. A is not correct but R is correct

Question Number : 61 Question Id : 3666944235 Question Type : MCQ Option Shuffling : Yes 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 है। एक अभिकथन A है और दूसरा कारण R है

अभिकथन A

प्रकाश विद्युत् प्रभाव में धातु की सतह पर जब प्रकाशपुंज जिसकी आवृति देहली आवृति से अधिक होती है, जैसे ही टकराता है तो तुरंत इलेक्ट्रोनो का निष्कासन होता है

कारण R

जब किसी भी ऊर्जा का फोटान परमाणु में एक इलेक्ट्रान से टकराता है तो फोटान से उर्जा इलेक्ट्रॉन को स्थानांतरित होती है

उपरोक्त कथनों के लिए सर्वाधिक उपयुक्त उत्तर का चुनाव नीचे दिए विकल्पों में से कीजिए

Options :

36669413161. A तथा R दोनों सही है और R सही व्याख्या है A की

36669413162. A तथा R दोनों सही है परन्तु R सही व्याख्या नहीं है A की

36669413163. A सही है परन्तु R गलत है

36669413164. A गलत है परन्तु R सही है

Question Number : 62 Question Id : 3666944236 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Match List-I with List-II :

List-I Species	List-II Geometry/Shape
A. H_3O^+ B. Acetylide anion C. NH_4^+ D. ClO_2^-	I. Tetrahedral II. Linear III. Pyramidal IV. Bent

Choose the correct answer from the options given below:

Options :

36669413165. A-III, B-II, C-I, D-IV

36669413166. A-III, B-I, C-II, D-IV

36669413167. A-III, B-IV, C-I, D-II

36669413168. A-III, B-IV, C-II, D-I

Question Number : 62 Question Id : 3666944236 Question Type : MCQ Option Shuffling : Yes 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 कीजिए :

सूची-I स्पीशीज	सूची-II जिओमेट्री/आकार
A. H_3O^+ B. ऐसीटिलाइड ऋणायन C. NH_4^+ D. ClO_2^-	I. चतुष्फलकीय II. रेखीय III. पिरैमिडी IV. मुड़ी हुई

नीचे दिये विकल्पों मे से सही उत्तर चुनिए:

Options :

36669413165. A-III, B-II, C-I, D-IV

36669413166. A-III, B-I, C-II, D-IV

36669413167. A-III, B-IV, C-I, D-II

36669413168. A-III, B-IV, C-II, D-I

Question Number : 63 Question Id : 3666944237 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

25 mL of silver nitrate solution (1M) is added dropwise to 25 mL of potassium iodide (1.05 M) solution. The ion(s) present in very small quantity in the solution is/are

Options :

36669413169. I^- only

36669413170. Ag^+ and I^- both

36669413171. K^+ only

36669413172. NO_3^- only

Question Number : 63 Question Id : 3666944237 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

सिल्वर नाइट्रेट (1M) के 25 mL विलयन कों बूँद-बूँद कर पोटैशियम आयोडाइड (1.05M) के 25 mL विलयन में मिलाया गया है। विलयन में अति सूक्ष्म मात्रा में जो आयन उपस्थित है वह है

Options :

36669413169. I^- केवल

36669413170. Ag+ तथा I^- दोनों

36669413171. K^+ केवल

36669413172. NO_3^- केवल

Question Number : 64 Question Id : 3666944238 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

For elements B, C, N, Li, Be, O and F, the correct order of first ionization enthalpy is

Options :

36669413173. $Li < Be < B < C < N < O < F$

36669413174. $Li < B < Be < C < O < N < F$

36669413175. $B > Li > Be > C > N > O > F$

36669413176. $Li < Be < B < C < O < N < F$

Question Number : 64 Question Id : 3666944238 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

तत्वों B, C, N, Li, Be, O तथा F के लिए प्रथम आयनन एन्थैल्पी का सही क्रम है

Options :

36669413173. $Li < Be < B < C < N < O < F$

36669413174. Li < B < Be < C < O < N < F

36669413175. B > Li > Be > C > N > O > F

36669413176. Li < Be < B < C < O < N < F

Question Number : 65 Question Id : 3666944239 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

In the extraction process of copper, the product obtained after carrying out the reactions

(i) $2Cu_2S + 3O_2 \rightarrow 2Cu_2O + 2SO_2$

(ii) $2Cu_2O + Cu_2S \rightarrow 6Cu + SO_2$ is called

Options :

36669413177. Copper matte

36669413178. Copper scrap

36669413179. Blister copper

36669413180. Reduced copper

Question Number : 65 Question Id : 3666944239 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

कॉपर के निष्कर्षण प्रक्रम में, निम्नलिखित अभिक्रियायें करने के पश्चात उत्पन्न उत्पाद को कहते है

(i) $2Cu_2S + 3O_2 \rightarrow 2Cu_2O + 2SO_2$

(ii) $2Cu_2O + Cu_2S \rightarrow 6Cu + SO_2$

Options :

36669413177. कॉपर मेट

36669413178. कॉपर स्क्रैप

36669413179. ब्लिस्टर कॉपर

36669413180. अपचयित कॉपर

Question Number : 66 Question Id : 3666944240 Question Type : MCQ Option Shuffling : Yes 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 : Methane and steam passed over a heated Ni catalyst produces hydrogen gas.

Statement-II : Sodium nitrite reacts with NH_4Cl to give H_2O, N_2 and NaCl.

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

Options :

36669413181. Both the statements I and II are correct

36669413182. Both the statements I and II are incorrect

36669413183. Statement I is correct but Statement II is incorrect

36669413184. Statement I is incorrect but Statement II is correct

Question Number : 66 Question Id : 3666944240 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

नीचे दो कथन दिए गए है

कथन I : मेथेन तथा जलवाष्प को गर्म Ni उत्प्रेरक पर प्रवाहित करने पर हाइड्रोजन गैस उत्पन्न होती है

कथन II : सोडियम नाइट्रेट से NH_4Cl की अभिक्रिया देती है H_2O, N_2 तथा NaCl.

Options :

36669413181. कथन I तथा कथन II दोनों सही हैं

36669413182. कथन I तथा कथन II दोनों गलत हैं

36669413183. कथन I सही है परन्तु कथन II गलत हैं

36669413184. कथन I गलत है परन्तु कथन II सही हैं

Question Number : 67 Question Id : 3666944241 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Match List-I with List-II:

List-I	List-II
A. K	I. Thermonuclear reactions
B. KCl	II. Fertilizer
C. KOH	III. Sodium potassium pump
D. Li	IV. Absorbent of CO_2

Choose the correct answer from the options given below :

Options :

36669413185. A-IV, B-I, C-III, D-II

36669413186. A-IV, B-III, C-I, D-II

36669413187. A-III, B-IV, C-II, D-I

36669413188. A-III, B-II, C-IV, D-I

Question Number : 67 Question Id : 3666944241 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

सूची I का सूची II से मिलान कीजिए :

सूची -I	सूची-II
A. K	I. तापनाभिकीय अभिक्रिया
B. KCl	II. उर्वरक
C. KOH	III. सोडियम पोटैशियम पंप
D. Li	IV. CO_2 का अवशोषकं

नीचे दिये गये विकल्पों में से सही उत्तर चुनिए:

Options :

36669413185. A-IV, B-I, C-III, D-II

36669413186. A-IV, B-III, C-I, D-II

36669413187. A-III, B-IV, C-II, D-I

36669413188. A-III, B-II, C-IV, D-I

Question Number : 68 Question Id : 3666944242 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

For compound having the formula $GaAlCl_4$, the correct option from the following is

Options :

36669413189. Oxidation state of Ga in the salt $GaAlCl_4$ is +3.

36669413190. Ga is coordinated with Cl in $GaAlCl_4$

36669413191. Ga is more electronegative than Al and is present as a cationic part of the salt $GaAlCl_4$

36669413192. Cl forms bond with both Al and Ga in $GaAlCl_4$

Question Number : 68 Question Id : 3666944242 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

$GaAlCl_4$ सूत्र के यौगिक के लिए निम्नलिखित में से सही विकल्प है

Options :

36669413189. साल्ट $GaAlCl_4$ में Ga की आक्सीकरण अवस्था +3 है।

36669413190. $GaAlCl_4$ में Ga उपसहसंयोजित है Cl से ।

36669413191. Al की अपेक्षा Ga अधिक विद्युत् ऋणात्मक है और साल्ट $GaAlCl_4$ में धनायनिक घटक के रूप में उपस्थित है।

36669413192. $GaAlCl_4$ में Cl, Al तथा Ga दोनों से आबन्ध बनाती है।

Question Number : 69 Question Id : 3666944243 Question Type : MCQ Option Shuffling : Yes 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 complex has a possibility to exist as meridional isomer?

Options :

36669413193. $[Co(NH_3)_3(NO_2)_3]$

36669413194. $[Co\ (en)_3]$

36669413195. $[Co\ (en)_2\ Cl_2]$

36669413196. $[Pt\ (NH_3)_2\ Cl_2]$

Question Number : 69 Question Id : 3666944243 Question Type : MCQ Option Shuffling : Yes 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 किस संकुल में रेखांशिक समावयव (Meridional isomer) के रूप में पाए जाने की संभावना है ?

Options :

36669413193. $[Co(NH_3)_3(NO_2)_3]$

36669413194. $[Co(en)_3]$

36669413195. $[Co(en)_2Cl_2]$

36669413196. $[pt(NH_3)_2(Cl_2]$

Question Number : 70 Question Id : 3666944244 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The set which does not have ambidentate ligand(s) is

Options :

36669413197. $EDTA^{4-}$, NCS^-, $C_2O_4^{2-}$

36669413198. NO_2^-, $C_2O_4^{2-}$, $EDTA^{4-}$

36669413199. $C_2O_4^{2-}$, ethylene diammine, H_2O

36669413200. $C_2O_4^{2-}$, NO_2^-, NCS^-

Question Number : 70 Question Id : 3666944244 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

सेट जिसमे उभयदन्ती लिगन्ड नहीं है, वह है

Options :

36669413197. $EDTA^{4-}$, NCS^-, $C_2O_4^{2-}$

36669413198. NO_2^-, $C_2O_4^{2-}$, $EDTA^{4-}$

36669413199. $C_2O_4^{2-}$, एथिलिन डाइऐमीन, H_2O

36669413200. $C_2O_4^{2-}$, NO_2^-, NCS^-

Question Number : 71 Question Id : 3666944245 Question Type : MCQ Option Shuffling : Yes 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: If BOD is 4 ppm and dissolved oxygen is 8 ppm, then it is a good quality water.

Statement II: If the concentration of zinc and nitrate salts are 5 ppm each, then it can be a good quality water.

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

Options :

36669413201. Both the statements I and II are correct

36669413202. Both the statements I and II are incorrect

36669413203. Statement I is correct but Statement II is incorrect

36669413204. Statement I is incorrect but Statement II is correct

Question Number : 71 Question Id : 3666944245 Question Type : MCQ Option Shuffling : Yes 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 हैं

कथन I : यदि जल की BOD 4 ppm और घुलित ऑक्सीजन 8 ppm है तो जल की गुणवत्ता अच्छी है।

कथन II : यदि जिंक तथा नाइट्रेट साल्टों में से प्रत्येक की सान्द्रता 5 ppm है तो जल की गुणवता अच्छी हो सकती है।

उपरोक्त कथनों के लिए नीचे दिए विकल्पों में से सर्वाधिक उचित उत्तर दीजिए

Options :

36669413201. कथन 1 तथा कथन II दोनों सही है।

36669413202. कथन I तथा कथन II दोनों गलत है।

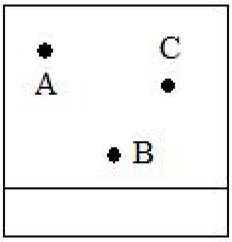
36669413203. कथन I सही है तथा कथन II गलत है।

36669413204. कथन I गलत है तथा कथन II सही है।

Question Number : 72 Question Id : 3666944246 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Thin layer chromatography of a mixture shows the following observation:



The correct order of elution in the silica gel column chromatography is

Options :

36669413205. B, C, A

36669413206. A, C, B

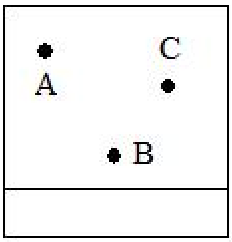
36669413207. C, A, B

36669413208. B, A, C

Question Number : 72 Question Id : 3666944246 Question Type : MCQ Option Shuffling : Yes 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 मिश्रण की पतली परत क्रोमेटोग्राफी निम्नलिखित प्रेक्षण दर्शाती है :



सिलिका जेल कॉलम क्रोमेटोग्राफी में निक्षालन का सही क्रम है

Options :

36669413205. B, C, A

36669413206. A, C, B

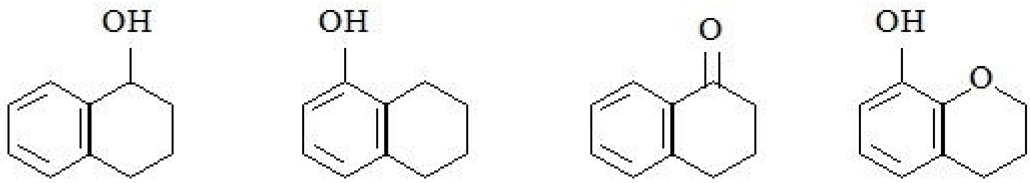
36669413207. C, A, B

36669413208. B, A, C

Question Number : 73 Question Id : 3666944247 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Arrange the following compounds in increasing order of rate of aromatic electrophilic substitution reaction



a b c d

Options :

36669413209. c, a, b, d

36669413210. b, c, a, d

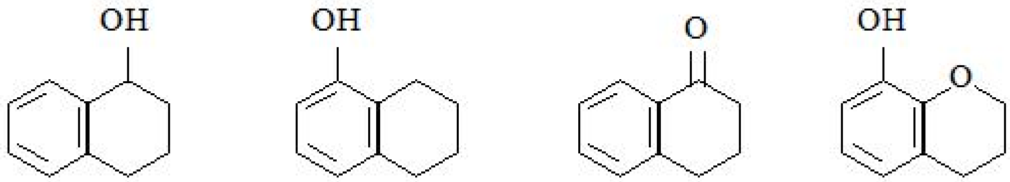
36669413211. d, b, c, a

36669413212. d, b, a, c

Question Number : 73 Question Id : 3666944247 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

ऐरोमैटिक इलेक्ट्रॉन स्नेही प्रतिस्थापन अभिक्रिया दर के बढ़ते क्रम में निम्नलिखित यौगिको को व्यवस्थित कीजिए



a b c d

Options :

36669413209. c, a, b, d

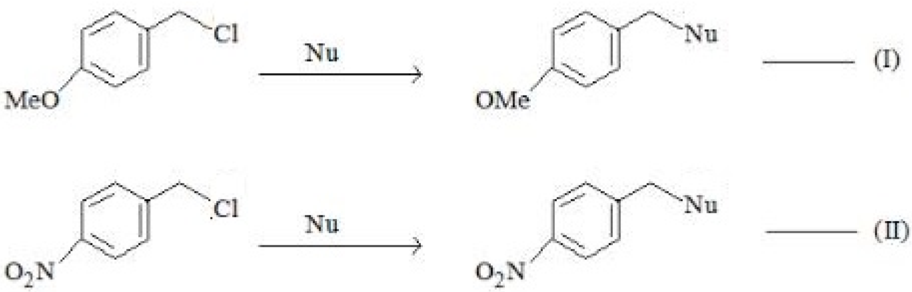
36669413210. b, c, a, d

36669413211. d, b, c, a

36669413212. d, b, a, c

Question Number : 74 Question Id : 3666944248 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1



Where Nu = Nucleophile

Find out the correct statement from the options given below for the above 2 reactions.

Options :

36669413213. Reaction (I) is of 1^{st} order and reaction (II) is of 2^{nd} order

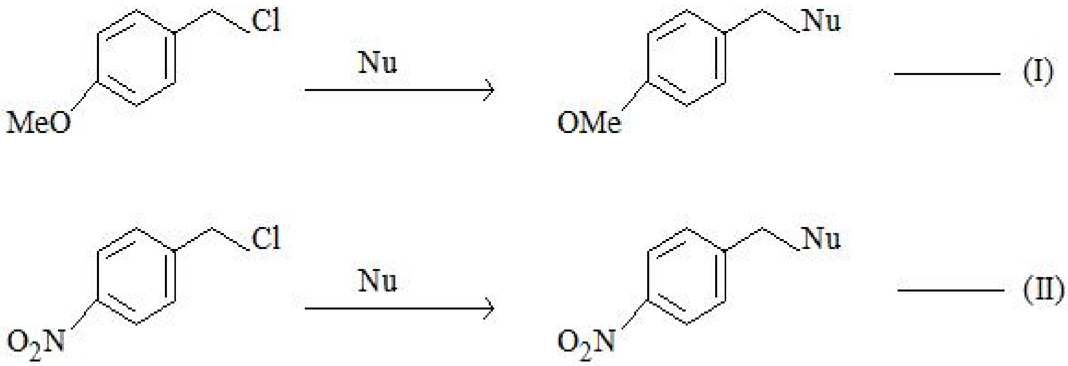
36669413214. Reactions (I) and (II) both are of 1^{st} order

36669413215. Reactions (I) and (II) both are of 2^{nd} order

36669413216. Reaction (I) is of 2^{nd} order and reaction (II) is of 1^{st} order

Question Number : 74 Question Id : 3666944248 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1



यहाँ Nu = नामिकस्नेही

उपरोक्त 2 अभिक्रियाओं के लिए नीचे दिए विकल्पों में से सही कथन चुनिए .

Options :

36669413213. अभिक्रिया (I) प्रथम कोटि की है और अभिक्रिया (II) द्वितीय कोटि की है

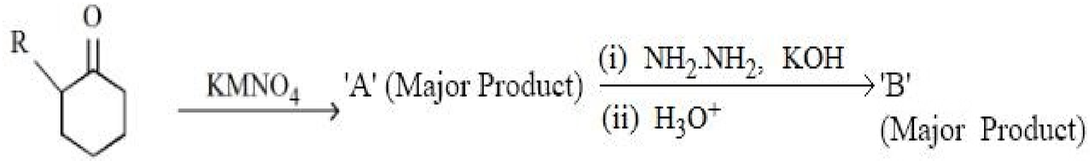
36669413214. अभिक्रिया (I) तथा अभिक्रिया (II) दोनों ही प्रथम कोटि की है

36669413215. अभिक्रिया (I) तथा अभिक्रिया (II) दोनों ही द्वितीय कोटि की है

36669413216. अभिक्रिया (I) द्वितीय कोटि की है और अभिक्रिया (II) प्रथम कोटि की है

Question Number : 75 Question Id : 3666944249 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

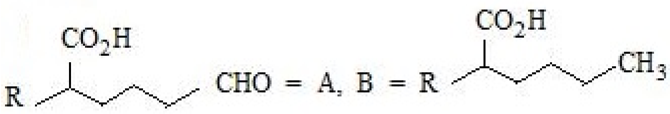
Correct Marks : 4 Wrong Marks : 1

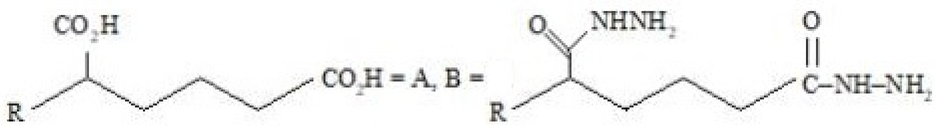


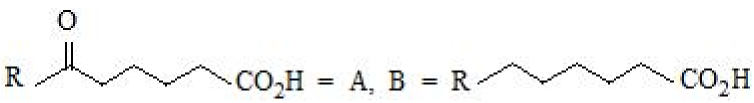
(R = alkyl)

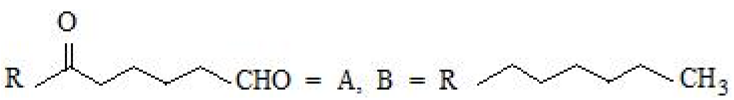
'A' and 'B' in the above reactions are:

Options :

36669413217. 

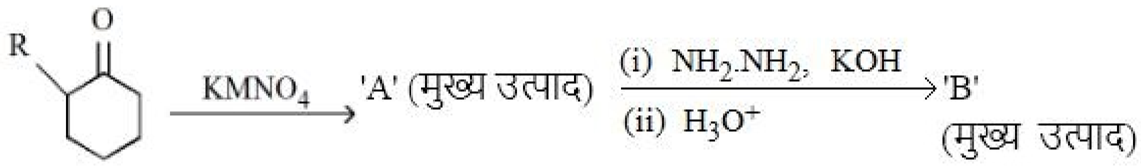
36669413218. 

36669413219. 

36669413220. 

Question Number : 75 Question Id : 3666944249 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

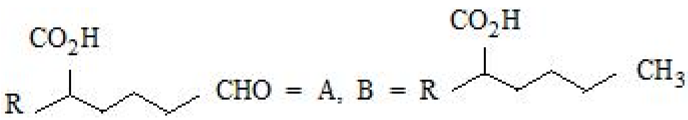
Correct Marks : 4 Wrong Marks : 1

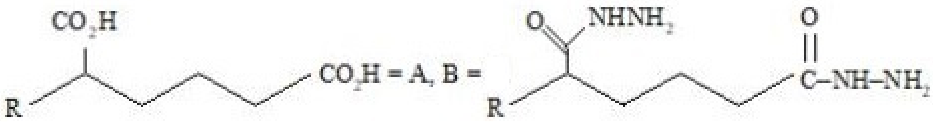


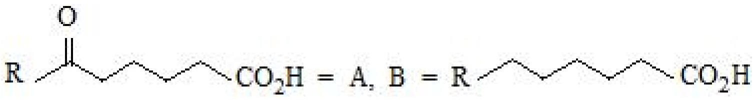
उपरोक्त अभिक्रिया में मुख्य उत्पाद A तथा B है

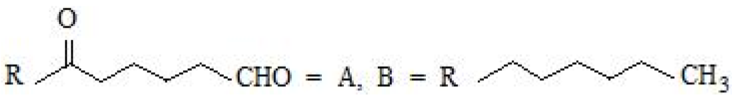
(R = ऐल्किल)

Options :

36669413217. 

36669413218. 

36669413219. 

36669413220. 

Question Number : 76 Question Id : 3666944250 Question Type : MCQ Option Shuffling : Yes 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 complex that dissolves in water is

Options :

36669413221. $[Fe_3(OH)_2(OAc)_6]\,Cl$

36669413222. $K_3[Co(NO_2)_6]$

36669413223. $Fe_4[Fe(CN)_6]_3$

36669413224. $(NH_4)_3[As(Mo_3O_{10})_4]$

Question Number : 76 Question Id : 3666944250 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

वह संकुल जो जल में घुलता है, है।

Options :

36669413221. $[Fe_3(OH)_2(OAc)_6]\ Cl$

36669413222. $K_3[Co(NO_2)_6]$

36669413223. $Fe_4[Fe(CN)_6]_3$

36669413224. $(NH_4)_3[As(Mo_3O_{10})_4]$

Question Number : 77 Question Id : 3666944251 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

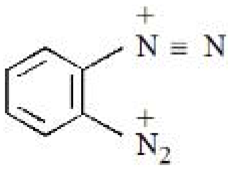
Correct Marks : 4 Wrong Marks : 1

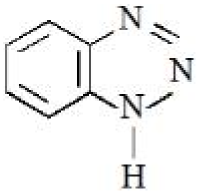
$$\text{o-Phenylenediamine} \xrightarrow{HNO_2} \text{'X'}$$

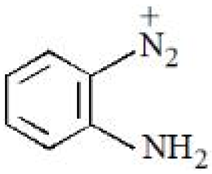
Major Product

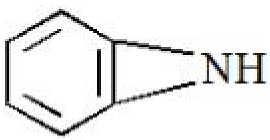
'X' is

Options :

36669413225. 

36669413226. 

36669413227. 

36669413228. 

Question Number : 77 Question Id : 3666944251 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

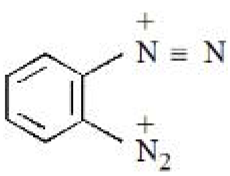
Correct Marks : 4 Wrong Marks : 1

o-फेनिलीनडाइऐमीन $\xrightarrow{HNO_2}$ 'X'

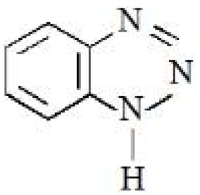
मुख्य उत्पाद

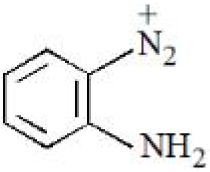
उपरोक्त अभिक्रिया में X है

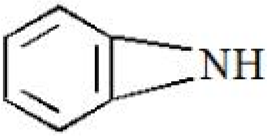
Options :

36669413225. 

36669413226.



36669413227. 

36669413228. 

Question Number : 78 Question Id : 3666944252 Question Type : MCQ Option Shuffling : Yes 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 polymer X - consists of linear molecules and is closely packed. It is prepared in the presence of triethylaluminium and titanium tetrachloride under low pressure. The polymer X is-

Options :

36669413229. Polytetrafluoroethane

36669413230. Polyacrylonitrile

36669413231. High density polythene

36669413232. Low density polythene

Question Number : 78 Question Id : 3666944252 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

बहुलक X रेखिक अणुओं से बना है और निकट रूप में संकलित है इसका निर्माण ट्राइएथिल ऐलुमीनियम और टाइटेनियम टेट्रा क्लोराइड की उपस्थिति में न्यून दाब पर किया जाता है I बहुलक X है

Options :

36669413229. पालीटेट्राफ्लुओरोएथीन

36669413230. पालीएक्रीलो नाइट्राइल

36669413231. उच्च घनत्व पॉलिथीन

36669413232. न्यून घनत्व पॉलिथीन

Question Number : 79 Question Id : 3666944253 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

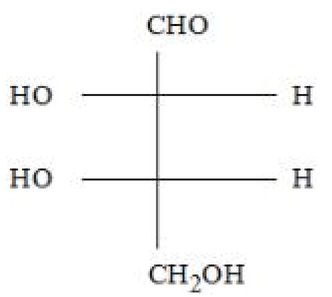
Correct Marks : 4 Wrong Marks : 1

L−isomer of tetrose X ($C_4H_8O_4$) gives positive Schiff's test and has two chiral carbons. On acetylation, 'X' yields triacetate. 'X' also undergoes following reactions

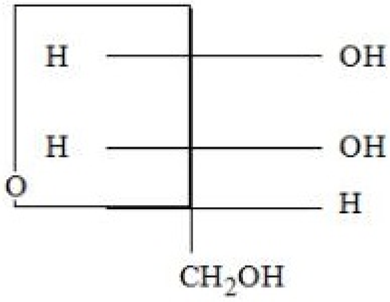
$$\text{'A'} \xleftarrow{HNO_3} \text{'X'} \xrightarrow{NaBH_4} \underset{\text{Chiral compound}}{\text{'B'}}$$

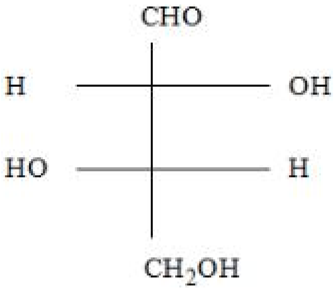
'X' is

Options :

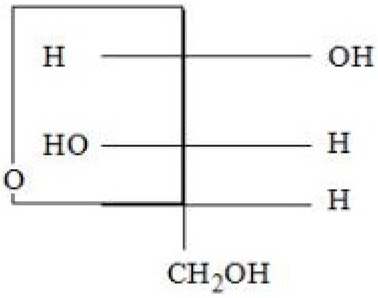
36669413233. 

36669413234.





36669413235.



36669413236.

Question Number : 79 Question Id : 3666944253 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

टेट्रोस X ($C_4H_8O_4$) का L समावयव सकारात्मक शिफ़ परीक्षण देता है। X का ऐसीटिलन, ट्राइऐसीटेट देता है। X निम्नलिखित अभिक्रियायें करता है।

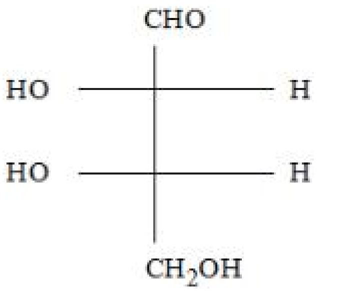
$$'A' \xleftarrow{HNO_3} 'X' \xrightarrow{NaBH_4} 'B'$$

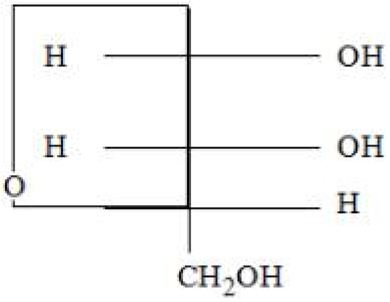
काइरल यौगिक

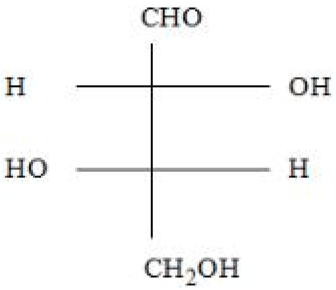
'X' है:

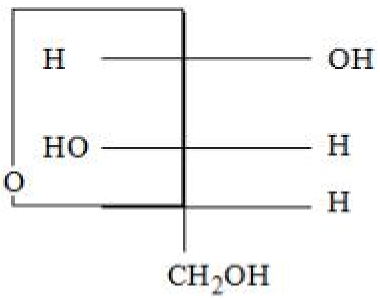
Options :

36669413233.



36669413234. 

36669413235. 

36669413236. 

Question Number : 80 Question Id : 3666944254 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

When a solution of mixture having two inorganic salts was treated with freshly prepared ferrous sulphate in acidic medium, a dark brown ring was formed whereas on treatment with neutral $FeCl_3$, it gave deep red colour which disppeared on boiling and a brown red ppt was formed. The mixture contains

Options :

36669413237. $C_2O_4^{2-}$ & NO_3^-

36669413238. CH_3COO^- & NO_3^-

36669413239. SO_3^{2-} & CH_3COO^-

36669413240. SO_3^{2-} & $C_2O_4^{2-}$

Question Number : 80 Question Id : 3666944254 Question Type : MCQ Option Shuffling : Yes 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 अकार्बनिक साल्टों के मिश्रण के विलयन को जब अम्लीय माध्यम में तुरंत निर्मित फेरस सल्फेट के विलयन से उपचारित करते है तो भूरे रंग का वलय बनता है जबकि उदासीन $FeCl_3$ से उपचारित करने पर गहरा लाल रंग प्राप्त होता है। यह रंग विलयन को उबालने पर उड़ जाता है और भूरे-लाल रंग का अवक्षेप मिलता है।

मिश्रण में उपस्थित हैं

Options :

36669413237. $C_2O_4^{2-}$ & NO_3^-

36669413238. CH_3COO^- & NO_3^-

36669413239. SO_3^{2-} & CH_3COO^-

36669413240. SO_3^{2-} & $C_2O_4^{2-}$

Chemistry Section B

Section Id :	366694245
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 :	366694245
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 81 Question Id : 3666944255 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

A solution of sugar is obtained by mixing 200g of its 25% solution and 500g of its 40% solution (both by mass). The mass percentage of the resulting sugar solution is __________ (Nearest integer)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 81 Question Id : 3666944255 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

चीनी का एक विलयन इसके 25% विलयन के 200g तथा 40% विलयन के 500g को मिश्रित करके बनाया है (दोनों द्रव्यमानों पर आधारित हैं) परिणाम स्वरूप प्राप्त चीनी के विलयन की प्रतिशत सांद्रता है ______________________(निकटतम पूर्णांक में)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 82 Question Id : 3666944256 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

An atomic substance A of molar mass 12 g mol^{-1} has a cubic crystal structure with edge length of 300 pm. The no. of atoms present in one unit cell of A is __________. (Nearest integer)

Given the density of A is 3.0 g mL^{-1} and $N_A = 6.02 \times 10^{23}\ mol^{-1}$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 82 Question Id : 3666944256 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 12 g mol^{-1} के एक परमाण्विक पदार्थ A की संरचना घनीय है, जिसकी कोर लम्बाई 300 pm है। पदार्थ A की एक इकाई सेल में उपस्थित परमाणुओं की संख्या है ____________________(निकटतम पूर्णांक में) (दिया है : A का घनत्व 3.0 g mL^{-1} N_A = 6.02×10^{23} mol^{-1})

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 83 Question Id : 3666944257 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Solid fuel used in rocket is a mixture of Fe_2O_3 and Al (in ratio 1:2). The heat evolved (kJ) per gram of the mixture is __________ (Nearest integer)

Given: ΔH_f^θ (Al_2O_3) = –1700 kJ mol^{-1}

ΔH_f^θ (Fe_2O_3) = –840 kJ mol^{-1}

Molar mass of Fe, Al and O are 56, 27 and 16 g mol^{-1} respectively

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 83 Question Id : 3666944257 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

रॉकेट में उपयोग किया जाने वाला ठोस इंधन Fe_2O_3 तथा Al का 1:2 अनुपात में मिश्रण है जो ऊष्मा (kJ) प्रति ग्राम मिश्रण से निकलेगी, वह है ______________ (निकटतम पूर्णांक में)

दिया है $\Delta H_f^\theta (Al_2O_3) = -1700 \text{ kJ mol}^{-1}$

$\Delta H_f^\theta (Fe_2O_3) = -840 \text{ kJ mol}^{-1}$

मोलर द्रव्यमान : Fe, Al तथा O के क्रमश:

56, 27 तथा 16 g mol^{-1}

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 84 Question Id : 3666944258 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

0.004 M K_2SO_4 solution is isotonic with 0.01 M glucose solution. Percentage dissociation of K_2SO_4 is ___________ (Nearest integer)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 84 Question Id : 3666944258 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

0.004 M K_2SO_4 का विलयन ग्लूकोस के 0.01 M विलयन से समपरासरी है। K_2SO_4 का प्रतिशत वियोजन ____________ है (निकटतम पूर्णांक में)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 85 Question Id : 3666944259 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

A mixture of 1 mole of H_2O and 1 mole of CO is taken in a 10 litre container and heated to 725 K. At equilibrium 40% of water by mass reacts with carbon monoxide according to the equation: $CO(g) + H_2O(g) \rightleftharpoons CO_2(g) + H_2(g)$. The equilibrium constant $K_c \times 10^2$ for the reaction is ________. (Nearest integer)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 85 Question Id : 3666944259 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 H_2O तथा 1 मोल CO के मिश्रण को 10 लीटर के बर्तन में लेकर 725 K पर गर्म किया है। साम्य अवस्था में जल का 40% (द्रव्यमान से) कार्बन मोनोऑक्साइड से निम्नलिखित समीकरण अनुसार अभिक्रिया करता है

$$CO(g) + H_2O(g) \rightleftharpoons CO_2(g) + H_2(g)$$

अभिक्रिया के लिए साम्य स्थिरांक $K_c \times 10^2$ ______________ है (निकटतम पूर्णांक में)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 86 Question Id : 3666944260 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

In an electrochemical reaction of lead, at standard temperature, if $E^{\circ}_{(Pb^{2+}/Pb)} = m$ Volt and $E^{\circ}_{(Pb^{4+}/Pb)} = n$ Volt, then the value of $E^{\circ}_{(Pb^{2+}/Pb^{4+})}$ is given by $m - xn$. The value of x is ________. (Nearest integer)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 86 Question Id : 3666944260 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

लेड की मानक ताप पर एक विद्युत्-रासायनिक अभिक्रिया में यदि $E^\circ(Pb^{2+}/Pb) = m$ तथा $E^\circ(Pb^{4+}/Pb) = n$ वोल्ट है तो $E^\circ(Pb^{2+}/Pb^{4+})$ का मान देता है $m - xn$. x का मान ____________ है

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 87 Question Id : 3666944261 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

$KClO_3 + 6FeSO_4 + 3H_2SO_4 \rightarrow KCl + 3Fe_2(SO_4)_3 + 3H_2O$

The above reaction was studied at 300 K by monitoring the concentration of $FeSO_4$ in which initial concentration was 10 M and after half an hour became 8.8 M. The rate of production of $Fe_2(SO_4)_3$ is ________ $\times 10^{-6}$ mol L^{-1} s^{-1}.
(Nearest integer)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 87 Question Id : 3666944261 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

$KClO_3 + 6FeSO_4 + 3H_2SO_4 \rightarrow KCl + 3Fe_2(SO_4)_3 + 3H_2O$

उपरोक्त अभिक्रिया का अध्ययन 300 K पर $FeSO_4$ की सांद्रता माप कर किया गया।
इसकी प्रारंभिक सांद्रता 10 M थी और आधा घंटे पश्चात 8.8 M हो गयी।

$Fe_2(SO_4)_3$ के उत्पादन की दर है __________ $\times 10^{-6}$ mol L^{-1} s^{-1}

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 88 Question Id : 3666944262 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

The ratio of spin-only magnetic moment values $\mu_{eff}\,[Cr(CN)_6]^{3-} / \mu_{eff}\,[Cr(H_2O)_6]^{3+}$ is ________.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 88 Question Id : 3666944262 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

चुम्बकीय आघूर्णों के केवल स्पिन मानों का अनुपात
$\mu_{eff}\,[Cr(CN)_6]^{3-} / \mu_{eff}\,[Cr(H_2O)_6]^{3+}$ __________ है

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

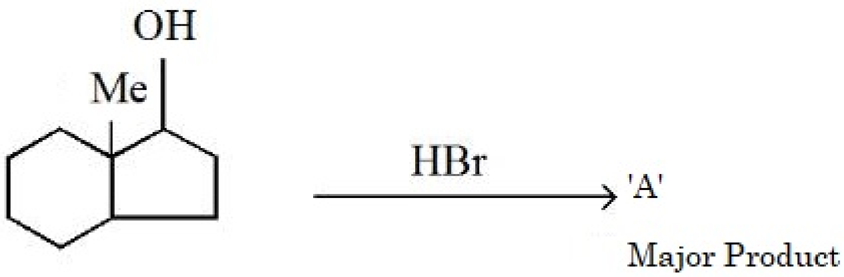
Possible Answers :

10

Question Number : 89 Question Id : 3666944263 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1



The number of hyperconjugation structures involved to stablize carbocation formed in the above reaction is ____________.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

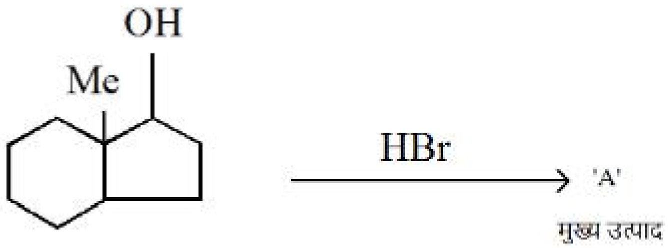
Possible Answers :

10

Question Number : 89 Question Id : 3666944263 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1



उपरोक्त अभिक्रिया में निर्मित कार्बधनायन को स्थायित्व प्रदान करने में सम्मलित अति संयुग्मन संरचनाओ की संख्या ___________ है .

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

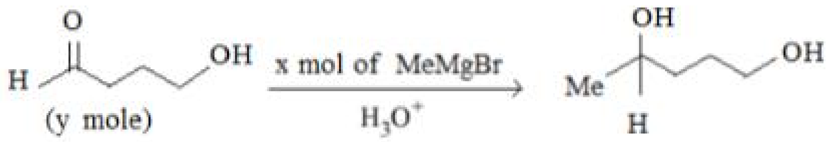
Possible Answers :

10

Question Number : 90 Question Id : 3666944264 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1



The ratio x/y on completion of the above reaction is __________.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

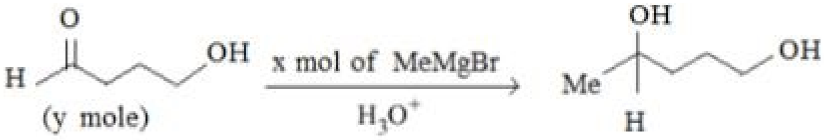
Possible Answers :

10

Question Number : 90 Question Id : 3666944264 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1



उपरोक्त अभिक्रिया के पूर्ण होने पर x/y का अनुपात ______________ है .

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10