National Testing Agency

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Question Paper Name :	B Tech 8th April 2024 Shift 2
Subject Name :	B. Tech
Creation Date :	2024-04-08 20:09:37
Duration :	180
Total Marks :	300
Display Marks:	Yes

B. Tech

Group Number :	1
Group Id :	878270682
Group Maximum Duration :	0
Group Minimum Duration :	180
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	300
Is this Group for Examiner? :	No
Examiner permission :	Cant View
Show Progress Bar? :	No

Mathematics Section A

Section Id :	8782701176
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 :	8782702083
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 1 Question Id : 87827056058 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Let $A = \{2, 3, 6, 8, 9, 11\}$ and $B = \{1, 4, 5, 10, 15\}$. Let R be a relation on $A \times B$ defined by $(a, b)R(c, d)$ if and only if $3ad - 7bc$ is an even integer. Then the relation R is

Options :

878270220131. an equivalence relation.

878270220132. reflexive but not symmetric.

878270220133. transitive but not symmetric.

878270220134. reflexive and symmetric but not transitive.

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Question Number : 1 Question Id : 87827056058 Question Type : MCQ Option Shuffling : Yes 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 $A = \{2, 3, 6, 8, 9, 11\}$ तथा $B = \{1, 4, 5, 10, 15\}$ हैं। माना R, $A \times B$ पर एक संबंध है जो $(a, b)R(c, d)$ द्वारा तो ही परिभाषित है यदि और केवल यदि $3ad - 7bc$ एक सम संख्या है। तो संबंध R

Options :

878270220131. एक तुल्यता संबंध है।

878270220132. स्वतुल्य है परन्तु सममित नहीं है।

878270220133. संक्रामक है परन्तु सममित नहीं है।

878270220134. स्वतुल्य और सममित है परन्तु संक्रामक नहीं है।

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Question Number : 2 Question Id : 87827056059 Question Type : MCQ Option Shuffling : Yes 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 $f(x) = \begin{cases} -a & \text{if } -a \le x \le 0 \\ x + a & \text{if } 0 < x \le a \end{cases}$ where $a > 0$ and $g(x) = (f(|x|) - |f(x)|)/2$.

Then the function $g : [-a, a] \to [-a, a]$ is

Options :

878270220135. one-one.

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878270220136. onto.

878270220137. both one-one and onto.

878270220138. neither one-one nor onto.

Question Number : 2 Question Id : 87827056059 Question Type : MCQ Option Shuffling : Yes 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 $f(x) = \begin{cases} -a & \text{यदि } -a \le x \le 0 \\ x + a & \text{यदि } \; 0 < x \le a \end{cases}$ है, जहाँ $a > 0$ तथा $g(x) = (f(|x|) - |f(x)|)/2$ है। तो फलन $g : [-a, a] \to [-a, a]$

Options :

878270220135. ऐकैकी है।

878270220136. आच्छादक है।

878270220137. ऐकैकी तथा आच्छादक दोनों है।

878270220138. न तो एकैकी है न ही आच्छादक है।

Question Number : 3 Question Id : 87827056060 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

If the system of equations $x+4y-z=\lambda$, $7x+9y+\mu z=-3$, $5x+y+2z=-1$ has infinitely many solutions, then $(2\mu+3\lambda)$ is equal to :

Options :

878270220139. 3

878270220140. -3

878270220141. 2

878270220142. -2

Question Number : 3 Question Id : 87827056060 Question Type : MCQ Option Shuffling : Yes 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 समीकरण निकाय $x+4y-z=\lambda$, $7x+9y+\mu z=-3$, $5x+y+2z=-1$ के अनंत हल हैं, तो $(2\mu+3\lambda)$ बराबर है :

Options :

878270220139. 3

878270220140. -3

878270220141. 2

878270220142. -2

Question Number : 4 Question Id : 87827056061 Question Type : MCQ Option Shuffling : Yes 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 $\alpha \neq a$, $\beta \neq b$, $\gamma \neq c$ and $\begin{vmatrix} \alpha & b & c \\ a & \beta & c \\ a & b & \gamma \end{vmatrix} = 0$, then $\dfrac{a}{\alpha - a} + \dfrac{b}{\beta - b} + \dfrac{\gamma}{\gamma - c}$ is equal to :

Options :

878270220143. 2

878270220144. 0

878270220145. 1

878270220146. 3

Question Number : 4 Question Id : 87827056061 Question Type : MCQ Option Shuffling : Yes 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 $\alpha \neq a$, $\beta \neq b$, $\gamma \neq c$ तथा $\begin{vmatrix} \alpha & b & c \\ a & \beta & c \\ a & b & \gamma \end{vmatrix} = 0$ हैं, तो $\dfrac{a}{\alpha - a} + \dfrac{b}{\beta - b} + \dfrac{\gamma}{\gamma - c}$ बराबर है :

Options :

878270220143. 2

878270220144. 0

878270220145. 1

878270220146. 3

Question Number : 5 Question Id : 87827056062 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The number of ways five alphabets can be chosen from the alphabets of the word MATHEMATICS, where the chosen alphabets are not necessarily distinct, is equal to :

Options :

878270220147. 175

878270220148. 177

878270220149. 179

878270220150. 181

Question Number : 5 Question Id : 87827056062 Question Type : MCQ Option Shuffling : Yes Is

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

Correct Marks : 4 Wrong Marks : 1

MATHEMATICS शब्द के अक्षरों से पाँच अक्षर चुनने के तरीकों, जबकि चुने गए अक्षरों का भिन्न होना आवश्यक नहीं है, की संख्या है :

Options :

878270220147. 175

878270220148. 177

878270220149. 179

878270220150. 181

Question Number : 6 Question Id : 87827056063 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

If the term independent of x in the expansion of $\left(\sqrt{a}x^2 + \frac{1}{2x^3}\right)^{10}$ is 105, then a^2 is equal to :

Options :

878270220151. 2

878270220152. 4

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878270220153. 6

878270220154. 9

Question Number : 6 Question Id : 87827056063 Question Type : MCQ Option Shuffling : Yes 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 $\left(\sqrt{a}x^2 + \frac{1}{2x^3}\right)^{10}$ के प्रसार में x से स्वतंत्र पद 105 है, तो a^2 बराबर है :

Options :

878270220151. 2

878270220152. 4

878270220153. 6

878270220154. 9

Question Number : 7 Question Id : 87827056064 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

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The sum of all possible values of $\theta \in [-\pi, 2\pi]$, for which $\frac{1 + i\cos\theta}{1 - 2i\cos\theta}$ is purely imaginary, is equal to :

Options :

878270220155. 2π

878270220156. 3π

878270220157. 4π

878270220158. 5π

Question Number : 7 Question Id : 87827056064 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

$\theta \in [-\pi, 2\pi]$ के सभी संभव मानों, जिनके लिए $\frac{1 + i\cos\theta}{1 - 2i\cos\theta}$ शुद्धतः काल्पनिक है, का योग बराबर है :

Options :

878270220155. 2π

878270220156. 3π

878270220157. 4π

878270220158. 5π

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Question Number : 8 Question Id : 87827056065 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

In an increasing geometric progression of positive terms, the sum of the second and sixth terms is $\frac{70}{3}$ and the product of the third and fifth terms is 49. Then the sum of the 4^{th}, 6^{th} and 8^{th} terms is equal to :

Options :

878270220159. 78

878270220160. 84

878270220161. 91

878270220162. 96

Question Number : 8 Question Id : 87827056065 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

धनात्मक पदों की एक वर्धमान गुणोत्तर श्रेढ़ी में, दूसरे तथा छठे पदों का योग $\frac{70}{3}$ है तथा तीसरे और पाँचवे पदों का गुणनफल 49 है। तो चौथे, छठे तथा आठवें पदों का योग है :

Options :

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878270220159. 78

878270220160. 84

878270220161. 91

878270220162. 96

Question Number : 9 Question Id : 87827056066 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

For a, b > 0, let $f(x) = \begin{cases} \dfrac{\tan((a+1)x) + b\tan x}{x}, & x < 0 \\ 3, & x = 0 \\ \dfrac{\sqrt{ax + b^2x^2} - \sqrt{ax}}{b\sqrt{a}\,x\sqrt{x}}, & x > 0 \end{cases}$

be a continous function at $x = 0$. Then $\dfrac{b}{a}$ is equal to :

Options :

878270220163. 6

878270220164. 5

878270220165. 4

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878270220166. 8

Question Number : 9 Question Id : 87827056066 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

$$\text{a, b} > 0 \text{ के लिए, माना } f(x) = \begin{cases} \dfrac{\tan((a+1)x) + b\tan x}{x}, & x<0 \\ 3, & x=0 \\ \dfrac{\sqrt{ax+b^2x^2} - \sqrt{ax}}{b\sqrt{a}\, x\sqrt{x}}, & x>0 \end{cases}$$

$x=0$ पर एक संतत फलन है। तो $\dfrac{b}{a}$ बराबर है :

Options :

878270220163. 6

878270220164. 5

878270220165. 4

878270220166. 8

Question Number : 10 Question Id : 87827056067 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

If the function $f(x)=2x^3-9ax^2+12a^2x+1$, $a>0$ has a local maximum at $x=\alpha$ and a local minimum at $x=\alpha^2$, then α and α^2 are the roots of the equation :

Options :

878270220167. $8x^2-6x+1=0$

878270220168. $8x^2+6x-1=0$

878270220169. $x^2-6x+8=0$

878270220170. $x^2+6x+8=0$

Question Number : 10 Question Id : 87827056067 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

यदि फलन $f(x)=2x^3-9ax^2+12a^2x+1$, $a>0$ का $x=\alpha$ पर एक स्थानीय उच्चतम है तथा $x=\alpha^2$ पर एक स्थानीय निम्नतम है, तो α तथा α^2 निम्न में से किस समीकरण के मूल हैं ?

Options :

878270220167. $8x^2-6x+1=0$

878270220168. $8x^2+6x-1=0$

878270220169. $x^2-6x+8=0$

878270220170. $x^2+6x+8=0$

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Question Number : 11 Question Id : 87827056068 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Let $\int_{\alpha}^{\log_e 4} \frac{dx}{\sqrt{e^x - 1}} = \frac{\pi}{6}$. Then e^{α} and $e^{-\alpha}$ are the roots of the equation :

Options :

878270220171. $x^2 + 2x - 8 = 0$

878270220172. $x^2 - 2x - 8 = 0$

878270220173. $2x^2 - 5x + 2 = 0$

878270220174. $2x^2 - 5x - 2 = 0$

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Question Number : 11 Question Id : 87827056068 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

माना $\int_{\alpha}^{\log_e 4} \frac{dx}{\sqrt{e^x - 1}} = \frac{\pi}{6}$ है। तो e^{α} तथा $e^{-\alpha}$ निम्न में से किस समीकरण के मूल हैं ?

Options :

878270220171. $x^2 + 2x - 8 = 0$

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878270220172. $x^2 - 2x - 8 = 0$

878270220173. $2x^2 - 5x + 2 = 0$

878270220174. $2x^2 - 5x - 2 = 0$

Question Number : 12 Question Id : 87827056069 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The area of the region in the first quadrant inside the circle $x^2+y^2=8$ and outside the parabola $y^2=2x$ is equal to :

Options :

878270220175. $\pi - \frac{2}{3}$

878270220176. $\frac{\pi}{2} - \frac{2}{3}$

878270220177. $\pi - \frac{1}{3}$

878270220178. $\frac{\pi}{2} - \frac{1}{3}$

Question Number : 12 Question Id : 87827056069 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

प्रथम चतुर्थांश में वृत्त $x^2+y^2=8$ के अन्दर तथा परवलय $y^2=2x$ के बाहर के क्षेत्र का क्षेत्रफल है :

Options :

878270220175. $\pi - \frac{2}{3}$

878270220176. $\frac{\pi}{2} - \frac{2}{3}$

878270220177. $\pi - \frac{1}{3}$

878270220178. $\frac{\pi}{2} - \frac{1}{3}$

Question Number : 13 Question Id : 87827056070 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Let $y=y(x)$ be the solution curve of the differential equation $\sec y \frac{dy}{dx} + 2x \sin y = x^3 \cos y$, $y(1)=0$.

Then $y(\sqrt{3})$ is equal to :

Options :

878270220179. $\frac{\pi}{12}$

878270220180. $\frac{\pi}{6}$

878270220181. $\frac{\pi}{4}$

878270220182. $\frac{\pi}{3}$

Question Number : 13 Question Id : 87827056070 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

माना अवकल समीकरण $\sec y \frac{dy}{dx} + 2x \sin y = x^3 \cos y$, $y(1) = 0$ का हल वक्र $y = y(x)$ है। तो $y(\sqrt{3})$ बराबर है :

Options :

878270220179. $\frac{\pi}{12}$

878270220180. $\frac{\pi}{6}$

878270220181. $\frac{\pi}{4}$

878270220182. $\frac{\pi}{3}$

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Question Number : 14 Question Id : 87827056071 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

If the line segment joining the points (5, 2) and (2, a) subtends an angle $\frac{\pi}{4}$ at the origin, then the absolute value of the product of all possible values of a is :

Options :

878270220183. 2

878270220184. 8

878270220185. 6

878270220186. 4

Question Number : 14 Question Id : 87827056071 Question Type : MCQ Option Shuffling : Yes 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 बिन्दुओं (5, 2) तथा (2, a) को मिलाने वाला रेखाखंड, मूलबिंदु पर $\frac{\pi}{4}$ का कोण बनाता है, तो a के सभी संभव मानों के गुणनफल का निरपेक्ष मान है :

Options :

878270220183. 2

878270220184.

8

878270220185. 6

878270220186. 4

Question Number : 15 Question Id : 87827056072 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

If the image of the point $(-4, 5)$ in the line $x+2y=2$ lies on the circle $(x+4)^2+(y-3)^2=r^2$, then r is equal to :

Options :

878270220187. 1

878270220188. 2

878270220189. 3

878270220190. 4

Question Number : 15 Question Id : 87827056072 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

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यदि रेखा $x+2y=2$ में $(-4, 5)$ का प्रतिबिंब वृत्त $(x+4)^2+(y-3)^2=r^2$ पर है, तो r बराबर है :

Options :

878270220187. 1

878270220188. 2

878270220189. 3

878270220190. 4

Question Number : 16 Question Id : 87827056073 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

If the shortest distance between the lines $\frac{x-\lambda}{2}=\frac{y-4}{3}=\frac{z-3}{4}$ and $\frac{x-2}{4}=\frac{y-4}{6}=\frac{z-7}{8}$ is $\frac{13}{\sqrt{29}}$, then a value of λ is :

Options :

878270220191. -1

878270220192. $\frac{13}{25}$

878270220193. 1

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878270220194. $-\frac{13}{25}$

Question Number : 16 Question Id : 87827056073 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

यदि रेखाओं $\frac{x-\lambda}{2}=\frac{y-4}{3}=\frac{z-3}{4}$ तथा $\frac{x-2}{4}=\frac{y-4}{6}=\frac{z-7}{8}$ के बीच की न्यूनतम दूरी $\frac{13}{\sqrt{29}}$ है, तो λ का एक मान है :

Options :

878270220191. -1

878270220192. $\frac{13}{25}$

878270220193. 1

878270220194. $-\frac{13}{25}$

Question Number : 17 Question Id : 87827056074 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

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Let $\vec{a}=4\hat{i}-\hat{j}+\hat{k}$, $\vec{b}=11\hat{i}-\hat{j}+\hat{k}$ and $\vec{c}$ be a vector such that $(\vec{a}+\vec{b})\times\vec{c}=\vec{c}\times(-2\vec{a}+3\vec{b})$.

If $(2\vec{a}+3\vec{b})\cdot\vec{c}=1670$, then $|\vec{c}|^2$ is equal to :

Options :

878270220195. 1609

878270220196. 1600

878270220197. 1618

878270220198. 1627

Question Number : 17 Question Id : 87827056074 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

माना $\vec{a}=4\hat{i}-\hat{j}+\hat{k}$, $\vec{b}=11\hat{i}-\hat{j}+\hat{k}$ हैं तथा एक सदिश $\vec{c}$ के लिए $(\vec{a}+\vec{b})\times\vec{c}=\vec{c}\times(-2\vec{a}+3\vec{b})$ है।

यदि $(2\vec{a}+3\vec{b})\cdot\vec{c}=1670$ है, तो $|\vec{c}|^2$ बराबर है :

Options :

878270220195. 1609

878270220196. 1600

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878270220197. 1618

878270220198. 1627

Question Number : 18 Question Id : 87827056075 Question Type : MCQ Option Shuffling : Yes 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 $\vec{a} = \hat{i} + 2\hat{j} + 3\hat{k}$, $\vec{b} = 2\hat{i} + 3\hat{j} - 5\hat{k}$ and $\vec{c} = 3\hat{i} - \hat{j} + \lambda\hat{k}$ be three vectors. Let $\vec{r}$ be a unit vector along $\vec{b} + \vec{c}$. If $\vec{r} \cdot \vec{a} = 3$, then 3λ is equal to :

Options :

878270220199. 25

878270220200. 27

878270220201. 30

878270220202. 21

Question Number : 18 Question Id : 87827056075 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

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माना तीन सदिश $\vec{a} = \hat{i}+2\hat{j}+3\hat{k}$, $\vec{b} = 2\hat{i}+3\hat{j}-5\hat{k}$ तथा $\vec{c} = 3\hat{i}-\hat{j}+\lambda\hat{k}$ हैं। माना $\vec{b}+\vec{c}$ के अनुदिश एक मात्रक सदिश $\vec{r}$ है। यदि $\vec{r}\cdot\vec{a} = 3$ है, तो 3λ बराबर है :

Options :

878270220199. 25

878270220200. 27

878270220201. 30

878270220202. 21

Question Number : 19 Question Id : 87827056076 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

There are three bags X, Y and Z. Bag X contains 5 one-rupee coins and 4 five-rupee coins; Bag Y contains 4 one-rupee coins and 5 five-rupee coins and Bag Z contains 3 one-rupee coins and 6 five-rupee coins. A bag is selected at random and a coin drawn from it at random is found to be a one-rupee coin. Then the probability, that it came from bag Y, is :

Options :

878270220203. $\frac{5}{12}$

878270220204. $\frac{1}{3}$

878270220205.

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$\frac{1}{4}$

878270220206. $\frac{1}{2}$

Question Number : 19 Question Id : 87827056076 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

X, Y, Z तीन थैले हैं। थैले X में एक रुपये के 5 सिक्के तथा पाँच रुपये के 4 सिक्के हैं, थैले Y में एक रुपये के 4 सिक्के तथा पाँच रुपये के 5 सिक्के हैं और थैले Z में एक रुपये के 3 सिक्के तथा पाँच रुपये के 6 सिक्के हैं। एक थैला यादृच्छया चुना जाता है तथा इसमें से यादृच्छया निकाला गया एक सिक्का, एक रुपये का पाया जाता है। तो इसके थैले Y से निकलने की प्रायिकता है :

Options :

878270220203. $\frac{5}{12}$

878270220204. $\frac{1}{3}$

878270220205. $\frac{1}{4}$

878270220206. $\frac{1}{2}$

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Question Number : 20 Question Id : 87827056077 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

If the value of $\dfrac{3\cos 36^\circ + 5\sin 18^\circ}{5\cos 36^\circ - 3\sin 18^\circ}$ is $\dfrac{a\sqrt{5}-b}{c}$, where a, b, c are natural numbers and $\gcd(a, c) = 1$, then $a+b+c$ is equal to :

Options :

878270220207. 40

878270220208. 50

878270220209. 52

878270220210. 54

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Question Number : 20 Question Id : 87827056077 Question Type : MCQ Option Shuffling : Yes

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 $\dfrac{3\cos 36^\circ + 5\sin 18^\circ}{5\cos 36^\circ - 3\sin 18^\circ} = \dfrac{a\sqrt{5}-b}{c}$ है, जहाँ a, b, c प्राकृतिक संख्याएँ हैं तथा $\gcd(a, c)=1$ है, तो $a+b+c$ बराबर है :

Options :

878270220207. 40

878270220208. 50

878270220209. 52

878270220210. 54

Mathematics Section B

Section Id :	8782701177
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 :	8782702084
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 21 Question Id : 87827056078 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 distinct real roots of the equation $|x+1|\ |x+3|-4|x+2|+5=0$, is ________

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Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 21 Question Id : 87827056078 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

समीकरण $|x+1|\,|x+3|-4|x+2|+5=0$ के भिन्न वास्तविक मूलों की संख्या है ________

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 22 Question Id : 87827056079 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 ray of light passing through the point (3, 10) reflects on the line $2x+y=6$ and the reflected ray passes through the point (7, 2). If the equation of the incident ray is $ax+by+1=0$, then a^2+b^2+3ab is equal to ________.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 22 Question Id : 87827056079 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

माना बिन्दु (3, 10) से गुजरने वाली प्रकाश की कोई किरण रेखा $2x+y=6$ पर परावर्तित होती है तथा परावर्तित किरण बिन्दु (7, 2) से गुजरती है। यदि आपतित किरण का समीकरण $ax+by+1=0$ है, तो a^2+b^2+3ab बराबर है ________

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 23 Question Id : 87827056080 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

An arithmetic progression is written in the following way

2

5 8

11 14 17

20 23 26 29

\- -

\- -

The sum of all the terms of the 10^{th} row is ________.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 23 Question Id : 87827056080 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

एक समांतर श्रेढ़ी को निम्न प्रकार से लिखा जाता है

2

5 8

11 14 17

20 23 26 29

_ _

_ ।

तो दसवीं पंक्ति के सभी पदों का योग है __________

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 24 Question Id : 87827056081 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Let A be the region enclosed by the parabola $y^2 = 2x$ and the line $x = 24$. Then the maximum area of the rectangle inscribed in the region A is ________.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 24 Question Id : 87827056081 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

माना परवलय $y^2=2x$ तथा रेखा $x=24$ से घिरा क्षेत्र A है। तो क्षेत्र A के अंतर्गत आयत का अधिकतम क्षेत्रफल है

____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 25 Question Id : 87827056082 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

If $\alpha = \lim\limits_{x \to 0^+} \left(\frac{e^{\sqrt{\tan x}} - e^{\sqrt{x}}}{\sqrt{\tan x} - \sqrt{x}} \right)$ and $\beta = \lim\limits_{x \to 0} (1+\sin x)^{\frac{1}{2}\cot x}$ are the roots of the quadratic equation

$ax^2 + bx - \sqrt{e} = 0$, then $12 \log_e(a+b)$ is equal to ________.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 25 Question Id : 87827056082 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

यदि $\alpha = \lim_{x \to 0^+} \left(\frac{e^{\sqrt{\tan x}} - e^{\sqrt{x}}}{\sqrt{\tan x} - \sqrt{x}} \right)$ तथा $\beta = \lim_{x \to 0} (1 + \sin x)^{\frac{1}{2}\cot x}$, द्विघात समीकरण $ax^2 + bx - \sqrt{e} = 0$ के मूल हैं, तो $12 \log_e(a+b)$ बराबर है ________

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 26 Question Id : 87827056083 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

If $\int \frac{1}{\sqrt[5]{(x-1)^4 (x+3)^6}} dx = A\left(\frac{\alpha x - 1}{\beta x + 3}\right)^B + C$, where C is the constant of integration, then the value of $\alpha + \beta + 20AB$ is ________.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

Question Number : 26 Question Id : 87827056083 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

यदि $\int \frac{1}{\sqrt[5]{(x-1)^4 (x+3)^6}} dx = A\left(\frac{\alpha x - 1}{\beta x + 3}\right)^B + C$ है, जहाँ C समाकलन अचर है, तो $\alpha+\beta+20AB$ का मान है

____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 27 Question Id : 87827056084 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Let $\alpha|x| = |y|e^{xy-\beta}$, $\alpha, \beta \in N$ be the solution of the differential equation $xdy - ydx + xy(xdy + ydx) = 0$, $y(1) = 2$. Then $\alpha + \beta$ is equal to ________

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

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Question Number : 27 Question Id : 87827056084 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

माना अवकल समीकरण $xdy - ydx + xy(xdy + ydx) = 0$, $y(1) = 2$ का हल $\alpha|x| = |y|e^{xy-\beta}$, $\alpha, \beta \in N$ है। तो $\alpha + \beta$ बराबर है ________

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 28 Question Id : 87827056085 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 be the focus of the hyperbola $\frac{x^2}{3} - \frac{y^2}{5} = 1$, on the positive x-axis. Let C be the circle with its centre at $A(\sqrt{6}, \sqrt{5})$ and passing through the point S. If O is the origin and SAB is a diameter of C, then the square of the area of the triangle OSB is equal to ________

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 28 Question Id : 87827056085 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

माना अतिपरवलय $\frac{x^2}{3} - \frac{y^2}{5} = 1$ की धनात्मक x-अक्ष पर नाभि S है। माना बिंदु S से होकर जाने वाले एक वृत्त C का केन्द्र $A(\sqrt{6}, \sqrt{5})$ है। यदि O मूलबिंदु है तथा C का एक व्यास SAB है, तो त्रिभुज OSB के क्षेत्रफल का वर्ग है

____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 29 Question Id : 87827056086 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Let $P(\alpha, \beta, \gamma)$ be the image of the point $Q(1, 6, 4)$ in the line $\frac{x}{1} = \frac{y-1}{2} = \frac{z-2}{3}$.

Then $2\alpha + \beta + \gamma$ is equal to ________

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 29 Question Id : 87827056086 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

माना रेखा $\frac{x}{1}=\frac{y-1}{2}=\frac{z-2}{3}$ में बिंदु $Q(1,6,4)$ का प्रतिबिंब $P(\alpha,\beta,\gamma)$ है। तो $2\alpha+\beta+\gamma$ बराबर है ________

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 30 Question Id : 87827056087 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Let $a, b, c \in N$ and $a < b < c$. Let the mean, the mean deviation about the mean and the variance of the 5 observations 9, 25, a, b, c be 18, 4 and $\frac{136}{5}$, respectively. Then $2a+b-c$ is equal to

____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 30 Question Id : 87827056087 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

माना $a, b, c \in N$ हैं तथा $a < b < c$ हैं। माना 5 प्रेक्षणों $9, 25, a, b, c$ का माध्य, माध्य के सापेक्ष माध्य विचलन तथा प्रसरण क्रमश: $18, 4$ तथा $\frac{136}{5}$ हैं। तो $2a+b-c$ बराबर है ________

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Physics Section A

Section Id :	8782701178
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 :	8782702085
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 31 Question Id : 87827056088 Question Type : MCQ Option Shuffling : Yes 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 ϵ_0 is the permittivity of free space and E is the electric field, then $\epsilon_0 E^2$ has the dimensions :

Options :

878270220221. $[M^o L^{-2} T A]$

878270220222. $[M^{-1} L^{-3} T^4 A^2]$

878270220223. $[M L^2 T^{-2}]$

878270220224. $[M L^{-1} T^{-2}]$

Question Number : 31 Question Id : 87827056088 Question Type : MCQ Option Shuffling : Yes

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 मुक्त आकाश की विद्युतशीलता ϵ_0 तथा विद्युत क्षेत्र E हो तो $\epsilon_0 E^2$ की विमाएँ हैं :

Options :

878270220221. $[M^o L^{-2} T A]$

878270220222. $[M^{-1} L^{-3} T^4 A^2]$

878270220223. $[M L^2 T^{-2}]$

878270220224. $[M L^{-1} T^{-2}]$

Question Number : 32 Question Id : 87827056089 Question Type : MCQ Option Shuffling : Yes 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 angle of projection for a projectile to have same horizontal range and maximum height is :

Options :

878270220225. $\tan^{-1}(2)$

878270220226. $\tan^{-1}(4)$

878270220227. $\tan^{-1}\left(\frac{1}{4}\right)$

878270220228. $\tan^{-1}\left(\frac{1}{2}\right)$

Question Number : 32 Question Id : 87827056089 Question Type : MCQ Option Shuffling : Yes 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 क्षैतिज परास तथा अधिकतम ऊँचाई के एक प्रक्षेप्य के लिए प्रक्षेपण कोण है :

Options :

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878270220225. $\tan^{-1}(2)$

878270220226. $\tan^{-1}(4)$

878270220227. $\tan^{-1}\left(\frac{1}{4}\right)$

878270220228. $\tan^{-1}\left(\frac{1}{2}\right)$

Question Number : 33 Question Id : 87827056090 Question Type : MCQ Option Shuffling : Yes 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 given object takes n times the time to slide down $45°$ rough inclined plane as it takes the time to slide down an identical perfectly smooth $45°$ inclined plane. The coefficient of kinetic friction between the object and the surface of inclined plane is :

Options :

878270220229. $1-n^2$

878270220230. $1-\frac{1}{n^2}$

878270220231. $\sqrt{1-n^2}$

878270220232.

$\sqrt{1-\frac{1}{n^2}}$

Question Number : 33 Question Id : 87827056090 Question Type : MCQ Option Shuffling : Yes 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 दी गई वस्तु 45° के कोण पर झुके खुरदरे आनत तल पर नीचे फिसलने में लगा समय 45° के कोण पर झुकने समान प्रकार के चिकने तल पर नीचे फिसलने में लगे समय का n गुना है। वस्तु व आनत तल के बीच गतिक घर्षण गुणांक है :

Options :

878270220229. $1-n^2$

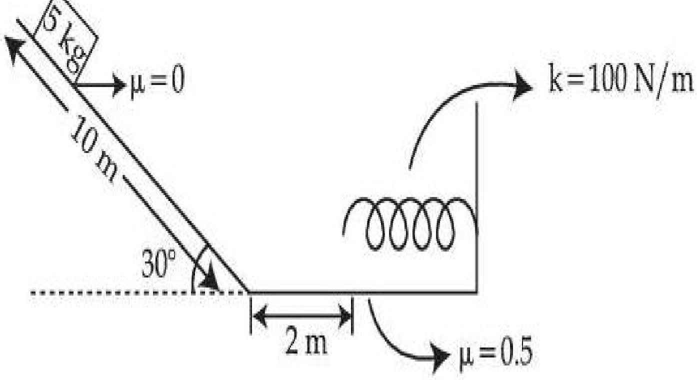
878270220230. $1-\frac{1}{n^2}$

878270220231. $\sqrt{1-n^2}$

878270220232. $\sqrt{1-\frac{1}{n^2}}$

Question Number : 34 Question Id : 87827056091 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1



A block is simply released from the top of an inclined plane as shown in the figure above. The maximum compression in the spring when the block hits the spring is :

Options :

878270220233. $\sqrt{5}$ m

878270220234. $\sqrt{6}$ m

878270220235. 1 m

878270220236. 2 m

Question Number : 34 Question Id : 87827056091 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

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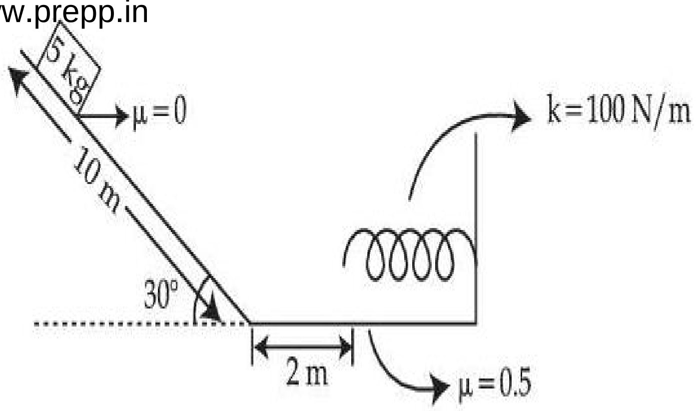

एक गुटके को प्रदर्शित चित्र के अनुसार एक आनत तल के शीर्ष से छोड़ा जाता है। जब गुटका स्प्रिंग से टकराता है तब स्प्रिंग में उत्पन्न अधिकतम संपीड़न है :

Options :

878270220233. $\sqrt{5}\,\text{m}$

878270220234. $\sqrt{6}\,\text{m}$

878270220235. 1 m

878270220236. 2 m

Question Number : 35 Question Id : 87827056092 Question Type : MCQ Option Shuffling : Yes 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 thin circular disc of mass M and radius R is rotating in a horizontal plane about an axis passing through its centre and perpendicular to its plane with angular velocity ω. If another disc of same dimensions but of mass $M/2$ is placed gently on the first disc co-axially, then the new angular velocity of the system is :

Options :

878270220237.

$\frac{5}{4}\omega$

878270220238. $\frac{2}{3}\omega$

878270220239. $\frac{4}{5}\omega$

878270220240. $\frac{3}{2}\omega$

Question Number : 35 Question Id : 87827056092 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

M द्रव्यमान व R त्रिज्या की एक पतली वृत्ताकार चकती क्षैतिज तल में इसके केन्द्र से गुजरने वाली इसके तल के लम्बवत अक्ष के परित: ω कोणीय वेग से घूम रही है। समान आकृति की $M/2$ द्रव्यमान की दूसरी चकती समअक्षीय रूप से इसके ऊपर धीरे से रख दी जाती है तब निकाय का नया कोणीय वेग है :

Options :

878270220237. $\frac{5}{4}\omega$

878270220238. $\frac{2}{3}\omega$

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878270220239. $\frac{4}{5}\omega$

878270220240. $\frac{3}{2}\omega$

Question Number : 36 Question Id : 87827056093 Question Type : MCQ Option Shuffling : Yes 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 satellite A and B go round a planet in circular orbits having radii 4R and R respectively. If the speed of A is $3v$, the speed of B will be :

Options :

878270220241. $3v$

878270220242. $\frac{4}{3}v$

878270220243. $6v$

878270220244. $12v$

Question Number : 36 Question Id : 87827056093 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

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दो उपग्रह A व B एक ग्रह के परितः क्रमशः 4R व R त्रिज्या की वृत्तीय कक्षाओं में घूम रहे हैं। यदि A की चाल $3v$ है, तब B की चाल होगी :

Options :

878270220241. $3\,v$

878270220242. $\frac{4}{3}v$

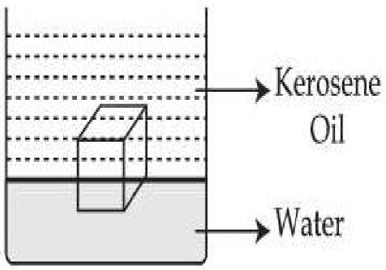
878270220243. $6\,v$

878270220244. $12\,v$

Question Number : 37 Question Id : 87827056094 Question Type : MCQ Option Shuffling : Yes 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 cube of ice floats partly in water and partly in kerosene oil. The ratio of volume of ice immersed in water to that in kerosene oil (specific gravity of Kerosene oil = 0.8, specific gravity of ice = 0.9) :



Options :

878270220245. $5 : 4$

878270220246. $8 : 9$

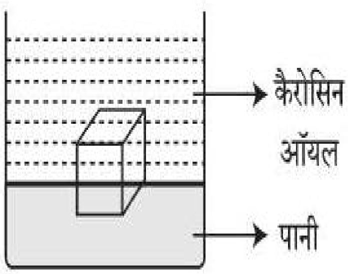
878270220247. 9 : 10

878270220248. 1 : 1

Question Number : 37 Question Id : 87827056094 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

बर्फ का एक घन आंशिक रूप से पानी तथा आंशिक कैरोसिन ऑयल में तैरता है। पानी में डूबे बर्फ के आयतन तथा कैरोसिन ऑयल में डूबे बर्फ के आयतन का अनुपात है : (कैरोसिन ऑयल का विशिष्ट गुरुत्व=0.8, बर्फ के विशिष्ट गुरुत्व=0.9) :



Options :

878270220245. 5 : 4

878270220246. 8 : 9

878270220247. 9 : 10

878270220248. 1 : 1

Question Number : 38 Question Id : 87827056095 Question Type : MCQ Option Shuffling : Yes

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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 diatomic gas ($\gamma = 1.4$) does 100 J of work in an isobaric expansion. The heat given to the gas is :

Options :

878270220249. 250 J

878270220250. 350 J

878270220251. 150 J

878270220252. 490 J

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Question Number : 38 Question Id : 87827056095 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

समदाबी प्रसार में एक द्विपरमाणुक गैस ($\gamma = 1.4$) 100 J कार्य करती है। गैस को दी गई ऊष्मा है :

Options :

878270220249. 250 J

878270220250. 350 J

878270220251. 150 J

878270220252. 490 J

Question Number : 39 Question Id : 87827056096 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Given below are two statements :

Statement (I) : The mean free path of gas molecules is inversely proportional to square of molecular diameter.

Statement (II) : Average kinetic energy of gas molecules is directly proportional to absolute temperature of gas.

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

Options :

878270220253. Both **Statement I** and **Statement II** are true

878270220254. Both **Statement I** and **Statement II** are false

878270220255. **Statement I** is true but **Statement II** is false

878270220256. **Statement I** is false but **Statement II** is true

Question Number : 39 Question Id : 87827056096 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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Correct Marks : 4 Wrong Marks : 1

नीचे दो कथन दिये गये हैं :

कथन (I) : गैस के अणुओं का औसत मुक्त पथ आण्विक व्यास के वर्ग के व्युत्क्रमानुपाती होता है।

कथन (II) : गैस की औसत गतिज ऊर्जा गैस के परम तापमान के समानुपाती होती है।

उपर्युक्त कथनों के आलोक में नीचे दिए गये विकल्पों में से **सही उत्तर** का चयन कीजिए।

Options :

878270220253. **कथन** I तथा **कथन** II दोनों सत्य हैं।

878270220254. **कथन** I तथा **कथन** II दोनों असत्य हैं।

878270220255. **कथन** I सत्य है, लेकिन **कथन** II असत्य है।

878270220256. **कथन** I असत्य है, लेकिन **कथन** II सत्य है।

Question Number : 40 Question Id : 87827056097 Question Type : MCQ Option Shuffling : Yes 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 capacitor has air as dielectric medium and two conducting plates of area 12 cm^2 and they are 0.6 cm apart. When a slab of dielectric having area 12 cm^2 and 0.6 cm thickness is inserted between the plates, one of the conducting plates has to be moved by 0.2 cm to keep the capacitance same as in previous case. The dielectric constant of the slab is : (Given $\epsilon_0 = 8.834 \times 10^{-12}$ F/m)

Options :

878270220257. 1.50

878270220258. 0.66

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878270220259. 1

878270220260. 1.33

Question Number : 40 Question Id : 87827056097 Question Type : MCQ Option Shuffling : Yes 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 संधारित्र में परावैद्युत माध्यम वायु है तथा 0.6 सेमी की दूरी पर स्थित दो 12 सेमी^{2} क्षेत्रफळ वाली चालक प्लेटें ली गई हैं। जब 12 सेमी^{2} क्षेत्रफल व 0.6 सेमी मोटाई की एक परावैद्युत पट्टी इसकी प्लेटों के बीच रख दी जाती है, तथा संधारित्र की धारिता समान बनाये रखने के लिए एक चालक प्लेट को 0.2 सेमी विस्थापित कर दिया जाता है। पट्टी का परावैद्युतांक है :
(दिया है $\epsilon_0 = 8.834 \times 10^{-12}$ F/m)

Options :

878270220257. 1.50

878270220258. 0.66

878270220259. 1

878270220260. 1.33

Question Number : 41 Question Id : 87827056098 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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Correct Marks : 4 Wrong Marks : 1

Water boils in an electric kettle in 20 minutes after being switched on. Using the same main supply, the length of the heating element should be ________ to _______ times of its initial length if the water is to be boiled in 15 minutes.

Options :

878270220261. increased, $\frac{3}{4}$

878270220262. decreased, $\frac{3}{4}$

878270220263. decreased, $\frac{4}{3}$

878270220264. increased, $\frac{4}{3}$

Question Number : 41 Question Id : 87827056098 Question Type : MCQ Option Shuffling : Yes

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 विद्युत केतली का स्विच खोलने के बाद इसमें पानी 20 मिनट में उबलता है। समान स्रोत का प्रयोग करके गर्म तन्तु की लम्बाई ________ प्रारम्भिक लम्बाई की _______ गुनी हो जाती है, जब पानी 15 मिनट में उबलता है।

Options :

878270220261. बढ़कर, $\frac{3}{4}$

878270220262. घटकर, $\frac{3}{4}$

878270220263.

घटकर, $4/3$

878270220264. बढ़कर, $4/3$

Question Number : 42 Question Id : 87827056099 Question Type : MCQ Option Shuffling : Yes 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 long straight wire of radius a carries a steady current I. The current is uniformly distributed across its cross section. The ratio of the magnetic field at $\frac{a}{2}$ and 2a from axis of the wire is :

Options :

878270220265. 1 : 4

878270220266. 3 : 4

878270220267. 1 : 1

878270220268. 4 : 1

Question Number : 42 Question Id : 87827056099 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

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a त्रिज्या के एक सीधे लम्बे तार में प्रवाहित स्थाई धारा I है। धारा इसके अनुप्रस्थ काट में समान रूप से वितरित है। तार की अक्ष से $\frac{a}{2}$ तथा 2 a दूरी पर चुम्बकीय क्षेत्रों का अनुपात है :

Options :

878270220265. 1 : 4

878270220266. 3 : 4

878270220267. 1 : 1

878270220268. 4 : 1

Question Number : 43 Question Id : 87827056100 Question Type : MCQ Option Shuffling : Yes 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 coil of negligible resistance is connected in series with 90 Ω resistor across 120 V, 60 Hz supply. A voltmeter reads 36 V across resistance. Inductance of the coil is :

Options :

878270220269. 2.86 H

878270220270. 0.91 H

878270220271. 0.286 H

878270220272. 0.76 H

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Question Number : 43 Question Id : 87827056100 Question Type : MCQ Option Shuffling : Yes 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 नगण्य प्रतिरोध की कुंडली को 90 Ω के प्रतिरोध के साथ श्रेणीक्रम में जोड़कर 120 V, 60 Hz के स्रोत से जोड़ा गया है। प्रतिरोध के सिरों के बीच वोल्टमीटर का पाठ्यांक 36 V है। कुंडली का प्रेरकत्व है :

Options :

878270220269. 2.86 H

878270220270. 0.91 H

878270220271. 0.286 H

878270220272. 0.76 H

Question Number : 44 Question Id : 87827056101 Question Type : MCQ Option Shuffling : Yes 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 plane progressive wave is given by $y = 2\cos 2\pi(330t - x)$ m. The frequency of the wave is :

Options :

878270220273. 660 Hz

878270220274. 340 Hz

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878270220275. 330 Hz

878270220276. 165 Hz

Question Number : 44 Question Id : 87827056101 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

एक समतल प्रगामी तरंग $y = 2\cos 2\pi(330t - x)$ m द्वारा प्रदर्शित की गई है। तरंग की आवृत्ति है :

Options :

878270220273. 660 Hz

878270220274. 340 Hz

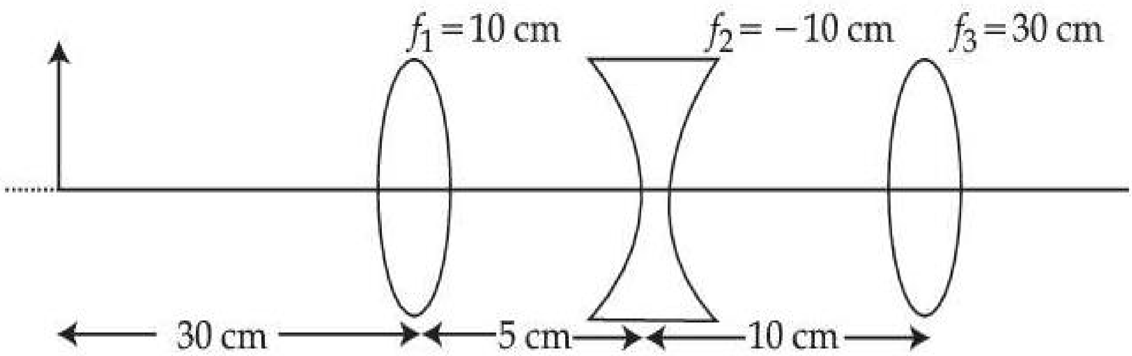
878270220275. 330 Hz

878270220276. 165 Hz

Question Number : 45 Question Id : 87827056102 Question Type : MCQ Option Shuffling : Yes 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 position of the image formed by the combination of lenses is :



Options :

878270220277. 15 cm (left of second lens)

878270220278. 30 cm (left of third lens)

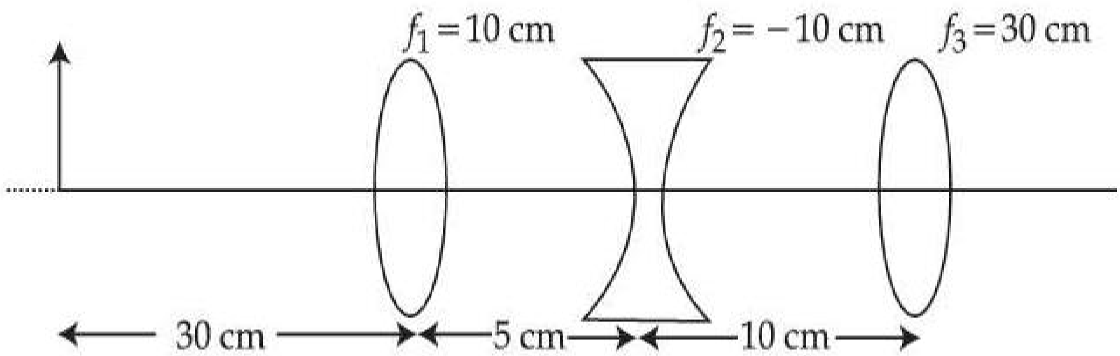
878270220279. 15 cm (right of second lens)

878270220280. 30 cm (right of third lens)

Question Number : 45 Question Id : 87827056102 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

लैंसों के संयोजन द्वारा बने प्रतिबिम्ब की स्थिति है :



Options :

878270220277. 15 सेमी (दूसरे लैंस से बाँये)

878270220278. 30 सेमी (तीसरे लैंस से बाँये)

878270220279. 15 सेमी (दूसरे लैंस से दाँये)

878270220280. 30 सेमी (तीसरे लैंस से बाँये)

Question Number : 46 Question Id : 87827056103 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

A proton and an electron have the same de Broglie wavelength. If K_p and K_e be the kinetic energies of proton and electron respectively, then choose the correct relation :

Options :

878270220281. $K_p > K_e$

878270220282. $K_p < K_e$

878270220283. $K_p = K_e$

878270220284. $K_p = K_e^2$

Question Number : 46 Question Id : 87827056103 Question Type : MCQ Option Shuffling : Yes 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 प्रोट्रान व एक इलैक्ट्रान की डी-ब्रॉग्ली तरंगदैर्ध्य समान हैं। यदि प्रोट्रान व इलैक्ट्रान की गतिज ऊर्जाएँ क्रमशः K_p तथा K_e हों तब सही संबन्ध चुनिए।

Options :

878270220281. $K_p > K_e$

878270220282. $K_p < K_e$

878270220283. $K_p = K_e$

878270220284. $K_p = K_e^2$

Question Number : 47 Question Id : 87827056104 Question Type : MCQ Option Shuffling : Yes 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 M_0 is the mass of isotope ${}^{12}_{5}B$, M_p and M_n are the masses of proton and neutron, then nuclear binding energy of isotope is :

Options :

878270220285. $(M_o - 5M_p)C^2$

878270220286. $(M_o - 12M_n)C^2$

878270220287. $(5M_p + 7M_n - M_o)C^2$

878270220288. $(M_o - 5M_p - 7M_n)C^2$

Question Number : 47 Question Id : 87827056104 Question Type : MCQ Option Shuffling : Yes 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 ${}^{12}_{5}B$ समस्थानिक का द्रव्यमान M_o है, प्रोट्रान व न्यूट्रान का द्रव्यमान क्रमशः M_p व M_n है तब समस्थानिक की नाभिकीय बंधन ऊर्जा है :

Options :

878270220285. $(M_o - 5M_p)\ C^2$

878270220286. $(M_o - 12M_n)\ C^2$

878270220287. $(5M_p + 7M_n - M_o)\ C^2$

878270220288. $(M_o - 5M_p - 7M_n)\ C^2$

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Question Number : 48 Question Id : 87827056105 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

In a hypothetical fission reaction

$_{92}X^{236} \rightarrow {}_{56}Y^{141} + {}_{36}Z^{92} + 3\mathbf{R}$

The identity of emitted particles (R) is :

Options :

878270220289. Electron

878270220290. Proton

878270220291. Neutron

878270220292. γ-radiations

Question Number : 48 Question Id : 87827056105 Question Type : MCQ Option Shuffling : Yes

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 काल्पनिक विखण्डन अभिक्रिया

$_{92}X^{236} \rightarrow {}_{56}Y^{141} + {}_{36}Z^{92} + 3\mathbf{R}$

में उत्सर्जित कण (R) होंगे :

Options :

878270220289. इलैक्ट्रान

878270220290. प्रोट्रान

878270220291. न्यूट्रान

878270220292. γ–विकिरण

Question Number : 49 Question Id : 87827056106 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

There are 100 divisions on the circular scale of a screw gauge of pitch 1 mm. With no measuring quantity in between the jaws, the zero of the circular scale lies 5 divisions below the reference line. The diameter of a wire is then measured using this screw gauge. It is found that 4 linear scale divisions are clearly visible while 60 divisions on circular scale coincide with the reference line. The diameter of the wire is :

Options :

878270220293. 4.60 mm

878270220294. 4.65 mm

878270220295. 3.35 mm

878270220296. 4.55 mm

Question Number : 49 Question Id : 87827056106 Question Type : MCQ Option Shuffling : Yes

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

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Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

1 मिमी पिच के एक पेंचमापी के वृत्तीय पैमाने पर खानों की संख्या 100 है। जबड़ों के बीच बिना राशि मापन के लिए वृत्तीय पैमाने का शून्यांक निर्देश रेखा के नीचे 5 खानें पर है। तब इस पेंचमापी का उपयोग करके एक तार का व्यास मापा जाता है। मुख्य पैमाने के 4 खाने पूर्णतया दिखाई देते हैं तथा निर्देश रेखा से वृत्तीय पैमाने के 60 खाने की रेखा मिलती है। तार का व्यास है :

Options :

878270220293. 4.60 मिमी

878270220294. 4.65 मिमी

878270220295. 3.35 मिमी

878270220296. 4.55 मिमी

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Question Number : 50 Question Id : 87827056107 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Least count of a vernier caliper is $\frac{1}{20N}$ cm. The value of one division on the main scale is 1 mm. Then the number of divisions of main scale that coincide with N divisions of vernier scale is :

Options :

878270220297. $\left(\frac{2N-1}{20N}\right)$

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878270220298. $\left(\frac{2N-1}{2}\right)$

878270220299. $(2N-1)$

878270220300. $\left(\frac{2N-1}{2N}\right)$

Question Number : 50 Question Id : 87827056107 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

वर्नियर कैलीपर्स की अल्पतमांक $\frac{1}{20N}$ सेमी है। मुख्य पैमाने पर एक खाने का मान 1 मिमी है। वर्नियर पैमाने के N खानों से पूर्णतया मिलने वाले मुख्य पैमाने पर खानों की संख्या है :

Options :

878270220297. $\left(\frac{2N-1}{20N}\right)$

878270220298. $\left(\frac{2N-1}{2}\right)$

878270220299. $(2N-1)$

878270220300. $\left(\frac{2N-1}{2N}\right)$

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Physics Section B

Section Id :	8782701179
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 :	8782702086
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 51 Question Id : 87827056108 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

A body of mass M thrown horizontally with velocity v from the top of the tower of height H touches the ground at a distance of 100 m from the foot of the tower. A body of mass 2M thrown at a velocity $\frac{v}{2}$ from the top of the tower of height 4H will touch the ground at a distance of ________m.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

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Text Areas : PlainText

Possible Answers :

1

Question Number : 51 Question Id : 87827056108 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

M द्रव्यमान की एक वस्तु को H ऊँचाई के टॉवर के शिखर से v वेग से क्षैतिज दिशा में फेंका जाता है। जो टॉवर के पाद से 100 मी की दूरी पर जमीन को छूती है। 2M द्रव्यमानकी एक वस्तु को $\frac{v}{2}$ वेग से 4 H ऊँचाई के टॉवर के शिखर से फेंका जाये तो वह ________ मी की दूरी पर पृथ्वी तल (जमीन) को छूएगी।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 52 Question Id : 87827056109 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

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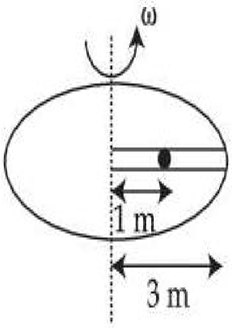
A circular table is rotating with an angular velocity of ω rad/s about its axis (see figure). There is a smooth groove along a radial direction on the table. A steel ball is gently placed at a distance of 1 m on the groove. All the surfaces are smooth. If the radius of the table is 3 m, the radial velocity of the ball w.r.t. the table at the time ball leaves the table is $x\sqrt{2}\omega$ m/s, where the value of x is ________.



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

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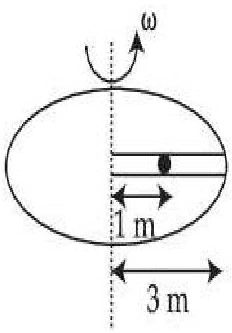
Question Number : 52 Question Id : 87827056109 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

एक वृत्ताकार मेज अपनी अक्ष के परितः ω रेडियन/से के कोणीय वेग से घूम रही है (चित्र देखिए)। मेज की त्रिज्या दिशा के अनुदिश एक चिकनी पट्टी रूपी खाँचा है। पूरी तरह चिकनी है। यदि मेज की त्रिज्या 3 मी हो मेज के सापेक्ष गेंद की त्रिज्या वेग $x\sqrt{2}\omega$ मी/से है जिस समय गेंद मेज को छोड़ती है। जहाँ x का मान ________ है।



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 53 Question Id : 87827056110 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Small water droplets of radius 0.01 mm are formed in the upper atmosphere and falling with a terminal velocity of 10 cm/s. Due to condensation, if 8 such droplets are coalesced and formed a larger drop, the new terminal velocity will be ________cm/s.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 53 Question Id : 87827056110 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

ऊपरी वायुमण्डल में 0.01 मिमी त्रिज्या की पानी की छोटी बूंदों का निर्माण होता है तथा 10 सेमी/से के सीमान्त वेग से नीचे गिरती हैं। संघनन के कारण यह 8 बूंदे मिलकर एक बड़ी बूंद बनाती है तब नया सीमान्त वेग ________ सेमी/से होगा।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 54 Question Id : 87827056111 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

An object of mass 0.2 kg executes simple harmonic motion along x axis with frequency of $\left(\frac{25}{\pi}\right)$Hz. At the position $x = 0.04$ m the object has kinetic energy 0.5 J and potential energy 0.4 J. The amplitude of oscillation is ________ cm.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 54 Question Id : 87827056111 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

0.2 किग्रा द्रव्यमान की एक वस्तु $\left(\frac{25}{\pi}\right)$Hz आवृत्ति से x-अक्ष के अनुदिश सरल आवर्त गति करती है। $x = 0.04$ स्थिति में वस्तु की गतिज ऊर्जा 0.5 J तथा स्थितिज ऊर्जा 0.4 J है। दोलक का आयाम ________ सेमी है।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

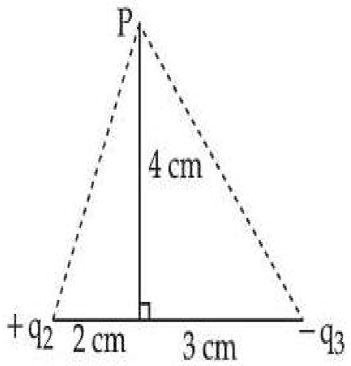
Question Number : 55 Question Id : 87827056112 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

If the net electric field at point P along Y axis is zero, then the ratio of $\left|\frac{q_2}{q_3}\right|$ is $\frac{8}{5\sqrt{x}}$, where

$x =$ ____________.



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 55 Question Id : 87827056112 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

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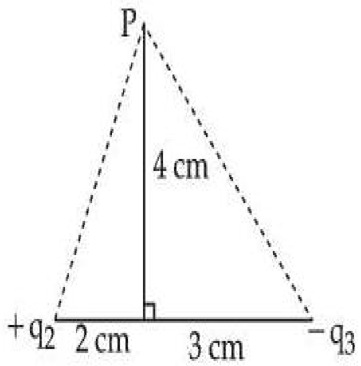
Y-अक्ष के अनुदिश बिन्दु P पर परिमापी वैद्युत क्षेत्र शून्य हैं, तब $\left|\frac{q_2}{q_3}\right|$ अनुपात $\frac{8}{5\sqrt{x}}$ है, जहाँ $x=$__________ ।



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

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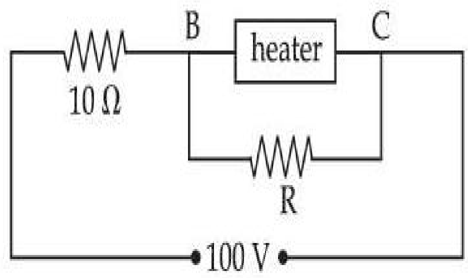
Question Number : 56 Question Id : 87827056113 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

A heater is designed to operate with a power of 1000 W in a 100 V line. It is connected in combination with a resistance of 10 Ω and a resistance R, to a 100 V mains as shown in figure. For the heater to operate at 62.5 W, the value of R should be __________ Ω.



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

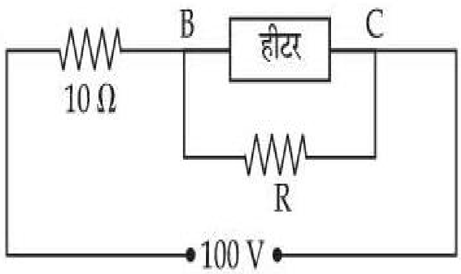
1

Question Number : 56 Question Id : 87827056113 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

100 V की लाइन में 1000 W शक्ति के साथ कार्य करने के लिए एक हीटर बनाया गया है। चित्र के अनुसार यह 10 Ω व R प्रतिरोध के संयोजन में जोड़ा गया है। 62.5 W पर हीटर को काम करने के लिए R का मान ________ Ω होना चाहिए।



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 57 Question Id : 87827056114 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

The coercivity of a magnet is 5×10^3 A/m. The amount of current required to be passed in a solenoid of length 30 cm and the number of turns 150, so that the magnet gets demagnetised when inside the solenoid is ________A.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 57 Question Id : 87827056114 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

एक चुम्बक की निग्राहिता 5×10^3 A/m है। 150 फेरों की 30 सेमी लम्बाई की परिनालिका से गुजरने वाली धारा की मात्रा ________A है ताकि परिनालिका के अन्दर चुम्बक अचुम्बकित हो जाए।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 58 Question Id : 87827056115 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

An alternating emf $E = 110\sqrt{2}\ \sin 100t$ volt is applied to a capacitor of $2\mu F$, the rms value of current in the circuit is ________mA.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 58 Question Id : 87827056115 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

एक प्रत्यावर्ती वि.वा.बल $E = 110\sqrt{2}\ \sin 100t$ वोल्ट को 2 μF के संधारित्र पर आरोपित किया जाता है, परिपथ में धारा का वर्ग माध्य मूल मान _________ mA है।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 59 Question Id : 87827056116 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Two slits are 1 mm apart and the screen is located 1 m away from the slits. A light of wavelength 500 nm is used. The width of each slit to obtain 10 maxima of the double slit pattern within the central maximum of the single slit pattern is ________ $\times 10^{-4}$ m.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 59 Question Id : 87827056116 Question Type : SA Calculator : None

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

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Correct Marks : 4 Wrong Marks : 1

दो झिर्रियों को 1 मिमी की दूरी पर तथा पर्दे को झिर्रियों से 1 मी की दूरी पर रखा गया है। 500 nm तरंगदैर्ध्य के प्रकाश का उपयोग किया गया है। एकल झिर्री पैटर्न के केन्द्रीय उच्चिष्ठ में द्विझिर्री पैटर्न के 10 उच्चिष्ठ प्राप्त करने के लिए प्रत्येक झिर्री प्रारूप की चौड़ाई ________ $\times 10^{-4}$ मी है।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

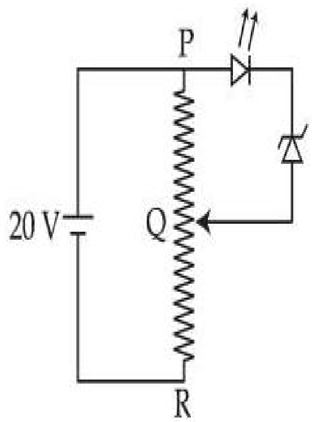
1

Question Number : 60 Question Id : 87827056117 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

A potential divider circuit is connected with a dc source of 20 V, a light emitting diode of glow in voltage 1.8 V and a zener diode of breakdown voltage of 3.2 V. The length (PR) of the resistive wire is 20 cm. The minimum length of PQ to just glow the LED is __________cm.



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

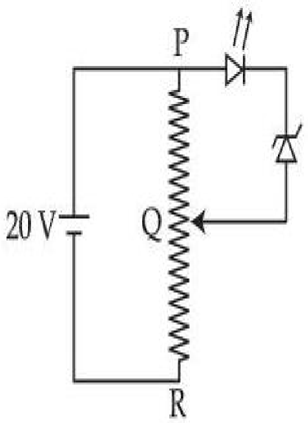
Possible Answers :

Question Number : 60 Question Id : 87827056117 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

एक विभव विभाजक परिपथ को 20 V के एक दिष्ट धारा स्रोत, 1.8 वोल्टेज में चमकने वाले एक प्रकाश उत्सर्जक डायोड तथा 3.2 V के भंजन वोल्टेज के जीनर डायोड से जोड़ा गया है। प्रतिरोधक तार की PR लंम्बाई 20 सेमी है। LED को केवल चमकने हेतु PQ की न्यूनतम लम्बाई __________ सेमी है।



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Chemistry Section A

Section Id :	8782701180
Section Number :	5
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	20

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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 :	8782702087
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 61 Question Id : 87827056118 Question Type : MCQ Option Shuffling : Yes 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 ψ_A and ψ_B are the wave functions of atomic orbitals, then σ^* is represented by :

Options :

878270220311. $\psi_A + \psi_B$

878270220312. $\psi_A - \psi_B$

878270220313. $\psi_A + 2\psi_B$

878270220314. $\psi_A - 2\psi_B$

Question Number : 61 Question Id : 87827056118 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

जब ψ_A एवं ψ_B परमाणु कक्षकों के तरंग फलन हैं, तब σ^* को निरूपित किया जा सकता है :

Options :

878270220311. $\psi_A + \psi_B$

878270220312. $\psi_A - \psi_B$

878270220313. $\psi_A + 2\psi_B$

878270220314. $\psi_A - 2\psi_B$

Question Number : 62 Question Id : 87827056119 Question Type : MCQ Option Shuffling : Yes
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) : A Buffer solution is the mixture of a salt and an acid or a base mixed in any particular quantities.

Statement (II) : Blood is naturally occurring buffer solution whose pH is maintained by $H_2CO_3/HCO_3^{\ominus}$ concentrations.

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

Options :

878270220315. Both **Statement I** and **Statement II** are true

878270220316. Both **Statement I** and **Statement II** are false

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878270220317. **Statement I** is true but **Statement II** is false

878270220318. **Statement I** is false but **Statement II** is true

Question Number : 62 Question Id : 87827056119 Question Type : MCQ Option Shuffling : Yes 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) : बफर विलयन किसी लवण तथा एक अम्ल या एक क्षारक का किसी विशेष मात्रा में मिश्रण है।

कथन (II) : रक्त एक प्राकृतिक बफर विलयन है जिसका pH $H_2CO_3/HCO_3^{\ominus}$ सान्द्रताओं द्वारा निर्धारित किया जाता है।

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

Options :

878270220315. दोनों **कथन I** एवं **कथन II** सही हैं।

878270220316. दोनों **कथन I** एवं **कथन II** गलत हैं।

878270220317. **कथन I** सही है परंतु **कथन II** गलत है।

878270220318. **कथन I** गलत है परंतु **कथन II** सही है।

Question Number : 63 Question Id : 87827056120 Question Type : MCQ Option Shuffling : Yes 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 emf of cell $Tl \left| \underset{(0.001M)}{Tl^{+}} \right|\left| \underset{(0.01M)}{Cu^{2+}} \right| Cu$ is 0.83 V at 298 K. It could be increased by :

Options :

878270220319. increasing concentration of Tl^{+} ions

878270220320. increasing concentration of Cu^{2+} ions

878270220321. increasing concentration of both Tl^{+} and Cu^{2+} ions

878270220322. decreasing concentration of both Tl^{+} and Cu^{2+} ions

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Question Number : 63 Question Id : 87827056120 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

$Tl \left| \underset{(0.001M)}{Tl^{+}} \right|\left| \underset{(0.01M)}{Cu^{2+}} \right| Cu$ सेल का 298 K पर emf 0.83 V है। इसे बढ़ाया जा सकता है :

Options :

878270220319. Tl^{+} आयनों की सान्द्रता बढ़ा कर

878270220320. Cu^{2+} आयनों की सान्द्रता बढ़ा कर

878270220321. Tl^{+} एवं Cu^{2+} दोनों आयनों की सान्द्रता बढ़ा कर

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878270220322. Tl^{+} एवं Cu^{2+} दोनों आयनों की सान्द्रता घटा कर

Question Number : 64 Question Id : 87827056121 Question Type : MCQ Option Shuffling : Yes 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 reaction ;

$$\frac{1}{2}H_{2(g)} + AgCl_{(s)} \rightarrow H^{+}_{(aq)} + Cl^{-}_{(aq)} + Ag_{(s)}$$

occurs in which of the following galvanic cell :

Options :

878270220323. $Ag|AgCl_{(s)}|KCl_{(soln.)}|AgNO_{3(aq.)}|Ag$

878270220324. $Pt|H_{2(g)}|KCl_{(soln.)}|AgCl_{(s)}|Ag$

878270220325. $Pt|H_{2(g)}|HCl_{(soln.)}|AgCl_{(s)}|Ag$

878270220326. $Pt|H_{2(g)}|HCl_{(soln.)}|AgNO_{3(aq)}|Ag$

Question Number : 64 Question Id : 87827056121 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

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अभिक्रिया

$$\frac{1}{2}H_{2(g)} + AgCl_{(s)} \rightarrow H^{+}_{(aq)} + Cl^{-}_{(aq)} + Ag_{(s)}$$

गैल्वैनी सेल में होती है :

Options :

878270220323. $Ag|AgCl_{(s)}|KCl_{(soln.)}|AgNO_{3(aq.)}|Ag$

878270220324. $Pt|H_{2(g)}|KCl_{(soln.)}|AgCl_{(s)}|Ag$

878270220325. $Pt|H_{2(g)}|HCl_{(soln.)}|AgCl_{(s)}|Ag$

878270220326. $Pt|H_{2(g)}|HCl_{(soln.)}|AgNO_{3(aq)}|Ag$

Question Number : 65 Question Id : 87827056122 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

For a reaction $A \xrightarrow{K_1} B \xrightarrow{K_2} C$

If the rate of formation of B is set to be zero then the concentration of B is given by :

Options :

878270220327. $(K_1 - K_2)[A]$

878270220328. $K_1K_2[A]$

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878270220329. $(K_1 + K_2)[A]$

878270220330. $(K_1/K_2)[A]$

Question Number : 65 Question Id : 87827056122 Question Type : MCQ Option Shuffling : Yes 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 अभिक्रिया $A \xrightarrow{K_1} B \xrightarrow{K_2} C$

के लिए, यदि B के निर्माण की दर को शून्य कर दिया जाए तो B की सान्द्रता लिखी जा सकती है :

Options :

878270220327. $(K_1 - K_2)[A]$

878270220328. $K_1K_2[A]$

878270220329. $(K_1 + K_2)[A]$

878270220330. $(K_1/K_2)[A]$

Question Number : 66 Question Id : 87827056123 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

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Identify the correct statements about p-block elements and their compounds.

(A) Non metals have higher electronegativity than metals.

(B) Non metals have lower ionisation enthalpy than metals.

(C) Compounds formed between highly reactive nonmetals and highly reactive metals are generally ionic.

(D) The non-metal oxides are generally basic in nature.

(E) The metal oxides are generally acidic or neutral in nature.

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

Options :

878270220331. (A) and (C) only

878270220332. (B) and (D) only

878270220333. (B) and (E) only

878270220334. (D) and (E) only

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Question Number : 66 Question Id : 87827056123 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

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p-ब्लॉक तत्वों एवं उसके यौगिकों के बारे में **सही** कथन हैं :

(A) अधातुओं की, धातुओं की तुलना में, विद्युत ऋणात्मकता अधिक होती है।

(B) अधातुओं की, धातुओं की तुलना में, आयनन एन्थैल्पी कम होती है।

(C) उच्च क्रियाशील अधातुओं एवं उच्च क्रियाशील धातुओं के मध्य बने यौगिक प्राय: आयनिक होते हैं।

(D) अधातुओं के ऑक्साइड्स प्राय: क्षारीय प्रकृति के होते हैं।

(E) धातुओं के ऑक्साइड्स प्राय: अम्लीय या उदासीन प्रकृति के होते हैं।

नीचे दिए गए विकल्पों में से **सही** उत्तर चुने :

Options :

878270220331. केवल (A) एवं (C)

878270220332. केवल (B) एवं (D)

878270220333. केवल (B) एवं (E)

878270220334. केवल (D) एवं (E)

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Question Number : 67 Question Id : 87827056124 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Identify the **incorrect** statements about group 15 elements :

(A) Dinitrogen is a diatomic gas which acts like an inert gas at room temperature.

(B) The common oxidation states of these elements are -3, $+3$ and $+5$.

(C) Nitrogen has unique ability to form $p\pi - p\pi$ multiple bonds.

(D) The stability of $+5$ oxidation states increases down the group.

(E) Nitrogen shows a maximum covalency of 6.

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

Options :

878270220335. (A), (B), (D) only

878270220336. (A), (C), (E) only

878270220337. (D) and (E) only

878270220338. (B), (D), (E) only

Question Number : 67 Question Id : 87827056124 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

समूह 15 तत्वों के बारे में असत्य कथन को पहचानें :

(A) डाइनाइट्रोजन एक द्विपरमाणुक गैस है जो कमरे के ताप पर अक्रिय गैस की भाँति कार्य करता है।

(B) इन तत्वों की सामान्य ऑक्सीकरण अवस्थाएँ -3, $+3$ एवं $+5$ हैं।

(C) नाइट्रोजन में $p\pi-p\pi$ बहुबन्ध बनाने की विशिष्ट योग्यता है।

(D) ऑक्सीकरण संख्या $+5$ का स्थायित्व समूह में नीचे जाने पर बढ़ता है।

(E) नाइट्रोजन 6 की अधिकतम सहसंयोजकता प्रदर्शित करता है।

नीचे दिए गए विकल्पों में से **सही** उत्तर चुने :

Options :

878270220335. केवल (A), (B), (D)

878270220336. केवल (A), (C), (E)

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878270220337. केवल (D) एवं (E)

878270220338. केवल (B), (D), (E)

Question Number : 68 Question Id : 87827056125 Question Type : MCQ Option Shuffling : Yes 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 equilibrium $Cr_2O_7^{2-} \rightleftharpoons 2CrO_4^{2-}$ is shifted to the right in :

Options :

878270220339. an acidic medium

878270220340. a basic medium

878270220341. a neutral medium

878270220342. a weakly acidic medium

Question Number : 68 Question Id : 87827056125 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

साम्यावस्था $Cr_2O_7^{2-} \rightleftharpoons 2CrO_4^{2-}$ दाहिनीं तरफ विस्थापित हो जाती है किसी :

Options :

878270220339. अम्लीय माध्यम में

878270220340. क्षारीय माध्यम में

878270220341. उदासीन माध्यम में

878270220342. दुर्बल अम्लीय माध्यम में

Question Number : 69 Question Id : 87827056126 Question Type : MCQ Option Shuffling : Yes 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) : Fusion of MnO_2 with KOH and an oxidising agent gives dark green K_2MnO_4.

Statement (II) : Manganate ion on electrolytic oxidation in alkaline medium gives permanganate ion.

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

Options :

878270220343. Both **Statement I** and **Statement II** are true

878270220344. Both **Statement I** and **Statement II** are false

878270220345. **Statement I** is true but **Statement II** is false

878270220346. Statement I is false but Statement II is true

Question Number : 69 Question Id : 87827056126 Question Type : MCQ Option Shuffling : Yes 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) : MnO_2 का KOH एवं एक ऑक्सीकारक पदार्थ के साथ संगलन गाढ़ा हरा K_2MnO_4 देता है।

कथन (II) : मैंगनेट आयन क्षारीय माध्यम में वैद्युत ऑक्सीकरण पर परमैंगनेट आयन देता है।

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

Options :

878270220343. दोनों **कथन** I एवं **कथन** II सही हैं।

878270220344. दोनों **कथन** I एवं **कथन** II गलत हैं।

878270220345. **कथन** I सही है परंतु **कथन** II गलत है।

878270220346. **कथन** I गलत है परंतु **कथन** II सही है।

Question Number : 70 Question Id : 87827056127 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

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Match **List - I** with **List - II**.

	List - I (Complex ion)		**List - II** (Spin only magnetic moment in B.M.)
(A)	$[Cr(NH_3)_6]^{3+}$	(I)	4.90
(B)	$[NiCl_4]^{2-}$	(II)	3.87
(C)	$[CoF_6]^{3-}$	(III)	0.0
(D)	$[Ni(CN)_4]^{2-}$	(IV)	2.83

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

Options :

878270220347. (A)-(IV), (B)-(III), (C)-(I), (D)-(II)

878270220348. (A)-(II), (B)-(IV), (C)-(I), (D)-(III)

878270220349. (A)-(I), (B)-(IV), (C)-(II), (D)-(III)

878270220350. (A)-(II), (B)-(III), (C)-(I), (D)-(IV)

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Question Number : 70 Question Id : 87827056127 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

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सूची - I का मिलान सूची - II से करें :

सूची - I (जटिल आयन)		सूची - II ('प्रचक्रण मात्र' चुम्बकीय आघूर्ण (B.M.))	
(A)	$[Cr(NH_3)_6]^{3+}$	(I)	4.90
(B)	$[NiCl_4]^{2-}$	(II)	3.87
(C)	$[CoF_6]^{3-}$	(III)	0.0
(D)	$[Ni(CN)_4]^{2-}$	(IV)	2.83

नीचे दिए गए विकल्पों से **सही** उत्तर चुने :

Options :

878270220347. (A)-(IV), (B)-(III), (C)-(I), (D)-(II)

878270220348. (A)-(II), (B)-(IV), (C)-(I), (D)-(III)

878270220349. (A)-(I), (B)-(IV), (C)-(II), (D)-(III)

878270220350. (A)-(II), (B)-(III), (C)-(I), (D)-(IV)

Question Number : 71 Question Id : 87827056128 Question Type : MCQ Option Shuffling : Yes

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 qualitative test for identification of presence of phosphorous, the compound is heated with an oxidising agent. Which is further treated with nitric acid and ammonium molybdate respectively. The yellow coloured precipitate obtained is :

Options :

878270220351. $Na_3PO_4.12MoO_3$

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878270220352. $(NH_4)_3PO_4.12MoO_3$

878270220353. $(NH_4)_3PO_4.12(NH_4)_2MoO_4$

878270220354. $MoPO_4.\ 21\,NH_4NO_3$

Question Number : 71 Question Id : 87827056128 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

फॉस्फोरस की उपस्थिति की पहचान हेतु गुणात्मक परीक्षण में, यौगिक को एक ऑक्सीकारक पदार्थ के साथ गर्म किया जाता है, इसके उपरान्त उसे क्रमश: नाइट्रिक अम्ल एवं अमोनियम मॉलिब्डेट के साथ उपचारित किया जाता है। प्राप्त पीले रंग का अवक्षेप है :

Options :

878270220351. $Na_3PO_4.12MoO_3$

878270220352. $(NH_4)_3PO_4.12MoO_3$

878270220353. $(NH_4)_3PO_4.12(NH_4)_2MoO_4$

878270220354. $MoPO_4.\ 21\,NH_4NO_3$

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Question Number : 72 Question Id : 87827056129 Question Type : MCQ Option Shuffling : Yes

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) : Kjeldahl method is applicable to estimate nitrogen in pyridine.

Statement (II) : The nitrogen present in pyridine can easily be converted into ammonium sulphate in Kjeldahl method.

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

Options :

878270220355. Both **Statement I** and **Statement II** are true

878270220356. Both **Statement I** and **Statement II** are false

878270220357. **Statement I** is true but **Statement II** is false

878270220358. **Statement I** is false but **Statement II** is true

Question Number : 72 Question Id : 87827056129 Question Type : MCQ Option Shuffling : Yes

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) : कैल्डॉल विधि को पिरीडीन में नाइट्रोजन ज्ञात करने में लागू किया जा सकता है।

कथन (II) : कैल्डॉल विधि में पिरीडीन में मौजूद नाइट्रोजन को आसानी के साथ अमोनियम सल्फेट में परिवर्तित किया जा सकता है।

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

Options :

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878270220355. दोनों **कथन I** एवं **कथन II** सही हैं।

878270220356. दोनों **कथन I** एवं **कथन II** गलत हैं।

878270220357. **कथन I** सही है परंतु **कथन II** गलत है।

878270220358. **कथन I** गलत है परंतु **कथन II** सही है।

Question Number : 73 Question Id : 87827056130 Question Type : MCQ Option Shuffling : Yes 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 shape of carbocation is :

Options :

878270220359. tetrahedral

878270220360. trigonal planar

878270220361. diagonal

878270220362. diagonal pyramidal

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Question Number : 73 Question Id : 87827056130 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

कार्बोकैटायन की आकृति है :

Options :

878270220359. चतुष्फलकीय

878270220360. त्रिकोणीय समतलीय

878270220361. विकर्णीय

878270220362. विकर्णीय पिरामिडी

Question Number : 74 Question Id : 87827056131 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

IUPAC name of following hydrocarbon(X) is :

$$CH_3-\underset{\displaystyle CH_3}{\underset{|}{CH}}-CH_2-CH_2-\underset{\displaystyle CH_3}{\underset{|}{CH}}-\underset{\displaystyle CH_3}{\underset{|}{CH}}-CH_2-CH_3$$

(X)

Options :

878270220363. 3,4,7-Trimethyloctane

878270220364.

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2-Ethyl-3,6-dimethylheptane

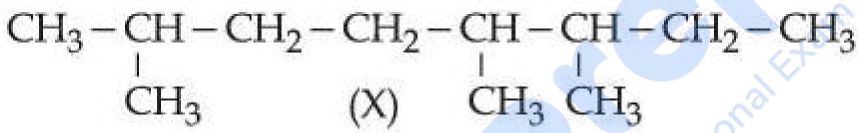
878270220365. 2,5,6-Trimethyloctane

878270220366. 2-Ethyl-2,6-diethylheptane

Question Number : 74 Question Id : 87827056131 Question Type : MCQ Option Shuffling : Yes 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 हाइड्रोकार्बन (X) का IUPAC नाम है :



Options :

878270220363. 3, 4, 7–ट्राइमेथिलऑक्टेन

878270220364. 2–एथिल––3,6–डाइमेथिलहेप्टेन

878270220365. 2,5,6–ट्राइमेथिलऑक्टेन

878270220366. 2–एथिल–2, 6–डाइएथिलहेप्टेन

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Question Number : 75 Question Id : 87827056132 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Given below are two statements :

Statement (I) : S_N2 reactions are 'stereospecific', indicating that they result in the formation of only one stereo-isomer as the product.

Statement (II) : S_N1 reactions generally result in formation of product as racemic mixtures.

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

Options :

878270220367. Both **Statement I** and **Statement II** are true

878270220368. Both **Statement I** and **Statement II** are false

878270220369. **Statement I** is true but **Statement II** is false

878270220370. **Statement I** is false but **Statement II** is true

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Question Number : 75 Question Id : 87827056132 Question Type : MCQ Option Shuffling : Yes

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) : S_N2 अभिक्रियाएँ 'त्रिविम विशिष्ट' होती हैं जो यह इंगित करता है कि वे उत्पाद के रूप में केवल एक त्रिविम-समावयव को उत्पन्न करती हैं।

कथन (II) : S_N1 अभिक्रियाएँ प्राय: उत्पाद के रूप में रेसिमिक मिश्रण को निर्मित करती हैं।

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

Options :

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878270220367. दोनों **कथन I** एवं **कथन II** सही हैं।

878270220368. दोनों **कथन I** एवं **कथन II** गलत हैं।

878270220369. **कथन I** सही है परंतु **कथन II** गलत है।

878270220370. **कथन I** गलत है परंतु **कथन II** सही है।

Question Number : 76 Question Id : 87827056133 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The correct sequence of acidic strength of the following aliphatic acids in their decreasing order is :

CH_3CH_2COOH, CH_3COOH, $CH_3CH_2CH_2COOH$, $HCOOH$

Options :

878270220371. $CH_3CH_2CH_2COOH > CH_3CH_2COOH > CH_3COOH > HCOOH$

878270220372. $HCOOH > CH_3COOH > CH_3CH_2COOH > CH_3CH_2CH_2COOH$

878270220373. $HCOOH > CH_3CH_2CH_2COOH > CH_3CH_2COOH > CH_3COOH$

878270220374. $CH_3COOH > CH_3CH_2COOH > CH_3CH_2CH_2COOH > HCOOH$

Question Number : 76 Question Id : 87827056133 Question Type : MCQ Option Shuffling : Yes

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 ऐलिफेटिक अम्लों के घटते हुए अम्लीय सामर्थ्य का सही क्रम है :

CH_3CH_2COOH, CH_3COOH, $CH_3CH_2CH_2COOH$, $HCOOH$

Options :

878270220371. $CH_3CH_2CH_2COOH > CH_3CH_2COOH > CH_3COOH > HCOOH$

878270220372. $HCOOH > CH_3COOH > CH_3CH_2COOH > CH_3CH_2CH_2COOH$

878270220373. $HCOOH > CH_3CH_2CH_2COOH > CH_3CH_2COOH > CH_3COOH$

878270220374. $CH_3COOH > CH_3CH_2COOH > CH_3CH_2CH_2COOH > HCOOH$

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Question Number : 77 Question Id : 87827056134 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

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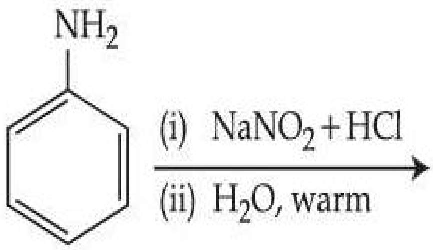
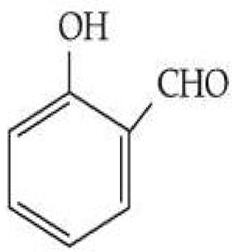
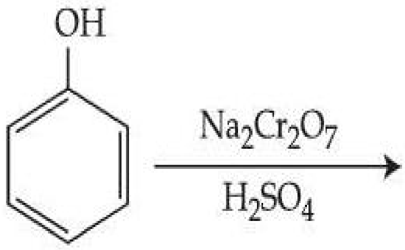
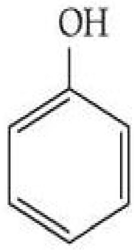
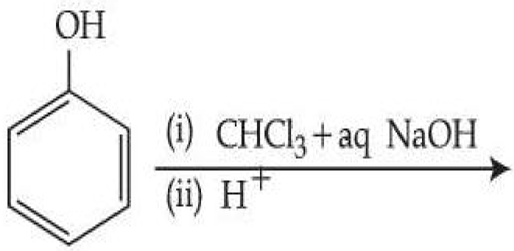
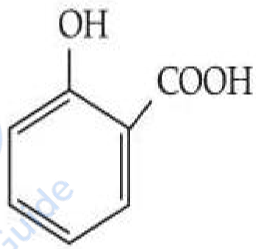
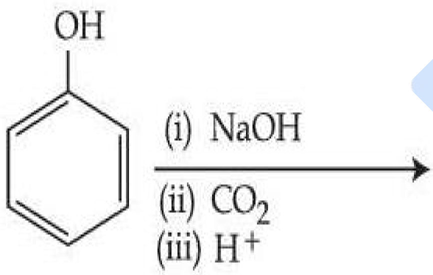
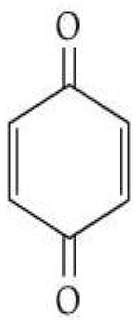
Match **List - I** with **List - II**.

List - I (Reactions)		**List - II** (Products)	
(A)		(I)	
(B)		(II)	
(C)		(III)	
(D)		(IV)	

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

Options :

878270220375. (A)-(I), (B)-(IV), (C)-(II), (D)-(III)

878270220376. (A)-(III), (B)-(II), (C)-(I), (D)-(IV)

878270220377. (A)-(II), (B)-(IV), (C)-(I), (D)-(III)

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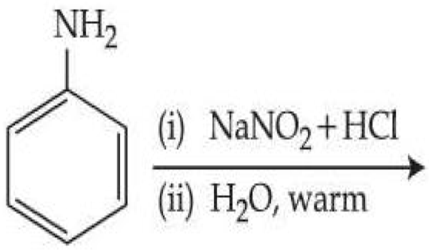
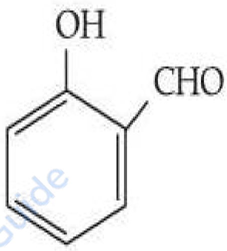
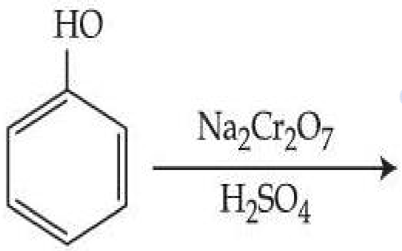
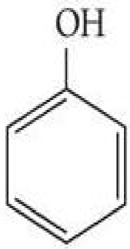
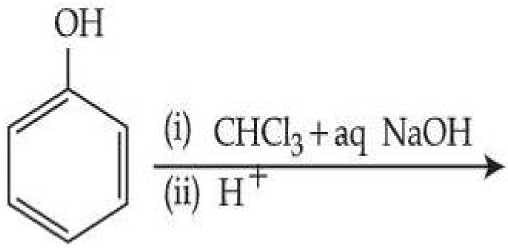
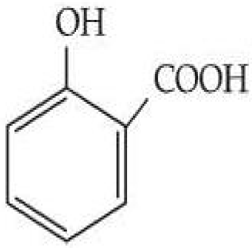
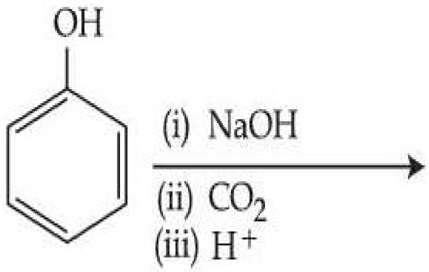
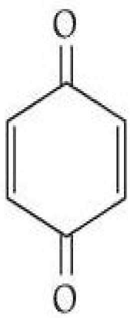
878270220378. (A)-(IV), (B)-(II), (C)-(III), (D)-(I)

Question Number : 77 Question Id : 87827056134 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

सूची - I का मिलान सूची - II से करें :

सूची - I (अभिक्रिया)		सूची - II (उत्पाद)	
(A)		(I)	
(B)		(II)	
(C)		(III)	
(D)		(IV)	

नीचे दिए गए विकल्पों से सही उत्तर चुने :

Options :

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878270220375. (A)-(I), (B)-(IV), (C)-(II), (D)-(III)

878270220376. (A)-(III), (B)-(II), (C)-(I), (D)-(IV)

878270220377. (A)-(II), (B)-(IV), (C)-(I), (D)-(III)

878270220378. (A)-(IV), (B)-(II), (C)-(III), (D)-(I)

Question Number : 78 Question Id : 87827056135 Question Type : MCQ Option Shuffling : Yes 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 one the following compounds will readily react with dilute NaOH ?

Options :

878270220379. C_6H_5OH

878270220380. $C_6H_5CH_2OH$

878270220381. $(CH_3)_3COH$

878270220382. C_2H_5OH

Question Number : 78 Question Id : 87827056135 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

निम्न में से कौन सा यौगिक तनु NaOH के साथ आसानी से अभिक्रिया करता है?

Options :

878270220379. C_6H_5OH

878270220380. $C_6H_5CH_2OH$

878270220381. $(CH_3)_3COH$

878270220382. C_2H_5OH

Question Number : 79 Question Id : 87827056136 Question Type : MCQ Option Shuffling : Yes

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) : All the following compounds react with p-toluenesulfonyl chloride.

$C_6H_5NH_2$ $(C_6H_5)_2NH$ $(C_6H_5)_3N$

Statement (II) : Their products in the above reaction are soluble is aqueous NaOH.

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

Options :

878270220383. Both **Statement I** and **Statement II** are true

878270220384. Both **Statement I** and **Statement II** are false

878270220385. **Statement I** is true but **Statement II** is false

878270220386. **Statement I** is false but **Statement II** is true

Question Number : 79 Question Id : 87827056136 Question Type : MCQ Option Shuffling : Yes 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) : नीचे दिए गए सभी यौगिक p-टॉलूईनसल्फोनिल क्लोराइड के साथ अभिक्रिया करते हैं।

$C_6H_5NH_2$ $(C_6H_5)_2NH$ $(C_6H_5)_3N$

कथन (II) : उपर्युक्त अभिक्रिया में उनके उत्पाद जलीय NaOH में विलेय होते हैं।

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

Options :

878270220383. दोनों **कथन I** एवं **कथन II** सही हैं।

878270220384. दोनों **कथन I** एवं **कथन II** गलत हैं।

878270220385. **कथन I** सही है परंतु **कथन II** गलत है।

878270220386. **कथन I** गलत है परंतु **कथन II** सही है।

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Question Number : 80 Question Id : 87827056137 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Match **List - I** with **List - II**.

	List - I (Test)		**List - II (Identification)**
(A)	Bayer's test	(I)	Phenol
(B)	Ceric ammonium nitrate test	(II)	Aldehyde
(C)	Phthalein dye test	(III)	Alcoholic-OH group
(D)	Schiff's test	(IV)	Unsaturation

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

Options :

878270220387. (A)-(IV), (B)-(III), (C)-(I), (D)-(II)

878270220388. (A)-(IV), (B)-(I), (C)-(II), (D)-(III)

878270220389. (A)-(II), (B)-(III), (C)-(IV), (D)-(I)

878270220390. (A)-(III), (B)-(I), (C)-(IV), (D)-(II)

Question Number : 80 Question Id : 87827056137 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

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सूची – I का मिलान सूची – II से करें :

सूची – I (परीक्षण)		सूची – II (पहचान)	
(A)	बायर परीक्षण	(I)	फ़ीनॉल
(B)	सेरिक अमोनियम नाइट्रेट परीक्षण	(II)	एल्डिहाइड
(C)	थैलीन रंजक परीक्षण	(III)	ऐल्कोहली-OH समूह
(D)	शिफ परीक्षण	(IV)	असंतृप्तता

नीचे दिए गए विकल्पों से **सही** उत्तर चुने :

Options :

878270220387. (A)-(IV), (B)-(III), (C)-(I), (D)-(II)

878270220388. (A)-(IV), (B)-(I), (C)-(II), (D)-(III)

878270220389. (A)-(II), (B)-(III), (C)-(IV), (D)-(I)

878270220390. (A)-(III), (B)-(I), (C)-(IV), (D)-(II)

Chemistry Section B

Section Id :	8782701181
Section Number :	6
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	10
Number of Questions to be attempted :	5

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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 : 8782702088

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 81 Question Id : 87827056138 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 is prepared by adding 1 mole ethyl alcohol in 9 mole water. The mass percent of solute in the solution is ________ (Integer answer) (Given : Molar mass in g mol^{-1} Ethyl alcohol : 46 water : 18)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 81 Question Id : 87827056138 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 एथिल ऐल्कोहॉल को 9 मोल जल में मिलाकर विलयन बनाया गया। विलयन में विलेय का द्रव्यमान प्रतिशत है : ________ (निकटतम पूर्णांक में)

(दिया गया है : g mol^{-1} में मोलर द्रव्यमान : एथिल ऐल्कोहॉल : 46, जल : 18)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 82 Question Id : 87827056139 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Wavenumber for a radiation having 5800 Å wavelength is $x \times 10\ cm^{-1}$. The value of x is _______.
(Integer answer)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 82 Question Id : 87827056139 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

5800 Å तरंग दैर्ध्य वाले विकिरण की तरंग संख्या $x \times 10\ cm^{-1}$ 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 :

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Question Number : 83 Question Id : 87827056140 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Number of molecules having bond order 2 from the following molecules is ________.

C_2, O_2, Be_2, Li_2, Ne_2, N_2, He_2

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 83 Question Id : 87827056140 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

निम्न अणुओं में से उन अणुओं की संख्या जिनकी आबन्ध कोटि 2 है, है : ________.

C_2, O_2, Be_2, Li_2, Ne_2, N_2, He_2

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 84 Question Id : 87827056141 Question Type : SA Calculator : None

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

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

$\Delta_{vap}H^{\ominus}$ for water is $+40.79$ kJ mol^{-1} at 1 bar and 100 °C. Change in internal energy for this vapourisation under same condition is ________ kJ mol^{-1}. (Integer answer)
(Given $R = 8.3$ JK^{-1} mol^{-1})

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 84 **Question Id :** 87827056141 **Question Type :** SA **Calculator :** None

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

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

1 bar एवं 100 °C पर जल की $\Delta_{vap}H^{\ominus}$ $+40.79$ kJ mol^{-1} है। समान परिस्थितियों में इसके वाष्पीकरण के लिए आन्तरिक उर्जा में परिवर्तन है : ________ kJ mol^{-1}। (निकटतम पूर्णांक में)
(दिया गया है : $R = 8.3$ JK^{-1} mol^{-1})

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 85 **Question Id :** 87827056142 **Question Type :** SA **Calculator :** None

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

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

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Molality of an aqueous solution of urea is 4.44 m. Mole fraction of urea in solution is $x \times 10^{-3}$. Value of x is ________. (Integer answer)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 85 Question Id : 87827056142 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

यूरिया के एक जलीय विलयन की मोललता 4.44 m है। विलयन में यूरिया का मोल प्रभाज $x \times 10^{-3}$ है। x का मान है ________। (निकटतम पूर्णांक में)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 86 Question Id : 87827056143 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Two moles of benzaldehyde and one mole of acetone under alkaline conditions using aqueous NaOH after heating gives x as the major product. The number of π bonds in the product x is ________.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 86 Question Id : 87827056143 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

बेंजल्डिहाइड के दो मोल तथा ऐसीटोन का एक मोल जलीय NaOH का उपयोग करते हुए क्षारीय परिस्थितियों में गर्म करने पर मुख्य उत्पाद के रूप में x देता है। उत्पाद में π आबन्धों की संख्या है ________ ।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 87 Question Id : 87827056144 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Total number of unpaired electrons in the complex ions $[Co(NH_3)_6]^{3+}$ and $[NiCl_4]^{2-}$ is ________.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

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Possible Answers :

1

Question Number : 87 Question Id : 87827056144 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

$[Co(NH_3)_6]^{3+}$ एवं $[NiCl_4]^{2-}$ संकुल आयनों में अयुग्मित इलेक्ट्रॉनों की कुल संख्या है : ________ ।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

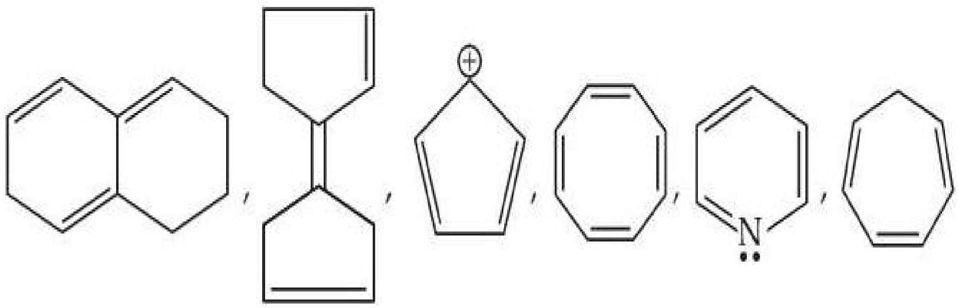
1

Question Number : 88 Question Id : 87827056145 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Total number of aromatic compounds among the following compounds is ________.



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

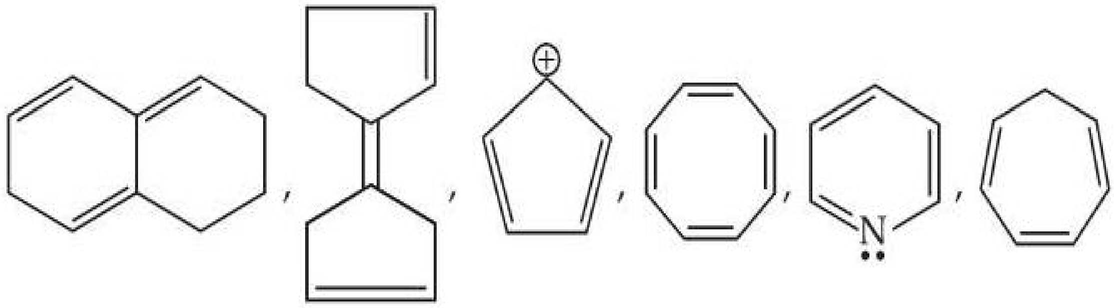
Possible Answers :

Question Number : 88 Question Id : 87827056145 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

निम्न यौगिकों में से ऐरोमैटिक यौगिकों की कुल संख्या है : __________ ।



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

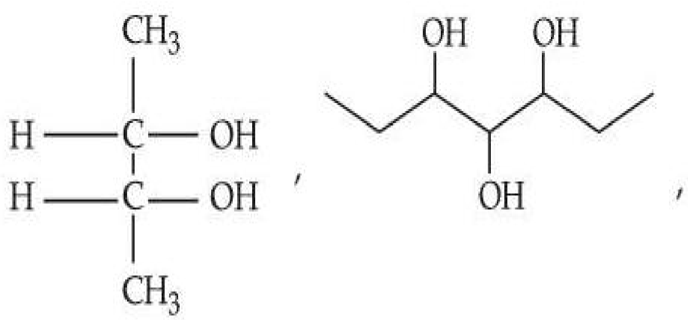
1

Question Number : 89 Question Id : 87827056146 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Total number of optically active compounds from the following is __________.



$CH_3-CH_2-CH_2-CH_2-OH$,

$CH_3-CH_2-CH(Cl)-CH_3$,

$CH_3-CH_2-CH_2-CH_2-Cl$,

$(CH_3)_2CH-CH_2-CH_2-Cl$

Response Type : Numeric

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Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

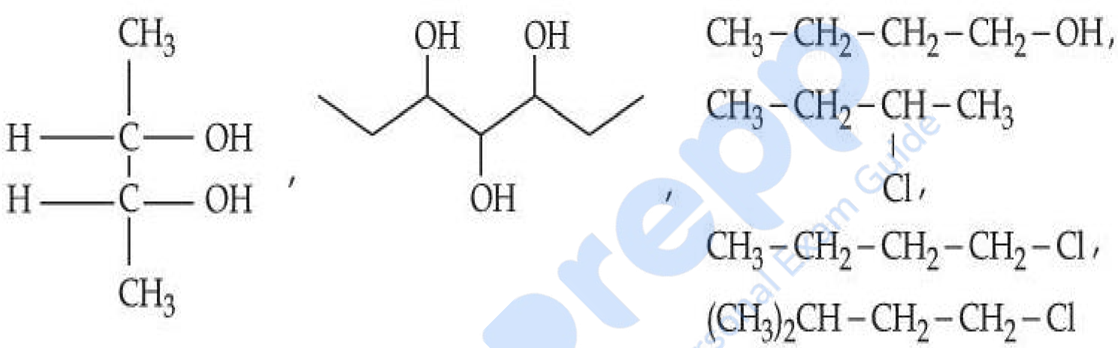
1

Question Number : 89 Question Id : 87827056146 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

निम्न में से प्रकाशिक रूप से सक्रिय यौगिकों की कुल संख्या है : ________।



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 90 Question Id : 87827056147 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

The total number of carbon atoms present in tyrosine, an amino acid, is ________.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 90 Question Id : 87827056147 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

ऐमीनो अम्ल टाइरोसीन में उपस्थित कार्बन परमाणुओं की कुल संख्या है ____________ ।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1