

Question Paper Name :	B Tech 5th April 2024 Shift 2 Paper
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B. Tech

Group Number :	1
Group Id :	878270678
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 :	8782701152
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 :

8782702059

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 1 Question Id : 87827055698 Question Type : MCQ Option Shuffling : Yes Is

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

Correct Marks : 4 Wrong Marks : 1

Let the set $S = \{2, 4, 8, 16, \dots, 512\}$ be partitioned into 3 sets A, B, C with equal number of elements such that $A \cup B \cup C = S$ and $A \cap B = B \cap C = A \cap C = \phi$. The maximum number of such possible partitions of S is equal to :

Options :

878270219051. 1710

878270219052. 1520

878270219053. 1680

878270219054. 1640

Question Number : 1 Question Id : 87827055698 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

माना समुच्चय $S = \{2, 4, 8, 16, \dots, 512\}$ को बराबर अवयवों के तीन समुच्चयों A, B, C में इस प्रकार विभाजित किया जाता है कि $A \cup B \cup C = S$ तथा $A \cap B = B \cap C = A \cap C = \phi$ हैं। S के इस प्रकार के संभव विभाजनों की अधिकतम संख्या है :

Options :

878270219051. 1710

878270219052. 1520

878270219053. 1680

878270219054. 1640

Question Number : 2 Question Id : 87827055699 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Let $f, g : \mathbb{R} \rightarrow \mathbb{R}$ be defined as :

$$f(x) = |x - 1| \text{ and } g(x) = \begin{cases} e^x, & x \geq 0 \\ x + 1, & x \leq 0. \end{cases}$$

Then the function $f(g(x))$ is

Options :

878270219055. both one-one and onto.

878270219056. one-one but not onto.

878270219057. onto but not one-one.

878270219058. neither one-one nor onto.

Question Number : 2 Question Id : 87827055699 Question Type : MCQ Option Shuffling : Yes 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 $f, g : \mathbf{R} \rightarrow \mathbf{R}$,

$$f(x) = |x - 1| \text{ तथा } g(x) = \begin{cases} e^x, & x \geq 0 \\ x + 1, & x \leq 0 \end{cases}$$

द्वारा परिभाषित हैं। तो फलन $f(g(x))$

Options :

878270219055. एकैकी तथा आच्छादक दोनों हैं।

878270219056. एकैकी है परन्तु आच्छादक नहीं है।

878270219057. आच्छादक है परन्तु एकैकी नहीं है।

878270219058.

न तो एकैकी है न ही आच्छादक है।

Question Number : 3 Question Id : 87827055700 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Let $S_1 = \{z \in \mathbb{C} : |z| \leq 5\}$, $S_2 = \left\{z \in \mathbb{C} : \operatorname{Im} \left(\frac{z+1-\sqrt{3}i}{1-\sqrt{3}i} \right) \geq 0 \right\}$ and $S_3 = \{z \in \mathbb{C} : \operatorname{Re}(z) \geq 0\}$. Then

the area of the region $S_1 \cap S_2 \cap S_3$ is :

Options :

878270219059. $\frac{125 \pi}{24}$

878270219060. $\frac{125 \pi}{4}$

878270219061. $\frac{125 \pi}{6}$

878270219062. $\frac{125 \pi}{12}$

Question Number : 3 Question Id : 87827055700 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

माना $S_1 = \{z \in \mathbb{C} : |z| \leq 5\}$, $S_2 = \left\{z \in \mathbb{C} : \operatorname{Im} \left(\frac{z+1-\sqrt{3}i}{1-\sqrt{3}i} \right) \geq 0\right\}$ तथा $S_3 = \{z \in \mathbb{C} : \operatorname{Re}(z) \geq 0\}$ हैं। तो क्षेत्र

$S_1 \cap S_2 \cap S_3$ का क्षेत्रफल है :

Options :

878270219059. $\frac{125\pi}{24}$

878270219060. $\frac{125\pi}{4}$

878270219061. $\frac{125\pi}{6}$

878270219062. $\frac{125\pi}{12}$

Question Number : 4 Question Id : 87827055701 Question Type : MCQ Option Shuffling : Yes 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 values of m, n , for which the system of equations

$$x + y + z = 4,$$

$$2x + 5y + 5z = 17,$$

$$x + 2y + mz = n$$

has infinitely many solutions, satisfy the equation :

Options :

878270219063. $m^2 + n^2 + mn = 68$

878270219064. $m^2 + n^2 - mn = 39$

878270219065. $m^2 + n^2 + m + n = 64$

878270219066. $m^2 + n^2 - m - n = 46$

Question Number : 4 Question Id : 87827055701 Question Type : MCQ Option Shuffling : Yes 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, n के मान, जिनके लिए समीकरण निकाय

$$x + y + z = 4,$$

$$2x + 5y + 5z = 17,$$

$$x + 2y + mz = n$$

के अनंत हल हैं, इनमें से किस समीकरण को संतुष्ट करते हैं?

Options :

878270219063. $m^2 + n^2 + mn = 68$

878270219064. $m^2 + n^2 - mn = 39$

878270219065. $m^2 + n^2 + m + n = 64$

878270219066. $m^2 + n^2 - m - n = 46$

Question Number : 5 Question Id : 87827055702 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Let $\alpha\beta \neq 0$ and $A = \begin{bmatrix} \beta & \alpha & 3 \\ \alpha & \alpha & \beta \\ -\beta & \alpha & 2\alpha \end{bmatrix}$. If $B = \begin{bmatrix} 3\alpha & -9 & 3\alpha \\ -\alpha & 7 & -2\alpha \\ -2\alpha & 5 & -2\beta \end{bmatrix}$ is the matrix of cofactors of the elements of A, then $\det(AB)$ is equal to :

Options :

878270219067. 125

878270219068. 64

878270219069. 216

878270219070. 343

Question Number : 5 Question Id : 87827055702 Question Type : MCQ Option Shuffling : Yes 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 $\alpha\beta \neq 0$ तथा $A = \begin{bmatrix} \beta & \alpha & 3 \\ \alpha & \alpha & \beta \\ -\beta & \alpha & 2\alpha \end{bmatrix}$ है। यदि आव्यूह A के अवयवों के सहखंडों का आव्यूह $B = \begin{bmatrix} 3\alpha & -9 & 3\alpha \\ -\alpha & 7 & -2\alpha \\ -2\alpha & 5 & -2\beta \end{bmatrix}$ है, तो $\det(AB)$ बराबर है :

Options :

878270219067. 125

878270219068. 64

878270219069. 216

878270219070. 343

Question Number : 6 Question Id : 87827055703 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

60 words can be made using all the letters of the word BHBJO, with or without meaning. If these words are written as in a dictionary, then the 50th word is :

Options :

878270219071. OBBHJ

878270219072. OBBJH

878270219073. HBBJO

878270219074. JBBOH

Question Number : 6 Question Id : 87827055703 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

BHBJO शब्द के सभी अक्षरों के प्रयोग से 60 अर्थपूर्ण या अर्थहीन शब्द बनाए जा सकते हैं। यदि इन शब्दों को एक शब्दकोश की तरह लिखा जाए, तो 50वाँ शब्द है :

Options :

878270219071. OBBHJ

878270219072. OBBJH

878270219073. HBBJO

878270219074. JBBOH

Question Number : 7 Question Id : 87827055704 Question Type : MCQ Option Shuffling : Yes 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 coefficients a, b, c in the quadratic equation $ax^2 + bx + c = 0$ are from the set $\{1, 2, 3, 4, 5, 6\}$. If the probability of this equation having one real root bigger than the other is p , then $216p$ equals :

Options :

878270219075. 19

878270219076. 38

878270219077. 57

878270219078. 76

Question Number : 7 Question Id : 87827055704 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

द्विघातीय समीकरण $ax^2+bx+c=0$ के गुणांक a, b, c समुच्चय $\{1, 2, 3, 4, 5, 6\}$ से हैं। यदि इस समीकरण का एक वास्तविक मूल दूसरे से बड़ा होने की प्रायिकता p है, तो $216p$ बराबर है :

Options :

878270219075. 19

878270219076. 38

878270219077. 57

878270219078. 76

Question Number : 8 Question Id : 87827055705 Question Type : MCQ Option Shuffling : Yes 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 $x \geq 0$, the least value of K , for which $4^{1+x} + 4^{1-x}, \frac{K}{2}, 16^x + 16^{-x}$ are three consecutive terms of an A.P., is equal to :

Options :

878270219079.

10

878270219080. 8

878270219081. 4

878270219082. 16

Question Number : 8 Question Id : 87827055705 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

K का न्यूनतम मान, जिसके लिए $4^{1+x} + 4^{1-x}, \frac{K}{2}, 16^x + 16^{-x}$ (जहाँ $x \geq 0$) एक A.P. के तीन क्रमागत पद हैं, है :

Options :

878270219079. 10

878270219080. 8

878270219081. 4

878270219082. 16

Question Number : 9 Question Id : 87827055706 Question Type : MCQ Option Shuffling : Yes 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 constant term in the expansion of $\left(\frac{\sqrt[5]{3}}{x} + \frac{2x}{\sqrt[3]{5}}\right)^{12}$, $x \neq 0$, is $\alpha \times 2^8 \times \sqrt[5]{3}$, then 25α is equal to :

Options :

878270219083. 742

878270219084. 639

878270219085. 724

878270219086. 693

Question Number : 9 Question Id : 87827055706 Question Type : MCQ Option Shuffling : Yes 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 $\left(\frac{\sqrt[5]{3}}{x} + \frac{2x}{\sqrt[3]{5}}\right)^{12}$, $x \neq 0$, के प्रसार में अचर पद $\alpha \times 2^8 \times \sqrt[5]{3}$ है, तो 25α बराबर है :

Options :

878270219083. 742

878270219084. 639

878270219085.

878270219086. 693

Question Number : 10 Question Id : 87827055707 Question Type : MCQ Option Shuffling : Yes**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 $f: [-1, 2] \rightarrow \mathbb{R}$ be given by $f(x) = 2x^2 + x + [x^2] - [x]$, where $[t]$ denotes the greatest integer less than or equal to t . The number of points, where f is not continuous, is :

Options :

878270219087. 6

878270219088. 5

878270219089. 4

878270219090. 3

Question Number : 10 Question Id : 87827055707 Question Type : MCQ Option Shuffling : Yes**Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A****Minimum Instruction Time : 0****Correct Marks : 4 Wrong Marks : 1**

माना फलन $f: [-1, 2] \rightarrow \mathbb{R}$, $f(x) = 2x^2 + x + [x^2] - [x]$ द्वारा दिया गया है, जहाँ $[t]$ महत्तम पूर्णांक $\leq t$ हैं। उन बिंदुओं जिन पर f संतत नहीं है, की संख्या है :

878270219087. 6

878270219088. 5

878270219089. 4

878270219090. 3

Question Number : 11 Question Id : 87827055708 Question Type : MCQ Option Shuffling : Yes

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 $\beta(m, n) = \int_0^1 x^{m-1} (1-x)^{n-1} dx$, $m, n > 0$. If $\int_0^1 (1-x^{10})^{20} dx = a \times \beta(b, c)$, then $100(a+b+c)$ equals _____.

Options :

878270219091. 2120

878270219092. 2012

878270219093. 1021

878270219094. 1120

Question Number : 11 Question Id : 87827055708 Question Type : MCQ Option Shuffling : Yes

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 $\beta(m, n) = \int_0^1 x^{m-1} (1-x)^{n-1} dx$, $m, n > 0$ है। यदि $\int_0^1 (1-x^{10})^{20} dx = a \times \beta(b, c)$ है, तो $100(a+b+c)$ बराबर है _____।

Options :

878270219091. 2120

878270219092. 2012

878270219093. 1021

878270219094. 1120

Question Number : 12 Question Id : 87827055709 Question Type : MCQ Option Shuffling : Yes

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 enclosed between the curves $y = x|x|$ and $y = x - |x|$ is :

Options :

878270219095. 1

878270219096.

$$\frac{2}{3}$$

$$878270219097. \quad \frac{4}{3}$$

$$878270219098. \quad \frac{8}{3}$$

Question Number : 12 Question Id : 87827055709 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

वक्रों $y = x|x|$ तथा $y = x - |x|$ के बीच घिरे क्षेत्र का क्षेत्रफल है :

Options :

$$878270219095. \quad 1$$

$$878270219096. \quad \frac{2}{3}$$

$$878270219097. \quad \frac{4}{3}$$

$$878270219098. \quad \frac{8}{3}$$

Question Number : 13 Question Id : 87827055710 Question Type : MCQ Option Shuffling : Yes

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 differential equation of the family of circles passing through the origin and having centre at the line $y=x$ is :

Options :

878270219099. $(x^2 - y^2 + 2xy)dx = (x^2 - y^2 - 2xy)dy$

878270219100. $(x^2 + y^2 - 2xy)dx = (x^2 + y^2 + 2xy)dy$

878270219101. $(x^2 - y^2 + 2xy)dx = (x^2 - y^2 + 2xy)dy$

878270219102. $(x^2 + y^2 + 2xy)dx = (x^2 + y^2 - 2xy)dy$

Question Number : 13 Question Id : 87827055710 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

मूल बिंदु से होकर जाने वाले तथा रेखा $y=x$ पर केन्द्र के वृत्त कुल का अवकल समीकरण है :

Options :

878270219099. $(x^2 - y^2 + 2xy)dx = (x^2 - y^2 - 2xy)dy$

878270219100. $(x^2 + y^2 - 2xy)dx = (x^2 + y^2 + 2xy)dy$

878270219101. $(x^2 - y^2 + 2xy)dx = (x^2 - y^2 + 2xy)dy$

878270219102. $(x^2 + y^2 + 2xy)dx = (x^2 + y^2 - 2xy)dy$

Question Number : 14 Question Id : 87827055711 Question Type : MCQ Option Shuffling : Yes

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 ABCD and AEFG be squares of side 4 and 2 units, respectively. The point E is on the line segment AB and the point F is on the diagonal AC. Then the radius r of the circle passing through the point F and touching the line segments BC and CD satisfies :

Options :

878270219103. $r = 1$

878270219104. $r^2 - 8r + 8 = 0$

878270219105. $2r^2 - 8r + 7 = 0$

878270219106. $2r^2 - 4r + 1 = 0$

Question Number : 14 Question Id : 87827055711 Question Type : MCQ Option Shuffling : Yes

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 भुजा 4 तथा 2 इकाईयों के दो वर्ग क्रमशः ABCD तथा AEFG हैं। बिंदु E रेखाखंड AB पर है तथा बिंदु F विकर्ण AC पर है। यदि बिंदु F से होकर जाने वाले तथा रेखाखंडों BC और CD को छूने वाले वृत्त की त्रिज्या r है, तो r संतुष्ट करता है:

Options :

878270219103. $r = 1$

878270219104. $r^2 - 8r + 8 = 0$

878270219105. $2r^2 - 8r + 7 = 0$

878270219106. $2r^2 - 4r + 1 = 0$

Question Number : 15 Question Id : 87827055712 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Let the circle $C_1 : x^2 + y^2 - 2(x + y) + 1 = 0$ and C_2 be a circle having centre at $(-1, 0)$ and radius 2. If the line of the common chord of C_1 and C_2 intersects the y -axis at the point P, then the square of the distance of P from the centre of C_1 is :

Options :

878270219107. 1

878270219108. 2

878270219109. 4

878270219110.

6

Question Number : 15 Question Id : 87827055712 Question Type : MCQ Option Shuffling : Yes**Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A****Minimum Instruction Time : 0****Correct Marks : 4 Wrong Marks : 1**

माना वृत्त $C_1 : x^2 + y^2 - 2(x + y) + 1 = 0$ है तथा वृत्त C_2 का केन्द्र $(-1, 0)$ और त्रिज्या 2 है। यदि C_1 तथा C_2 की उभयनिष्ठ जीवा की रेखा y -अक्ष को बिंदु P पर काटती है, तो बिंदु P की वृत्त C_1 के केन्द्र से दूरी का वर्ग है :

Options :

878270219107.

1

878270219108.

2

878270219109.

4

878270219110.

6

Question Number : 16 Question Id : 87827055713 Question Type : MCQ Option Shuffling : Yes**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(-1, 1) and B(2, 3) be two points and P be a variable point above the line AB such that the area of ΔPAB is 10. If the locus of P is $ax + by = 15$, then $5a + 2b$ is :

Options :

878270219111.

4

878270219112. 6

878270219113. $-\frac{6}{5}$ 878270219114. $-\frac{12}{5}$ **Question Number : 16 Question Id : 87827055713 Question Type : MCQ Option Shuffling : Yes****Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A****Minimum Instruction Time : 0****Correct Marks : 4 Wrong Marks : 1**

माना दो बिंदु $A(-1, 1)$ तथा $B(2, 3)$ हैं और रेखा AB के ऊपर एक चर बिंदु P इस प्रकार है कि ΔPAB का क्षेत्रफल 10 है। यदि P का बिंदुपथ $ax + by = 15$ है, तो $5a + 2b$ बराबर है :

Options :

878270219111. 4

878270219112. 6

878270219113. $-\frac{6}{5}$ 878270219114. $-\frac{12}{5}$

Question Number : 17 Question Id : 87827055714 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Let (α, β, γ) be the image of the point $(8, 5, 7)$ in the line $\frac{x-1}{2} = \frac{y+1}{3} = \frac{z-2}{5}$. Then $\alpha + \beta + \gamma$ is equal to :

Options :

878270219115. 20

878270219116. 18

878270219117. 16

878270219118. 14

Question Number : 17 Question Id : 87827055714 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

माना बिंदु $(8, 5, 7)$ का रेखा $\frac{x-1}{2} = \frac{y+1}{3} = \frac{z-2}{5}$ में प्रतिबिंब (α, β, γ) है। तो $\alpha + \beta + \gamma$ बराबर है :

Options :

878270219115. 20

878270219116. 18

878270219117. 16

878270219118. 14

Question Number : 18 Question Id : 87827055715 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Let $\vec{a} = 2\hat{i} + 5\hat{j} - \hat{k}$, $\vec{b} = 2\hat{i} - 2\hat{j} + 2\hat{k}$ and $\vec{c}$ be three vectors such that

$(\vec{c} + \hat{i}) \times (\vec{a} + \vec{b} + \hat{i}) = \vec{a} \times (\vec{c} + \hat{i})$. If $\vec{a} \cdot \vec{c} = -29$, then $\vec{c} \cdot (-2\hat{i} + \hat{j} + \hat{k})$ is equal

to :

Options :

878270219119. 15

878270219120. 12

878270219121. 10

878270219122. 5

Question Number : 18 Question Id : 87827055715 Question Type : MCQ Option Shuffling : Yes

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 तीन सदिशों $\vec{a} = 2\hat{i} + 5\hat{j} - \hat{k}$, $\vec{b} = 2\hat{i} - 2\hat{j} + 2\hat{k}$ तथा $\vec{c}$ के लिए

$$(\vec{c} + \hat{i}) \times (\vec{a} + \vec{b} + \hat{i}) = \vec{a} \times (\vec{c} + \hat{i}) \text{ है। यदि } \vec{a} \cdot \vec{c} = -29 \text{ है, तो } \vec{c} \cdot (-2\hat{i} + \hat{j} + \hat{k}) \text{ बराबर है :}$$

Options :

878270219119. 15

878270219120. 12

878270219121. 10

878270219122. 5

Question Number : 19 Question Id : 87827055716 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Consider three vectors $\vec{a}$, $\vec{b}$, $\vec{c}$. Let $|\vec{a}| = 2$, $|\vec{b}| = 3$ and $\vec{a} = \vec{b} \times \vec{c}$. If $\alpha \in \left[0, \frac{\pi}{3}\right]$ is the angle

between the vectors $\vec{b}$ and $\vec{c}$, then the minimum value of $27|\vec{c} - \vec{a}|^2$ is equal to :

Options :

878270219123. 105

878270219124. 124

878270219125.

110

878270219126. 121

Question Number : 19 Question Id : 87827055716 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

तीन सदिशों $\vec{a}$, $\vec{b}$, $\vec{c}$ का विचार कीजिए। माना $|\vec{a}| = 2$, $|\vec{b}| = 3$ तथा $\vec{a} = \vec{b} \times \vec{c}$ हैं। यदि सदिशों $\vec{b}$ तथा $\vec{c}$

के बीच का कोण $\alpha \in \left[0, \frac{\pi}{3}\right]$ हैं, तो $27|\vec{c} - \vec{a}|^2$ का न्यूनतम मान है :

Options :

878270219123. 105

878270219124. 124

878270219125. 110

878270219126. 121

Question Number : 20 Question Id : 87827055717 Question Type : MCQ Option Shuffling : Yes

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 $y(\theta) = \frac{2 \cos \theta + \cos 2\theta}{\cos 3\theta + 4 \cos 2\theta + 5 \cos \theta + 2}$, then at $\theta = \frac{\pi}{2}$, $y'' + y' + y$ is equal to :

Options :

878270219127. $\frac{1}{2}$

878270219128. 1

878270219129. $\frac{3}{2}$

878270219130. 2

Question Number : 20 Question Id : 87827055717 Question Type : MCQ Option Shuffling : Yes

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 $y(\theta) = \frac{2 \cos \theta + \cos 2\theta}{\cos 3\theta + 4 \cos 2\theta + 5 \cos \theta + 2}$ है, तो $\theta = \frac{\pi}{2}$ पर, $y'' + y' + y$ बराबर है :

Options :

878270219127. $\frac{1}{2}$

878270219128. 1

878270219129. $\frac{3}{2}$

878270219130.

2

Mathematics Section B

Section Id :	8782701153
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 :	8782702060
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 21 Question Id : 87827055718 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 solutions of $\sin^2 x + (2 + 2x - x^2) \sin x - 3(x - 1)^2 = 0$, where $-\pi \leq x \leq \pi$, is

_____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Possible Answers :

1

Question Number : 21 Question Id : 87827055718 Question Type : SA Calculator : None**Response Time : N.A Think Time : N.A Minimum Instruction Time : 0****Correct Marks : 4 Wrong Marks : 1**
 $\sin^2 x + (2 + 2x - x^2) \sin x - 3(x - 1)^2 = 0$, जहाँ $-\pi \leq x \leq \pi$, के हलों 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 : 87827055719 Question Type : SA Calculator : None**Response Time : N.A Think Time : N.A Minimum Instruction Time : 0****Correct Marks : 4 Wrong Marks : 1**

If $1 + \frac{\sqrt{3} - \sqrt{2}}{2\sqrt{3}} + \frac{5 - 2\sqrt{6}}{18} + \frac{9\sqrt{3} - 11\sqrt{2}}{36\sqrt{3}} + \frac{49 - 20\sqrt{6}}{180} + \dots$ upto $\infty = 2 + \left(\sqrt{\frac{b}{a}} + 1\right) \log_e \left(\frac{a}{b}\right)$,

where a and b are integers with $\gcd(a, b) = 1$, then $11a + 18b$ 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 : 87827055719 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

$$\text{यदि } 1 + \frac{\sqrt{3} - \sqrt{2}}{2\sqrt{3}} + \frac{5 - 2\sqrt{6}}{18} + \frac{9\sqrt{3} - 11\sqrt{2}}{36\sqrt{3}} + \frac{49 - 20\sqrt{6}}{180} + \dots \text{ upto } \infty = 2 + \left(\sqrt{\frac{b}{a}} + 1 \right) \log_e \left(\frac{a}{b} \right),$$

है, जहाँ a, b पूर्णांक हैं तथा $\gcd(a, b) = 1$ है, तो $11a + 18b$ 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 : 87827055720 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Let $a > 0$ be a root of the equation $2x^2 + x - 2 = 0$. If $\lim_{x \rightarrow \frac{1}{a}} \frac{16(1 - \cos(2 + x - 2x^2))}{(1 - ax)^2} = \alpha + \beta \sqrt{17}$,

where $\alpha, \beta \in \mathbb{Z}$, 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

Question Number : 23 Question Id : 87827055720 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

माना समीकरण $2x^2 + x - 2 = 0$ का एक मूल $a > 0$ है।

यदि $\lim_{x \rightarrow \frac{1}{a}} \frac{16(1 - \cos(2 + x - 2x^2))}{(1 - ax)^2} = \alpha + \beta \sqrt{17}$ है, जहाँ $\alpha, \beta \in \mathbb{Z}$ 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 : 24 Question Id : 87827055721 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Let the maximum and minimum values of $(\sqrt{8x - x^2} - 12 - 4)^2 + (x - 7)^2, x \in \mathbb{R}$ be M and m, respectively. Then $M^2 - m^2$ is equal to _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 24 Question Id : 87827055721 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

माना $(\sqrt{8x - x^2 - 12} - 4)^2 + (x - 7)^2, x \in \mathbb{R}$, के उच्चतम तथा निम्नतम मान क्रमशः M तथा m हैं। तो $M^2 - m^2$ बराबर है _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 25 Question Id : 87827055722 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

If $f(t) = \int_0^{\pi} \frac{2x \, dx}{1 - \cos^2 t \sin^2 x}, 0 < t < \pi$, then the value of $\int_0^{\frac{\pi}{2}} \frac{\pi^2 \, dt}{f(t)}$ equals _____.

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 : 87827055722 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

यदि $f(t) = \int_0^{\pi} \frac{2x \, dx}{1 - \cos^2 t \sin^2 x}$, $0 < t < \pi$ है, तो $\int_0^{\frac{\pi}{2}} \frac{\pi^2 \, dt}{f(t)}$ का मान है _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 26 **Question Id :** 87827055723 **Question Type :** SA **Calculator :** None

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

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

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

$$\frac{dy}{dx} + \frac{2x}{(1+x^2)^2} y = x e^{\frac{1}{(1+x^2)}}; y(0) = 0.$$

Then the area enclosed by the curve $f(x) = y(x) e^{-\frac{1}{(1+x^2)}}$ and the line $y - x = 4$ is _____.

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 :** 87827055723 **Question Type :** SA **Calculator :** None

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

माना अवकल समीकरण $\frac{dy}{dx} + \frac{2x}{(1+x^2)^2} y = x e^{\frac{1}{(1+x^2)}}; y(0) = 0$, का हल $y = y(x)$ है। तो वक्र

$f(x) = y(x) e^{-\frac{1}{(1+x^2)}}$ तथा रेखा $y-x=4$ से घिरे क्षेत्र का 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 : 27 **Question Id :** 87827055724 **Question Type :** SA **Calculator :** None

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

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

Let a line perpendicular to the line $2x-y=10$ touch the parabola $y^2=4(x-9)$ at the point P. The distance of the point P from the centre of the circle $x^2+y^2-14x-8y+56=0$ is _____.

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 :** 87827055724 **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 $2x - y = 10$ के लंबवत एक रेखा परवलय $y^2 = 4(x - 9)$ को बिंदु P पर स्पर्श करती है। बिंदु P की वृत्त $x^2 + y^2 - 14x - 8y + 56 = 0$ के केन्द्र से दूरी है _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 28 **Question Id :** 87827055725 **Question Type :** SA **Calculator :** None

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

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

Let the point $(-1, \alpha, \beta)$ lie on the line of the shortest distance between the lines

$$\frac{x+2}{-3} = \frac{y-2}{4} = \frac{z-5}{2} \text{ and } \frac{x+2}{-1} = \frac{y+6}{2} = \frac{z-1}{0}. \text{ Then } (\alpha - \beta)^2 \text{ is equal to } \underline{\hspace{2cm}}.$$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 28 **Question Id :** 87827055725 **Question Type :** SA **Calculator :** None

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

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

माना बिंदु $(-1, \alpha, \beta)$ रेखाओं $\frac{x+2}{-3} = \frac{y-2}{4} = \frac{z-5}{2}$ तथा $\frac{x+2}{-1} = \frac{y+6}{2} = \frac{z-1}{0}$ के बीच न्यूनतम दूरी की रेखा पर है। तो $(\alpha - \beta)^2$ बराबर है _____

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 29 Question Id : 87827055726 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Let the mean and the standard deviation of the probability distribution

X	α	1	0	-3
P(X)	$\frac{1}{3}$	K	$\frac{1}{6}$	$\frac{1}{4}$

be μ and σ , respectively. If $\sigma - \mu = 2$, then $\sigma + \mu$ 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 : 87827055726 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

X	α	1	0	-3
P(X)	$\frac{1}{3}$	K	$\frac{1}{6}$	$\frac{1}{4}$

के माध्य तथा मानक विचलन क्रमशः μ तथा σ हैं। यदि $\sigma - \mu = 2$ है, तो $\sigma + \mu$ 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 :** 87827055727 **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 real solutions of the equation $x|x+5| + 2|x+7| - 2 = 0$ is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 30 **Question Id :** 87827055727 **Question Type :** SA **Calculator :** None

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

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

समीकरण $x|x+5|+2|x+7|-2=0$ के 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

Physics Section A

Section Id :	8782701154
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 :	8782702061
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 31 Question Id : 87827055728 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

What is the dimensional formula of ab^{-1} in the equation $\left(P + \frac{a}{V^2}\right)(V - b) = RT$, where letters have their usual meaning.

Options :

878270219141. $[ML^2T^{-2}]$

878270219142. $[M^{-1}L^5T^3]$

878270219143. $[M^0L^3T^{-2}]$

878270219144. $[M^6L^7T^4]$

Question Number : 31 Question Id : 87827055728 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

समीकरण $\left(P + \frac{a}{V^2}\right)(V - b) = RT$ में ab^{-1} की विमा क्या है जबकि वर्णों का प्रचलित अर्थ लिया गया है :

Options :

878270219141. $[ML^2T^{-2}]$

878270219142. $[M^{-1}L^5T^3]$

878270219143. $[M^0L^3T^{-2}]$

878270219144. $[M^6L^7T^4]$

Question Number : 32 Question Id : 87827055729 Question Type : MCQ Option Shuffling : Yes

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 man carrying a monkey on his shoulder does cycling smoothly on a circular track of radius 9 m and completes 120 revolutions in 3 minutes. The magnitude of centripetal acceleration of monkey is (in m/s^2):

Options :

878270219145. Zero

878270219146. $4\pi^2 ms^{-2}$

878270219147. $16\pi^2 ms^{-2}$

878270219148. $57600\pi^2 ms^{-2}$

Question Number : 32 Question Id : 87827055729 Question Type : MCQ Option Shuffling : Yes

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 व्यक्ति एक बन्दर को अपने कंधो पर बैठाकर 9 m त्रिज्या के वृत्तीय पथ पर सुविधाजनक तरीके से साईकिल चला रहा है तथा 3 मिनट में 120 चक्कर पूरे करता है। बन्दर के अभिकेन्द्र त्वरण का परिमाण है :

Options :

878270219145. शून्य

878270219146. $4\pi^2 \text{ ms}^{-2}$

878270219147. $16\pi^2 \text{ ms}^{-2}$

878270219148. $57600\pi^2 \text{ ms}^{-2}$

Question Number : 33 Question Id : 87827055730 Question Type : MCQ Option Shuffling : Yes

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 heavy box of mass 50 kg is moving on a horizontal surface. If co-efficient of kinetic friction between the box and horizontal surface is 0.3 then force of kinetic friction is :

Options :

878270219149. 1.47 N

878270219150.

14.7 N

878270219151.

147 N

878270219152.

1470 N

Question Number : 33 Question Id : 87827055730 Question Type : MCQ Option Shuffling : Yes**Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A****Minimum Instruction Time : 0****Correct Marks : 4 Wrong Marks : 1**

50 किग्रा का एक भारी बॉक्स एक क्षैतिज तल पर गति कर रहा है। यदि बॉक्स तथा क्षैतिज तल के मध्य गतिक घर्षण गुणांक 0.3 है। गतिक घर्षण बल है :

Options :

878270219149.

1.47 N

878270219150.

14.7 N

878270219151.

147 N

878270219152.

1470 N

Question Number : 34 Question Id : 87827055731 Question Type : MCQ Option Shuffling : Yes**Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A**

Correct Marks : 4 Wrong Marks : 1

A particle moves in x - y plane under the influence of a force $\vec{F}$ such that its linear momentum is

$\vec{p}(t) = \hat{i} \cos(kt) - \hat{j} \sin(kt)$. If k is constant, the angle between $\vec{F}$ and $\vec{p}$ will be :

Options :

878270219153. $\frac{\pi}{2}$

878270219154. $\frac{\pi}{3}$

878270219155. $\frac{\pi}{4}$

878270219156. $\frac{\pi}{6}$

Question Number : 34 Question Id : 87827055731 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

$\vec{F}$ बल के अन्तर्गत एक कण x - y तल में इस प्रकार गति करता है कि इसका रेखीय संवेग $\vec{p}(t) = \hat{i} \cos(kt) - \hat{j} \sin(kt)$

है। यदि k नियतांक हो तो $\vec{F}$ व $\vec{p}$ के बीच का कोण होगा :

Options :

878270219153. $\frac{\pi}{2}$

878270219154. $\frac{\pi}{3}$

878270219155. $\frac{\pi}{4}$

878270219156. $\frac{\pi}{6}$

Question Number : 35 Question Id : 87827055732 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

A body is moving unidirectionally under the influence of a constant power source. Its displacement in time t is proportional to :

Options :

878270219157. t

878270219158. $t^{3/2}$

878270219159. $t^{2/3}$

878270219160. t^2

Question Number : 35 Question Id : 87827055732 Question Type : MCQ Option Shuffling : Yes

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 नियत शक्ति स्रोत के अन्तर्गत एक पिण्ड एक दिशीय गति कर रहा है। t समय में इसका विस्थापन किसके समानुपाती है ?

Options :

878270219157. t

878270219158. $t^{3/2}$

878270219159. $t^{2/3}$

878270219160. t^2

Question Number : 36 Question Id : 87827055733 Question Type : MCQ Option Shuffling : Yes

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 vernier callipers has 20 divisions on the vernier scale, which coincides with 19th division on the main scale. The least count of the instrument is 0.1 mm. One main scale division is equal to _____ mm.

Options :

878270219161. 5

878270219162. 2

878270219163. 1

878270219164. 0.5

Question Number : 36 Question Id : 87827055733 Question Type : MCQ Option Shuffling : Yes

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 वर्नियर कैलीपर्स के वर्नियर पैमाने पर 20 भाग हैं जो इसके मुख्य पैमाने के 19 भागों साथ संपाती हैं। यंत्र की अल्पतमांक 0.1 mm है। मुख्य पैमाने के एक भाग का मान (मिमी में) किसके बराबर है :

Options :

878270219161. 5

878270219162. 2

878270219163. 1

878270219164. 0.5

Question Number : 37 Question Id : 87827055734 Question Type : MCQ Option Shuffling : Yes**Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A****Minimum Instruction Time : 0****Correct Marks : 4 Wrong Marks : 1**

A satellite revolving around a planet in stationary orbit has time period 6 hours. The mass of planet is one-fourth the mass of earth. The radius orbit of planet is :

(Given = Radius of geo-stationary orbit for earth is 4.2×10^4 km)

Options :878270219165. 1.4×10^4 km878270219166. 8.4×10^4 km878270219167. 1.05×10^4 km878270219168. 1.68×10^5 km**Question Number : 37 Question Id : 87827055734 Question Type : MCQ Option Shuffling : Yes****Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A**

Correct Marks : 4 Wrong Marks : 1

एक ग्रह के परितः किसी स्थायी कक्षा में परिक्रमण करते उपग्रह का परिक्रमण काल 6 घंटा है। ग्रह का द्रव्यमान पृथ्वी के द्रव्यमान का एक चौथाई है। ग्रह की कक्षा की त्रिज्या है (पृथ्वी की भूस्थरीय कक्षा की त्रिज्या 4.2×10^4 km है) :

Options :

878270219165. 1.4×10^4 km878270219166. 8.4×10^4 km878270219167. 1.05×10^4 km878270219168. 1.68×10^5 km

Question Number : 38 Question Id : 87827055735 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Match List-I with List-II :

List-I

List-II

- | | |
|--|----------------------|
| (A) A force that restores an elastic body of unit area to its original state | (I) Bulk modulus |
| (B) Two equal and opposite forces parallel to opposite faces | (II) Young's modulus |
| (C) Forces perpendicular everywhere to the surface per unit area same everywhere | (III) Stress |
| (D) Two equal and opposite forces perpendicular to opposite faces | (IV) Shear modulus |

Choose the correct answer from the options given below :

Options :

878270219169.

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

878270219170.

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

878270219171.

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

878270219172.

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

Question Number : 38 Question Id : 87827055735 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

सूची-I का सूची-II से मिलान कीजिए।

सूची-I

- (A) एक प्रत्यास्थ पिण्ड के एकांक क्षेत्र का वह बल जो उसको मूल अवस्था में बनाये रखता है
- (B) विपरीत सतहों के दो बराबर व विपरीत समान्तर बल
- (C) सतह के प्रति एकांक क्षेत्रफल पर लम्बवत बल सभी जगह समान होते हैं
- (D) विपरीत सतहों के दो बराबर व विपरीत लम्बवत बल

सूची-II

- (I) आयतन प्रत्यास्थता गुणांक
- (II) यंग प्रत्यास्थता गुणांक
- (III) प्रतिबल
- (IV) दृढ़ता गुणांक

नीचे दिये गये विकल्पों से सही उत्तर चुनिए :

Options :

878270219169.

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

878270219170. (A)-(II), (B)-(IV), (C)-(I), (D)-(III)

878270219171. (A)-(IV), (B)-(II), (C)-(III), (D)-(I)

878270219172. (A)-(III), (B)-(IV), (C)-(I), (D)-(II)

Question Number : 39 Question Id : 87827055736 Question Type : MCQ Option Shuffling : Yes

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 n is the number density and d is the diameter of the molecule, then the average distance covered by a molecule between two successive collisions (i.e. mean free path) is represented by :

Options :

878270219173. $\frac{1}{\sqrt{2} n \pi d^2}$

878270219174. $\frac{1}{\sqrt{2} n \pi d^2}$

878270219175.

$$\sqrt{2} n \pi d^2$$

878270219176.

$$\frac{1}{\sqrt{2} n^2 \pi^2 d^2}$$

Question Number : 39 Question Id : 87827055736 Question Type : MCQ Option Shuffling : Yes

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 n संख्या घनत्व व d अणु का व्यास हो तब दो लगातार टक्करों के बीच एक अणु द्वारा तय की गई औसत दूरी (औसत मुक्त पथ) है :

Options :

878270219173.

$$\frac{1}{\sqrt{2} n \pi d^2}$$

878270219174.

$$\frac{1}{\sqrt{2} n \pi d^2}$$

878270219175.

$$\sqrt{2} n \pi d^2$$

878270219176.

$$\frac{1}{\sqrt{2} n^2 \pi^2 d^2}$$

Question Number : 40 Question Id : 87827055737 Question Type : MCQ Option Shuffling : Yes

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 vehicles carrying inflammable fluids usually have metallic chains touching the ground :

Options :

878270219177. To protect tyres from catching dirt from ground

878270219178. To alert other vehicles

878270219179. To conduct excess charge due to air friction to ground and prevent sparking

878270219180. It is a custom

Question Number : 40 Question Id : 87827055737 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

ज्वलनशील द्रवों को ले जाने वाले वाहनों में सामान्यतः धरती को छूती हुई एक धात्विक जंजीर होती है :

Options :

878270219177. टायरों को धरती से धूल को पकड़ने से बचाने के लिए।

878270219178. दूसरे वाहनों को सचेत करने के लिए।

878270219179. वायु घर्षण के कारण आधिक्य आवेश को धरती की ओर चालन करने तथा जलाने से बचने में।

878270219180. यह एक परम्परा है।

Question Number : 41 Question Id : 87827055738 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

A series LCR circuit is subjected to an ac signal of 200 V, 50 Hz. If the voltage across the inductor ($L = 10 \text{ mH}$) is 31.4 V, then the current in this circuit is _____.

Options :

878270219181. 10 A

878270219182. 10 mA

878270219183. 63 A

878270219184. 68 A

Question Number : 41 Question Id : 87827055738 Question Type : MCQ Option Shuffling : Yes

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 श्रेणीबद्ध LCR परिपथ 200 V, 50 Hz के एक प्रत्यावर्ती सिग्नल से जोड़ा गया है। यदि प्रेरक ($L = 10 \text{ mH}$) के सिरों के बीच वोल्टेज 31.4 V हो तो इस परिपथ में धारा है :

Options :

878270219181. 10 A

878270219182. 10 mA

878270219183. 63 A

878270219184. 68 A

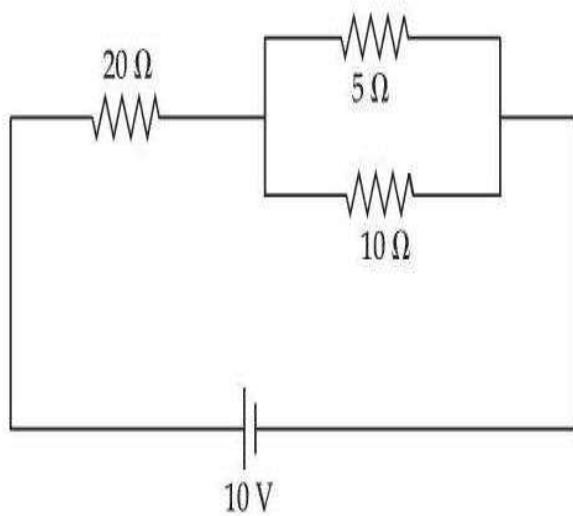
Question Number : 42 Question Id : 87827055739 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The ratio of heat dissipated per second through the resistance $5\ \Omega$ and $10\ \Omega$ in the circuit given below is :



Options :

878270219185. 1:2

878270219186. 2:1

878270219187. 1:1

878270219188. 4:1

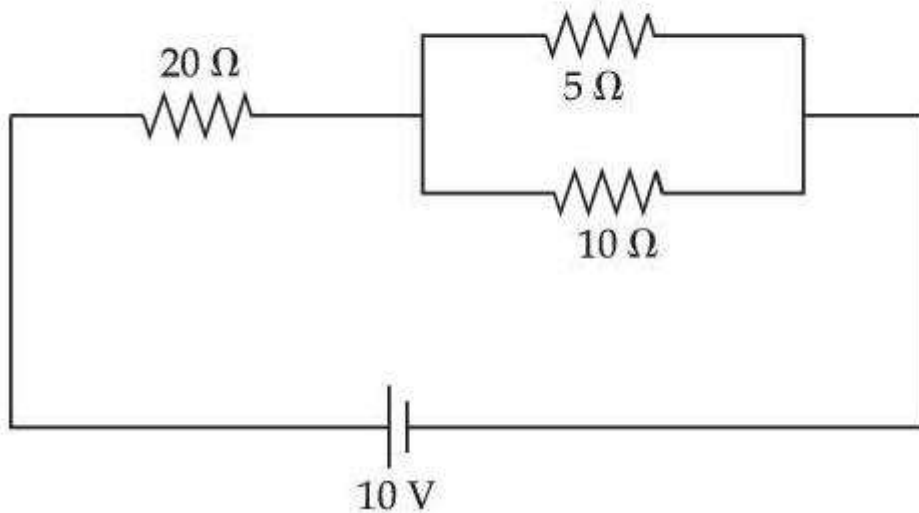
Question Number : 42 Question Id : 87827055739 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

दिये गये परिपथ में $5\ \Omega$ तथा $10\ \Omega$ में प्रति सेकंड ऊष्मा क्षय का अनुपात है :



Options :

878270219185. 1 : 2

878270219186. 2 : 1

878270219187. 1 : 1

878270219188. 4 : 1

Question Number : 43 Question Id : 87827055740 Question Type : MCQ Option Shuffling : Yes

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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Previous English

The electrostatic force $\left(\vec{F}_1\right)$ and magnetic force $\left(\vec{F}_2\right)$ acting on a charge q moving with velocity v can be written :

Options :

878270219189.

$$\vec{F}_1 = q \vec{E}, \vec{F}_2 = q(\vec{B} \times \vec{V})$$

878270219190.

$$\vec{F}_1 = q \vec{E}, \vec{F}_2 = q(\vec{V} \times \vec{B})$$

878270219191.

$$\vec{F}_1 = q \vec{B}, \vec{F}_2 = q(\vec{B} \times \vec{V})$$

878270219192.

$$\vec{F}_1 = q \vec{V} \cdot \vec{E}, \vec{F}_2 = q(\vec{B} \cdot \vec{V})$$

Question Number : 43 Question Id : 87827055740 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A
Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

० वेग से गतिमान एक आवेश q पर लगने वाले स्थिरवैद्युत बल $\left(\vec{F}_1 \right)$ तथा चुम्बकीय बल $\left(\vec{F}_2 \right)$ को लिखा जा सकता है :

Options :

878270219189.

$$\vec{F}_1 = q \vec{E}, \vec{F}_2 = q(\vec{B} \times \vec{V})$$

878270219190.

$$\vec{F}_1 = q \vec{E}, \vec{F}_2 = q(\vec{V} \times \vec{B})$$

878270219191.

$$\vec{F}_1 = q \vec{B}, \vec{F}_2 = q(\vec{B} \times \vec{V})$$

878270219192.

$$\vec{F}_1 = q \vec{V} \cdot \vec{E}, \vec{F}_2 = q(\vec{B} \cdot \vec{V})$$

Question Number : 44 Question Id : 87827055741 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Match List-I with List-II :

List-I	List-II
EM-Wave	Wavelength Range
(A) Infra-red	(I) $< 10^{-3}$ nm
(B) Ultraviolet	(II) 400 nm to 1 nm
(C) X-rays	(III) 1 mm to 700 nm
(D) Gamma rays	(IV) 1 nm to 10^{-3} nm

Choose the correct answer from the options given below :

Options :

878270219193.

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

878270219194.

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

878270219195.

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

878270219196.

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

Question Number : 44 Question Id : 87827055741 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

सूची-I का सूची-II से मिलान कीजिए।

सूची-I

(विद्युतचुंबकीय तरंगे)

सूची-II

(तरंगदैर्घ्य परास)

(A) अवरक्त

(I) $< 10^{-3}$ nm

(B) पराबैंगनी

(II) 400 nm से 1 nm

(C) X-किरणें

(III) 1 mm से 700 nm

(D) गामा किरणें

(IV) 1 nm से 10^{-3} nm

नीचे दिये गये विकल्पों से सही उत्तर चुनिए :

Options :

878270219193.

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

878270219194.

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

878270219195.

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

878270219196.

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

Question Number : 45 Question Id : 87827055742 Question Type : MCQ Option Shuffling : Yes

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 : When the white light passed through a prism, the red light bends lesser than yellow and violet.

Statement II : The refractive indices are different for different wavelengths in dispersive medium.

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

Options :

878270219197. Both Statement I and Statement II are true

878270219198. Both Statement I and Statement II are false

878270219199. Statement I is true but Statement II is false

878270219200. Statement I is false but Statement II is true

Question Number : 45 Question Id : 87827055742 Question Type : MCQ Option Shuffling : Yes

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 दिये गये हैं :

कथन I : जब श्वेत प्रकाश एक प्रिज्म से गुजरता है तो पीली व बैंगनी की तुलना में लाल रंग का प्रकाश कम विचलित होता है।

कथन II : परिक्षेपी माध्यम में विभिन्न तरंगदैर्घ्यों के लिए अपवर्तनांक भिन्न-भिन्न होता है।

उपरोक्त कथनों के आधार पर, नीचे दिये गये विकल्पों में से **सबसे उचित** उत्तर चुनिए :

Options :

878270219197. दोनों कथन I व कथन II सही हैं।

878270219198. दोनों कथन I व कथन II गलत हैं।

878270219199. कथन I सही है परन्तु कथन II गलत है।

878270219200. कथन I गलत है परन्तु कथन II सही है।

Question Number : 46 Question Id : 87827055743 Question Type : MCQ Option Shuffling : Yes

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 galvanometer of resistance $100\ \Omega$ when connected in series with $400\ \Omega$ measures a voltage of upto 10 V. The value of resistance required to convert the galvanometer into ammeter to read upto 10 A is $x \times 10^{-2}\ \Omega$. The value of x is :

Options :

878270219201. 20

878270219202.

2

878270219203.

200

878270219204.

800

Question Number : 46 Question Id : 87827055743 Question Type : MCQ Option Shuffling : Yes**Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A****Minimum Instruction Time : 0****Correct Marks : 4 Wrong Marks : 1**

100 Ω प्रतिरोध के एक धारामापी को जब 400 Ω प्रतिरोध के साथ श्रेणीक्रम में जोड़ा जाता है तो 10 V तक का वोल्टेज मापता है। धारामापी को अमीटर में बदलने के लिए आवश्यक प्रतिरोध का मान $x \times 10^{-2} \Omega$ है जब यह 10 A तक धारा पढ़ सकता है। x का मान है :

Options :

878270219201.

20

878270219202.

2

878270219203.

200

878270219204.

800

Question Number : 47 Question Id : 87827055744 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Which of the following statement is **not** true about stopping potential (V_0) ?

Options :

878270219205. It depends upon frequency of the incident light.

878270219206. It depends on the nature of emitter material.

878270219207. It increases with increase in intensity of the incident light.

878270219208. It is $1/e$ times the maximum kinetic energy of electrons emitted.

Question Number : 47 Question Id : 87827055744 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

निरोधी विभव (V_0) के लिए निम्नलिखित में से कौन सा कथन सत्य नहीं है ?

Options :

878270219205. यह आपतित प्रकाश की आवृत्ति पर निर्भर करता है।

878270219206.

यह उत्सर्जक पदार्थ की प्रकृति पर निर्भर करता है।

878270219207. यह आपतित प्रकाश की तीव्रता में वृद्धि के साथ बढ़ता है।

878270219208. यह उत्सर्जित इलेक्ट्रॉनों की अधिकतम गतिज ऊर्जा का $1/e$ गुना होता है।

Question Number : 48 Question Id : 87827055745 Question Type : MCQ Option Shuffling : Yes

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 angular momentum of an electron in a hydrogen atom is proportional to :
(Where r is the radius of orbit of electron)

Options :

878270219209. $\sqrt{r}$

878270219210. $\frac{1}{\sqrt{r}}$

878270219211. r

878270219212.

$$\frac{1}{r}$$

Question Number : 48 Question Id : 87827055745 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

हाइड्रोजन परमाणु में एक इलेक्ट्रॉन का कोणीय संवेग किसके समानुपाती है (जहाँ r इलेक्ट्रॉन की कक्षा की त्रिज्या है) :

Options :

878270219209. $\sqrt{r}$

878270219210. $\frac{1}{\sqrt{r}}$

878270219211. r

878270219212. $\frac{1}{r}$

Question Number : 49 Question Id : 87827055746 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

During an adiabatic process, if the pressure of a gas is found to be proportional to the cube of its absolute temperature, then the ratio of $\frac{C_p}{C_v}$ for the gas is :

Options :

878270219213. $\frac{3}{2}$

878270219214. $\frac{5}{3}$

878270219215. $\frac{7}{5}$

878270219216. $\frac{9}{7}$

Question Number : 49 Question Id : 87827055746 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

रूद्धोष्म प्रक्रम के दौरान किसी गैस का दाब यदि इसके परमताप के घन के अनुक्रमानुपाती हो तब इस गैस के लिए $\frac{C_p}{C_v}$ अनुपात है :

Options :

878270219213. $\frac{3}{2}$

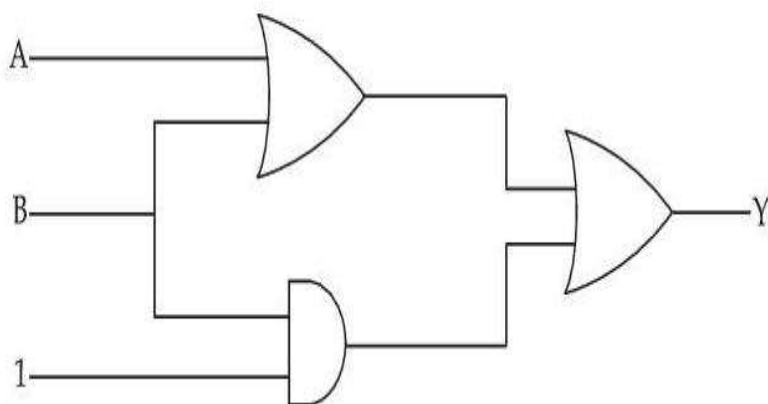
878270219214. $\frac{5}{3}$

878270219215. $\frac{7}{5}$

878270219216. $\frac{9}{7}$

Question Number : 50 Question Id : 87827055747 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A
Minimum Instruction Time : 0
Correct Marks : 4 Wrong Marks : 1

The output (Y) of logic circuit given below is 0 only when :



Options :

878270219217. $A=0, B=0$

878270219218.

A=1, B=0

878270219219.

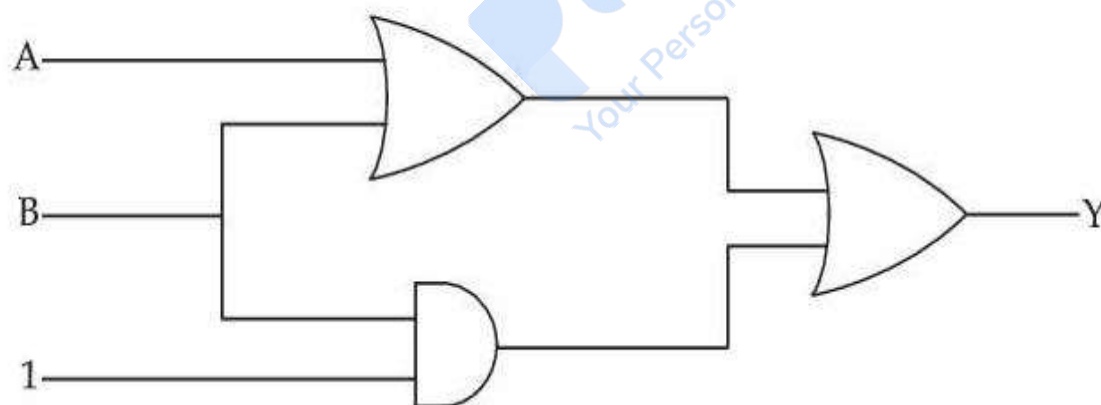
A=0, B=1

878270219220.

A=1, B=1

Question Number : 50 Question Id : 87827055747 Question Type : MCQ Option Shuffling : Yes**Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A****Minimum Instruction Time : 0****Correct Marks : 4 Wrong Marks : 1**

दिये गये लॉजिक परिपथ का निर्गत (Y) केवल 0 (शून्य) है जब :

**Options :**

878270219217.

A=0 एवं B=0

878270219218.

A=1 अथवा B=0

878270219219.

A=0 अथवा B=1

878270219220. $A=1$ अथवा $B=1$

Physics Section B

Section Id :	8782701155
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 :	8782702062
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 51 Question Id : 87827055748 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

The maximum height reached by a projectile is 64 m. If the initial velocity is halved, the new maximum height of the projectile is _____ m.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Text Areas : PlainText

Possible Answers :

1

Question Number : 51 Question Id : 87827055748 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

किसी स्थान पर एक प्रक्षेप्य की अधिकतम ऊँचाई 64 मी है। यदि प्रारम्भिक वेग को आधा कर दिया जाये तो प्रक्षेप्य की नई अधिकतम ऊँचाई _____ मी है।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 52 Question Id : 87827055749 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

A hollow sphere is rolling on a plane surface about its axis of symmetry. The ratio of rotational kinetic energy to its total kinetic energy is $\frac{x}{5}$. The value of x is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

1

Question Number : 52 Question Id : 87827055749 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

एक खोखला गोला अपनी सममित अक्ष के परितः एक समतल पर लुढ़क रहा है। इसकी घूर्णन गतिज ऊर्जा तथा कुल गतिज ऊर्जा का अनुपात $\frac{x}{5}$ है। x का मान _____ है।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 53 Question Id : 87827055750 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

In a single slit experiment, a parallel beam of green light of wavelength 550 nm passes through a slit of width 0.20 mm. The transmitted light is collected on a screen 100 cm away. The distance of first order minima from the central maximum will be $x \times 10^{-5}$ m. The value of x is :

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 53 Question Id : 87827055750 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

एक एकल झिरी प्रयोग में 550 nm तरंगदैर्घ्य की हरे प्रकाश की समान्तर पुँज 0.20 mm चौड़ाई की एक झिरी से गुजरती है। पारगमित प्रकाश 100 सेमी की दूरी पर एक पर्दे पर एकत्रित होता है। केन्द्रीय उच्चिष्ठ से प्रथम निम्निष्ठ की दूरी $x \times 10^{-5} \text{ m}$ है। x का मान _____ है।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

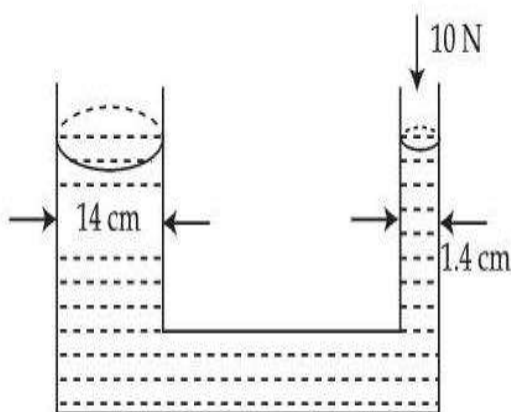
Possible Answers :

1

Question Number : 54 Question Id : 87827055751 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1



A hydraulic press containing water has two arms with diameters as mentioned in the figure. A force of 10 N is applied on the surface of water in the thinner arm. The force required to be applied on the surface of water in the thicker arm to maintain equilibrium of water is _____ N .

Response Type : Numeric

Evaluation Required For SA : Yes

Answers Type : Equal

Text Areas : PlainText

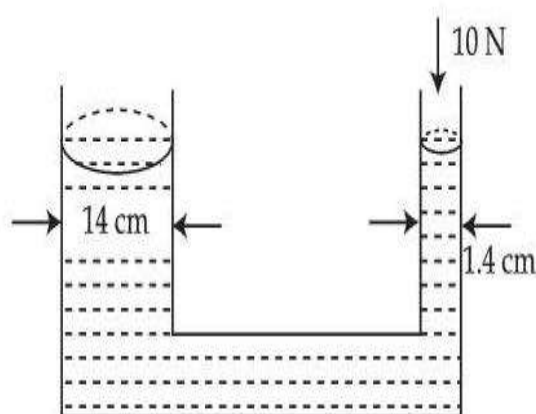
Possible Answers :

1

Question Number : 54 Question Id : 87827055751 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1



जल युक्त एक हाइड्रोलिक प्रेस में प्रदर्शित चित्र के अनुसार अलग-अलग व्यास की दो भुजाएँ ली गई हैं। पतली भुजा में जल की सतह पर एक 10 N का बल आरोपित किया जाता है। पानी की साम्यावस्था बनाये रखने के लिए चौड़ी भुजा पर आवश्यक आरोपित बल _____ N है।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 55 Question Id : 87827055752 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

A sonometer wire of resonating length 90 cm has a fundamental frequency of 400 Hz when kept under some tension. The resonating length of the wire with fundamental frequency of 600 Hz under same tension _____ cm.

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 :** 87827055752 **Question Type :** SA **Calculator :** None

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

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

जब एक सोनोमीटर को कुछ तनाव के अन्तर्गत रखा जाता है तो 90 सेमी अनुनादित लम्बाई पर मूल आवृत्ति 400 Hz है। समान तनाव पर 600 Hz मूल आवृत्ति के लिए तार की अनुनादित लंबाई _____ सेमी है।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 56 **Question Id :** 87827055753 **Question Type :** SA **Calculator :** None

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

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

A wire of resistance $20\ \Omega$ is divided into 10 equal parts, resulting pairs. A combination of two parts are connected in parallel and so on. Now resulting pairs of parallel combination are connected in series. The equivalent resistance of final combination is _____ Ω .

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 56 **Question Id :** 87827055753 **Question Type :** SA **Calculator :** None

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

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

$20\ \Omega$ प्रतिरोध के एक तार को 10 बराबर भागों में विभाजित किया गया है। दो-दो भागों को समान्तर क्रम में जोड़कर संयोजन बनाये गये। अब इन समान्तर संयोजन के सभी जोड़ों को श्रेणी क्रम में जोड़ दिया गया है। अन्तिम संयोजन का तुल्य प्रतिरोध _____ Ω है।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 57 **Question Id :** 87827055754 **Question Type :** SA **Calculator :** None

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

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

A solenoid of length 0.5 m has a radius of 1 cm and is made up of 'm' number of turns. It carries a current of 5 A. If the magnitude of the magnetic field inside the solenoid is $6.28 \times 10^{-3} \text{ T}$ then the value of m is _____.

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 :** 87827055754 **Question Type :** SA **Calculator :** None

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

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

0.5 मी लम्बाई तथा 1 सेमी त्रिज्या की एक परिनालिका को m फेरों से बनाया गया है। इसमें प्रवाहित धारा 5 A है। यदि परिनालिका के अन्दर चुम्बकीय क्षेत्र का परिमाण $6.28 \times 10^{-3} \text{ T}$ हो तब m का मान _____ है।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

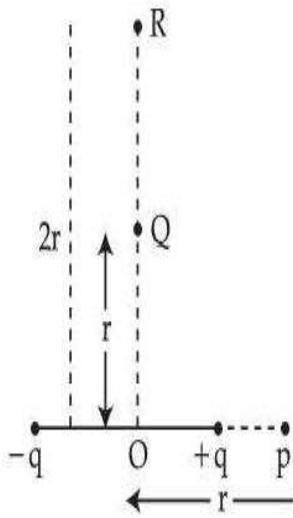
1

Question Number : 58 **Question Id :** 87827055755 **Question Type :** SA **Calculator :** None

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

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

The electric field at point p due to an electric dipole is E. The electric field at point R on equatorial line will be $\frac{E}{x}$. The value of x :



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

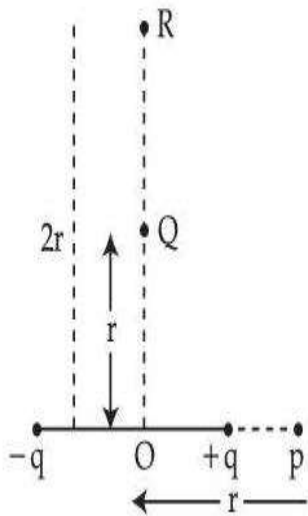
1

Question Number : 58 **Question Id :** 87827055755 **Question Type :** SA **Calculator :** None

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

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

वैद्युत द्विध्रुव के कारण बिन्दु P पर वैद्युत क्षेत्र E है। लम्बार्धक रेखा के बिन्दु R पर वैद्युत क्षेत्र $\frac{E}{x}$ है। x का मान _____ है।



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 59 **Question Id :** 87827055756 **Question Type :** SA **Calculator :** None

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

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

The current in an inductor is given by $I = (3t + 8)$ where t is in second. The magnitude of induced emf produced in the inductor is 12 mV. The self-inductance of the inductor _____ mH.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

1

Question Number : 59 Question Id : 87827055756 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

एक प्रेरक में धारा $I = (3t + 8)A$ है, जहाँ t सेकंड में है। प्रेरक में उत्पन्न वि.बा. बल 12 mV है। प्रेरक का स्व-प्रेरकत्व _____ mH 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 : 87827055757 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

The shortest wavelength of the spectral lines in the Lyman series of hydrogen spectrum is $915 \text{ \AA}$. The longest wavelength of spectral lines in the Balmer series will be _____ $\text{\AA}$.

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 : 87827055757 Question Type : SA Calculator : None**Response Time : N.A Think Time : N.A Minimum Instruction Time : 0****Correct Marks : 4 Wrong Marks : 1**

हाइड्रोजन स्पैक्ट्रम की लाइमन श्रेणी की स्पैक्ट्रमी रेखाओं की न्यूनतम तरंगदैर्घ्य $915 \text{ \AA}$ है। बॉमर श्रेणी की स्पैक्ट्रमी रेखाओं की अधिकतम तरंगदैर्घ्य _____ $\text{\AA}$ होगी।

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 :	8782701156
Section Number :	5
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	20
Number of Questions to be attempted :	20
Section Marks :	80
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	8782702063
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 61 Question Id : 87827055758 Question Type : MCQ Option Shuffling : Yes

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 moles of methane required to produce 11 g $\text{CO}_2(\text{g})$ after complete combustion is :

(Given molar mass of methane in g mol^{-1} : 16)

Options :

878270219231. 0.25

878270219232. 0.5

878270219233. 0.75

878270219234. 0.35

Question Number : 61 Question Id : 87827055758 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

मेथेन का मोलों की आवश्यक संख्या जिसके पूर्ण दहन पर 11 g $\text{CO}_2(\text{g})$ उत्पादित हो सके।

(दिया गया है : मेथेन का मोलर द्रव्यमान g mol^{-1} में 16)

Options :

878270219231. 0.25

878270219232. 0.5

878270219233. 0.75

878270219234. 0.35

Question Number : 62 Question Id : 87827055759 Question Type : MCQ Option Shuffling : Yes**Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A****Minimum Instruction Time : 0****Correct Marks : 4 Wrong Marks : 1**

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

Assertion (A) : NH_3 and NF_3 molecule have pyramidal shape with a lone pair of electrons on nitrogen atom. The resultant dipole moment of NH_3 is greater than that of NF_3 .

Reason (R) : In NH_3 , the orbital dipole due to lone pair is in the same direction as the resultant dipole moment of the N – H bonds. F is the most electronegative element.

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

Options :878270219235. Both **(A)** and **(R)** are true and **(R)** is the correct explanation of **(A)**878270219236. Both **(A)** and **(R)** are true but **(R)** is NOT the correct explanation of **(A)**878270219237. **(A)** is true but **(R)** is false878270219238. **(A)** is false but **(R)** is true**Question Number : 62 Question Id : 87827055759 Question Type : MCQ Option Shuffling : Yes****Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A**

Correct Marks : 4 Wrong Marks : 1

नीचे दो कथन दिए गए हैं। इनमें से एक को अभिकथन (A) एवं दूसरे को कारण (R) दर्शाया गया है :

अभिकथन (A) : NH_3 एवं NF_3 अणुओं की पिरामिडी संरचना है। जिसमें N परमाणु पर एक एकाकी इलेक्ट्रॉन युग्म उपस्थित है। NH_3 का परिणामी द्विध्रुव आघूर्ण NF_3 से अधिक है।

कारण (R) : NH_3 में एकाकी इलेक्ट्रॉन युग्म के कारण कक्षक द्विध्रुव आघूर्ण, N-H आबंधों के परिणामी द्विध्रुव आघूर्ण की समान दिशा में है। F सर्वाधिक ऋणविद्युती तत्व है।

उपर्युक्त कथनों के संदर्भ में नीचे दिए गए विकल्पों में से सही उत्तर को चुनें :

Options :

878270219235. दोनों (A) एवं (R) सही हैं तथा (A) की सही व्याख्या (R) है।

878270219236. दोनों (A) एवं (R) सही हैं परन्तु (A) की सही व्याख्या (R) नहीं है।

878270219237. (A) सही है परन्तु (R) गलत है।

878270219238. (A) गलत है परन्तु (R) सही है।

Question Number : 63 Question Id : 87827055760 Question Type : MCQ Option Shuffling : Yes

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 : On passing $\text{HCl}_{(g)}$ through a saturated solution of BaCl_2 , at room temperature white turbidity appears.

Statement II : When HCl gas is passed through a saturated solution of NaCl , sodium chloride is precipitated due to common ion effect.

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

878270219239. Both Statement I and Statement II are correct

878270219240. Both Statement I and Statement II are incorrect

878270219241. Statement I is correct but Statement II is incorrect

878270219242. Statement I is incorrect but Statement II is correct

Question Number : 63 Question Id : 87827055760 Question Type : MCQ Option Shuffling : Yes

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 : BaCl_2 के किसी संतृप्त विलयन में $\text{HCl}_{(g)}$ को प्रवाहित करने पर कमरे के ताप पर, एक सफेद धुंधलापन दिखाई देता है।

कथन II : जब HCl गैस को NaCl के संतृप्त विलयन में प्रवाहित किया जाता है तो सम आयन प्रभाव के कारण सोडियम क्लोराइड अवक्षेपित हो जाता है।

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

Options :

878270219239. दोनों कथन I एवं कथन II सही हैं।

878270219240. दोनों कथन I एवं कथन II गलत हैं।

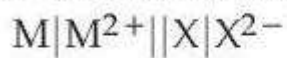
878270219241. कथन I सही है परन्तु कथन II गलत है।

878270219242. कथन I गलत है परन्तु कथन II सही है।

Question Number : 64 Question Id : 87827055761 Question Type : MCQ Option Shuffling : Yes
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 the electro chemical cell



If $E^0_{(M^{2+}/M)} = 0.46 \text{ V}$ and $E^0_{(X/X^{2-})} = 0.34 \text{ V}$.

Which of the following is correct ?

Options :

878270219243. $M + X \rightarrow M^{2+} + X^{2-}$ is a spontaneous reaction

878270219244. $M^{2+} + X^{2-} \rightarrow M + X$ is a spontaneous reaction

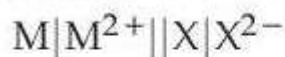
878270219245. $E_{\text{cell}} = 0.80 \text{ V}$

878270219246. $E_{\text{cell}} = -0.80 \text{ V}$

Question Number : 64 Question Id : 87827055761 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A
Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

वैद्युत रासायनिक सेल के लिए



यदि $E^0_{(M^{2+}/M)} = 0.46 \text{ V}$ तथा $E^0_{(X/X^{2-})} = 0.34 \text{ V}$ तो :

निम्नलिखित में से कौन सही है ?

Options :

878270219243. $M + X \rightarrow M^{2+} + X^{2-}$ एक स्वतः अभिक्रिया है

878270219244. $M^{2+} + X^{2-} \rightarrow M + X$ एक स्वतः अभिक्रिया है

878270219245. $E_{\text{cell}} = 0.80 \text{ V}$

878270219246. $E_{\text{cell}} = -0.80 \text{ V}$

Question Number : 65 Question Id : 87827055762 Question Type : MCQ Option Shuffling : Yes

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 quantity of silver deposited when one coulomb charge is passed through AgNO_3 solution :

Options :

878270219247. 1 g of silver

878270219248. 0.1 g atom of silver

878270219249.

1 electrochemical equivalent of silver

1 chemical equivalent of silver

878270219250.

Question Number : 65 Question Id : 87827055762 Question Type : MCQ Option Shuffling : Yes

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 AgNO_3 विलयन से एक कूलाम्ब आवेश प्रवाहित किया जाता है तो निक्षेपित हुई सिल्वर की मात्रा है :

Options :

878270219247. 1 g सिल्वर

878270219248. 0.1 g परमाणु सिल्वर

878270219249. सिल्वर का 1 वैद्युत रासायनिक तुल्यांक

878270219250. सिल्वर का 1 रासायनिक तुल्यांक

Question Number : 66 Question Id : 87827055763 Question Type : MCQ Option Shuffling : Yes

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 metallic radius of Na is $1.86 \text{ \AA}$ and the ionic radius of Na^+ is lesser than $1.86 \text{ \AA}$.

Statement II : Ions are always smaller in size than the corresponding elements.

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

Options :

878270219251. Both **Statement I** and **Statement II** are true

878270219252. Both **Statement I** and **Statement II** are false

878270219253. **Statement I** is correct but **Statement II** is false

878270219254. **Statement I** is incorrect but **Statement II** is true

Question Number : 66 Question Id : 87827055763 Question Type : MCQ Option Shuffling : Yes

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 : Na की धात्विक त्रिज्या $1.86 \text{ \AA}$ है तथा Na^+ की आयनिक त्रिज्या $1.86 \text{ \AA}$ से कम है।

कथन II : अपने तत्वों की तुलना में आयन आकार में सदैव छोटे होते हैं।

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

Options :

878270219251. दोनों **कथन I** एवं **कथन II** सही हैं।

878270219252. दोनों **कथन I** एवं **कथन II** गलत हैं।

878270219253. कथन I सही है परन्तु कथन II गलत है।

878270219254. कथन I गलत है परन्तु कथन II सही है।

Question Number : 67 Question Id : 87827055764 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Match List - I with List - II.

List - I	List - II
(A) ICl	(I) T - shape
(B) ICl_3	(II) Square pyramidal
(C) ClF_5	(III) Pentagonal bipyramidal
(D) IF_7	(IV) Linear

Choose the correct answer from the options given below :

Options :

878270219255. (A)-(I), (B)-(III), (C)-(II), (D)-(IV)

878270219256. (A)-(I), (B)-(IV), (C)-(III), (D)-(II)

878270219257. (A)-(IV), (B)-(III), (C)-(II), (D)-(I)

878270219258. (A)-(IV), (B)-(I), (C)-(II), (D)-(III)

Question Number : 67 Question Id : 87827055764 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

सूची - I का मिलान सूची - II से करें :

सूची - I

सूची - II

(A) ICl

(I) T - आकृति

(B) ICl_3

(II) वर्ग पिरामिडी

(C) ClF_5

(III) पेन्टागोनल द्विपिरामिडी

(D) IF_7

(IV) रेखीय

नीचे दिए गए विकल्पों में से सही उत्तर को चुनें :

Options :

878270219255. (A)-(I), (B)-(III), (C)-(II), (D)-(IV)

878270219256. (A)-(I), (B)-(IV), (C)-(III), (D)-(II)

878270219257. (A)-(IV), (B)-(III), (C)-(II), (D)-(I)

878270219258. (A)-(IV), (B)-(I), (C)-(II), (D)-(III)

Question Number : 68 Question Id : 87827055765 Question Type : MCQ Option Shuffling : Yes

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** statements from the following are :

- (A) The decreasing order of atomic radii of group 13 elements is $Tl > In > Ga > Al > B$.
- (B) Down the group 13 electronegativity decreases from top to bottom.
- (C) Al dissolves in dil. HCl and liberates H_2 but conc. HNO_3 renders Al passive by forming a protective oxide layer on the surface.
- (D) All elements of group 13 exhibits highly stable +1 oxidation state.
- (E) Hybridisation of Al in $[Al(H_2O)_6]^{3+}$ ion is sp^3d^2 .

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

Options :

878270219259. (A) and (C) only

878270219260. (C) and (E) only

878270219261. (A), (B), (C) and (E) only

878270219262. (A), (C) and (E) only

Question Number : 68 Question Id : 87827055765 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

निम्न में से सही कथन हैं :

- (A) समूह 13 तत्वों के परमाणु क्रियाओं का घटता क्रम है : $Tl > In > Ga > Al > B$
- (B) समूह 13 में ऊपर से नीचे आने पर विद्युत ऋणात्मकता घटती है।
- (C) Al तनु HCl में घुलकर H_2 निर्मुक्त करता है परन्तु सान्द्र HNO_3 सतह पर एक रक्षी ऑक्साइड परत बनाकर Al को निष्क्रिय बना देता है।
- (D) समूह 13 के सभी तत्व अत्यधिक स्थायी +1 ऑक्सीकरण अवस्था प्रदर्शित करते हैं।
- (E) $[Al(H_2O)_6]^{3+}$ में Al का संकरण sp^3d^2 है।

नीचे दिए गए विकल्पों में से सही उत्तर को चुनें :

Options :

878270219259. केवल (A) एवं (C)

878270219260. केवल (C) एवं (E)

878270219261. केवल (A), (B), (C) एवं (E)

878270219262. केवल (A), (C) एवं (E)

Question Number : 69 Question Id : 87827055766 Question Type : MCQ Option Shuffling : Yes

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 ions from the following that have the ability to liberate hydrogen from a dilute acid is _____.

Ti^{2+} , Cr^{2+} and V^{2+}

Options :

878270219263. 0

878270219264. 1

878270219265. 2

878270219266. 3

Question Number : 69 Question Id : 87827055766 Question Type : MCQ Option Shuffling : Yes**Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A****Minimum Instruction Time : 0****Correct Marks : 4 Wrong Marks : 1**

निम्नलिखित में से उन आयनों की संख्या जिनमें तनु अम्ल से हाइड्रोजन को निर्मुक्त करने की क्षमता है :

Ti^{2+} , Cr^{2+} एवं V^{2+}

Options :

878270219263. 0

878270219264. 1

878270219265. 2

878270219266. 3

Question Number : 70 Question Id : 87827055767 Question Type : MCQ Option Shuffling : Yes**Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A****Minimum Instruction Time : 0**

The metal atom present in the complex $MABXL$ (where A, B, X and L are unidentate ligands and M is metal) involves sp^3 hybridization. The number of geometrical isomers exhibited by the complex is :

Options :

878270219267. 0

878270219268. 2

878270219269. 3

878270219270. 4

Question Number : 70 Question Id : 87827055767 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

संकुल $MABXL$ (जहाँ A, B, X एवं L एकदंतुर लिगण्ड हैं तथा M धातु है) में उपस्थित धातु परमाणु sp^3 संकरण करता है।

संकुल द्वारा प्रदर्शित ज्यामितीय समावयवों की संख्या है :

Options :

878270219267. 0

878270219268. 2

878270219269. 3

878270219270. 4

Question Number : 71 Question Id : 87827055768 Question Type : MCQ Option Shuffling : Yes**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 complexes from the following with no electrons in the t_2 orbital is _____. TiCl_4 , $[\text{MnO}_4]^-$, $[\text{FeO}_4]^{2-}$, $[\text{FeCl}_4]^-$, $[\text{CoCl}_4]^{2-}$ **Options :**

878270219271. 4

878270219272. 3

878270219273. 2

878270219274. 1

Question Number : 71 Question Id : 87827055768 Question Type : MCQ Option Shuffling : Yes**Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A****Minimum Instruction Time : 0****Correct Marks : 4 Wrong Marks : 1**निम्नलिखित में से उन संकुलों की संख्या जिनके t_2 कक्षकों में कोई भी इलेक्ट्रॉन उपस्थित नहीं है? TiCl_4 , $[\text{MnO}_4]^-$, $[\text{FeO}_4]^{2-}$, $[\text{FeCl}_4]^-$, $[\text{CoCl}_4]^{2-}$ **Options :**

878270219271. 4

878270219272. 3

878270219273. 2

878270219274. 1

Question Number : 72 Question Id : 87827055769 Question Type : MCQ Option Shuffling : Yes**Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A****Minimum Instruction Time : 0****Correct Marks : 4 Wrong Marks : 1**

While preparing crystals of Mohr's salt, dil H_2SO_4 is added to a mixture of ferrous sulphate and ammonium sulphate, before dissolving this mixture in water, dil H_2SO_4 is added here to :

Options :

878270219275. prevent the hydrolysis of ammonium sulphate

878270219276. make the medium strongly acidic

878270219277. prevent the hydrolysis of ferrous sulphate

878270219278. increase the rate of formation of crystals

Question Number : 72 Question Id : 87827055769 Question Type : MCQ Option Shuffling : Yes**Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A**

Correct Marks : 4 Wrong Marks : 1

मोहर लवण के क्रिस्टलों के निर्माण के दौरान फेरस सल्फेट एवं अमोनियम सल्फेट के मिश्रण को जल में घोलने के पहले तनु H_2SO_4 मिलाया जाता है। इसमें तनु H_2SO_4 को मिलाया जाता है :

Options :

878270219275.

अमोनियम सल्फेट के जल अपघटन को रोकने के लिए

878270219276.

माध्यम को प्रबल अम्लीय बनाने हेतु

878270219277.

फेरस सल्फेट के जल अपघटन को रोकने के लिए

878270219278.

क्रिस्टल के निर्माण की दर को बढ़ाने के लिए

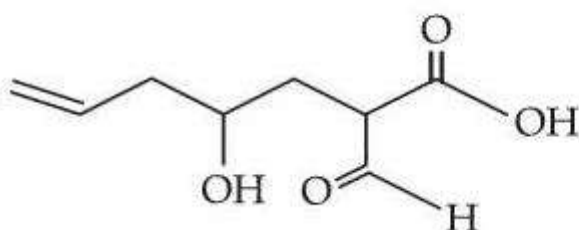
Question Number : 73 Question Id : 87827055770 Question Type : MCQ Option Shuffling : Yes

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 nomenclature for the following compound is :



Options :

878270219279.

2-carboxy-4-hydroxyhept-7-enal

878270219280. 2-carboxy-4-hydroxyhept-6-enal

878270219281. 2-formyl-4-hydroxyhept-6-enoic acid

878270219282. 2-formyl-4-hydroxyhept-7-enoic acid

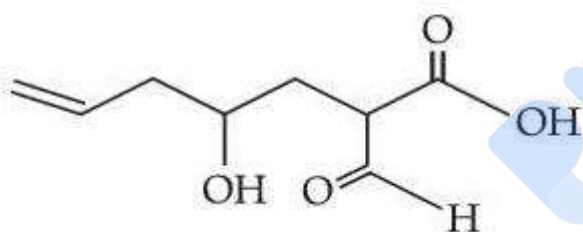
Question Number : 73 Question Id : 87827055770 Question Type : MCQ Option Shuffling : Yes

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 यौगिक के लिए सही नामकरण है :



Options :

878270219279. 2-carboxy-4-hydroxyhept-7-enal

878270219280. 2-carboxy-4-hydroxyhept-6-enal

878270219281. 2-formyl-4-hydroxyhept-6-enoic acid

878270219282. 2-formyl-4-hydroxyhept-7-enoic acid

Question Number : 74 Question Id : 87827055771 Question Type : MCQ Option Shuffling : Yes

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

(Pair of Compounds)

- (A) n-propanol and Isopropanol
- (B) Methoxypropane and ethoxyethane
- (C) Propanone and propanal
- (D) Neopentane and Isopentane

List - II

(Isomerism)

- (I) Metamerism
- (II) Chain Isomerism
- (III) Position Isomerism
- (IV) Functional Isomerism

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

Options :

878270219283. (A)-(II), (B)-(I), (C)-(IV), (D)-(III)

878270219284. (A)-(III), (B)-(I), (C)-(II), (D)-(IV)

878270219285. (A)-(I), (B)-(III), (C)-(IV), (D)-(II)

878270219286. (A)-(III), (B)-(I), (C)-(IV), (D)-(II)

Question Number : 74 Question Id : 87827055771 Question Type : MCQ Option Shuffling : Yes

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 मिचान सूची - II से करें :

सूची - I

(यौगिकों के युग्म)

- (A) n-प्रोपेनॉल एवं आइसोप्रोपेनॉल
- (B) मिथाक्सी प्रोपेन एवं इथाक्सी एथेन
- (C) प्रोपेनोन एवं प्रोपेनल
- (D) निओपेन्टेन एवं आइसोपेन्टेन

सूची - II

(समावयवता)

- (I) मध्यावयवता
- (II) शृंखला समावयवता
- (III) स्थिति समावयवता
- (IV) क्रियात्मक समावयवता

नीचे दिए गए विकल्पों में से सही उत्तर को चुनें :

Options :

878270219283. (A)-(II), (B)-(I), (C)-(IV), (D)-(III)

878270219284. (A)-(III), (B)-(I), (C)-(II), (D)-(IV)

878270219285. (A)-(I), (B)-(III), (C)-(IV), (D)-(II)

878270219286. (A)-(III), (B)-(I), (C)-(IV), (D)-(II)

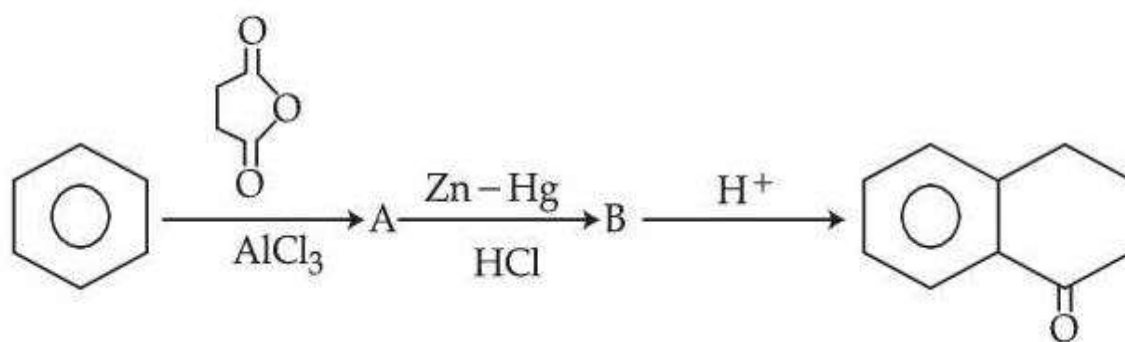
Question Number : 75 Question Id : 87827055772 Question Type : MCQ Option Shuffling : Yes

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

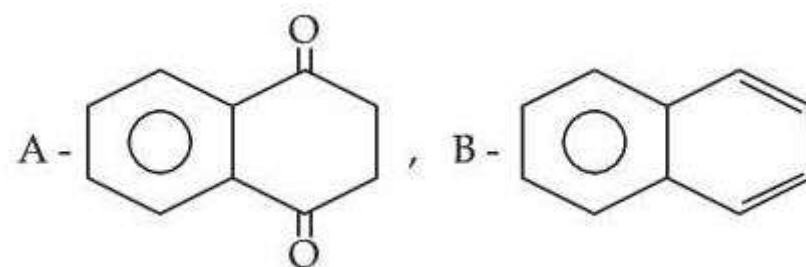
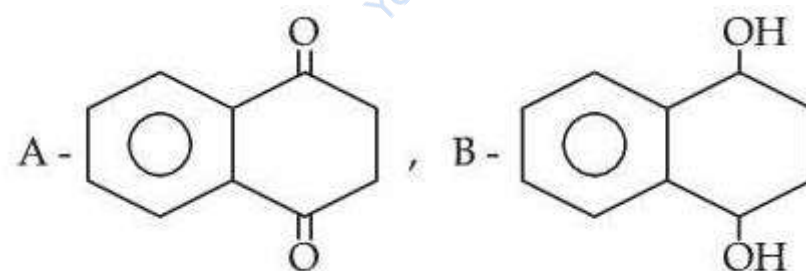
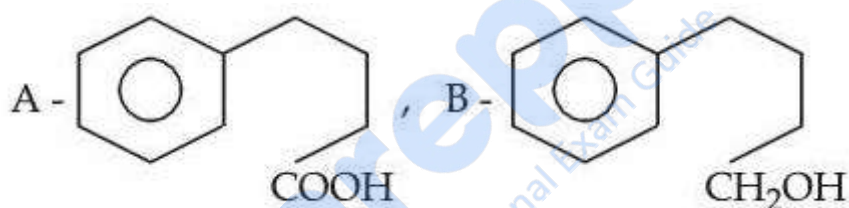
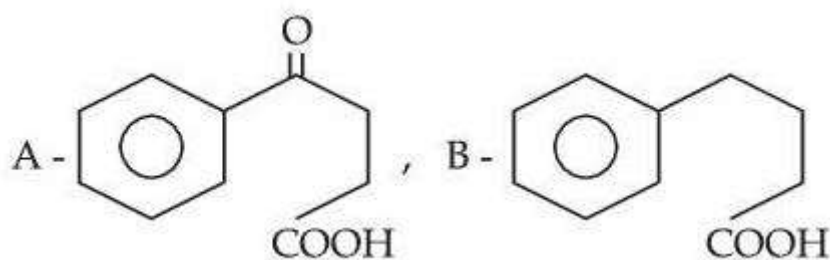
Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Identify A and B in the given chemical reaction sequence :



Options :



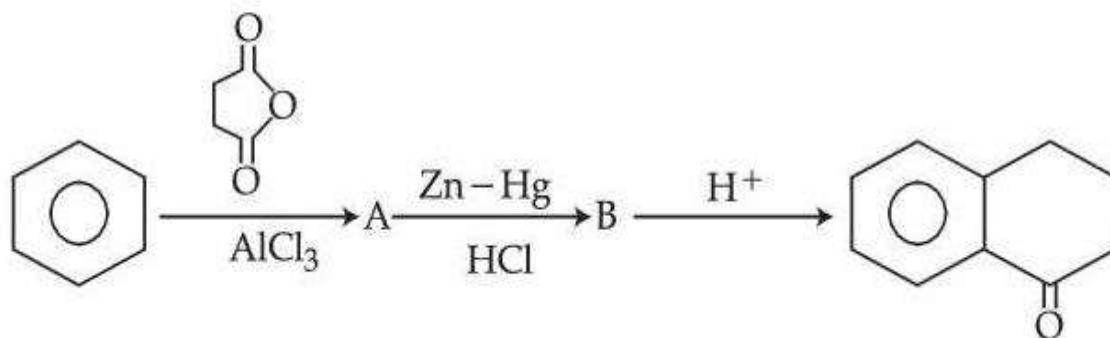
Question Number : 75 Question Id : 87827055772 Question Type : MCQ Option Shuffling : Yes

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

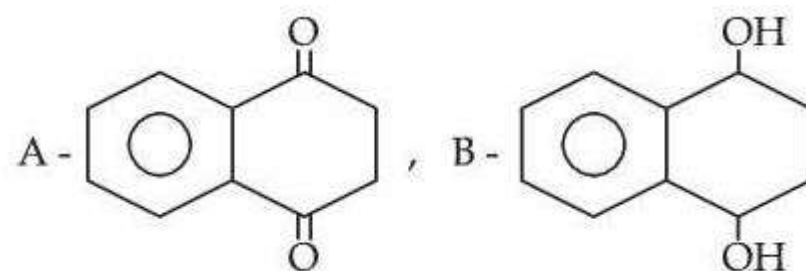
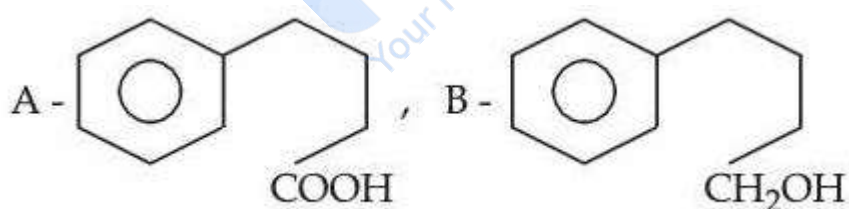
Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

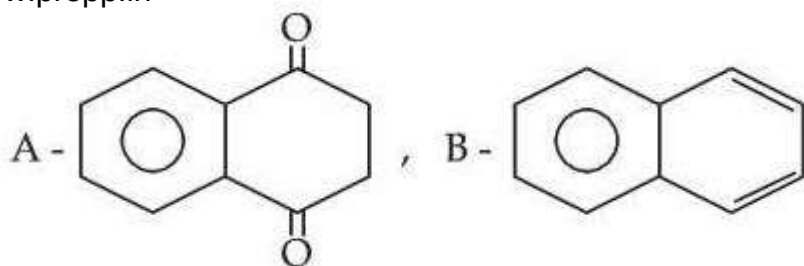
दिए गए रासायनिक अभिक्रिया क्रम में A एवं B को पहचानें :



Options :



878270219290.



Question Number : 76 Question Id : 87827055773 Question Type : MCQ Option Shuffling : Yes

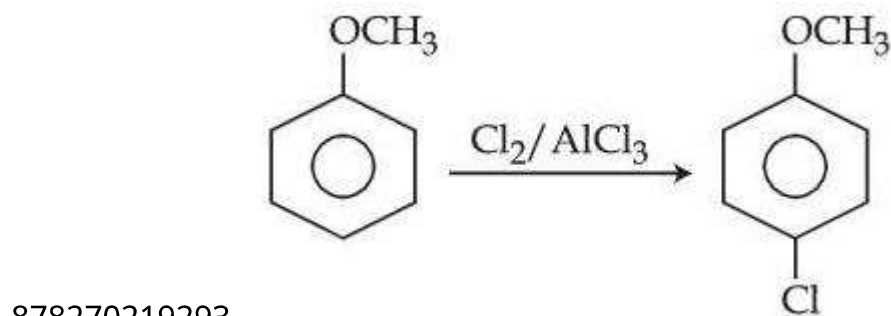
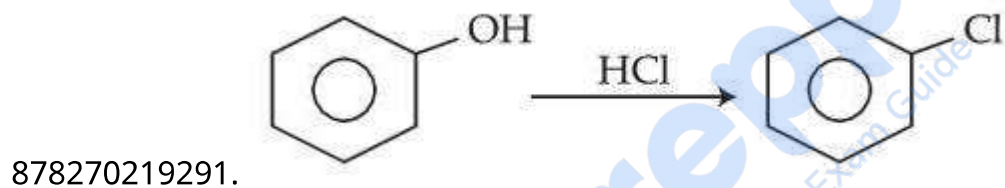
Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A

Minimum Instruction Time : 0

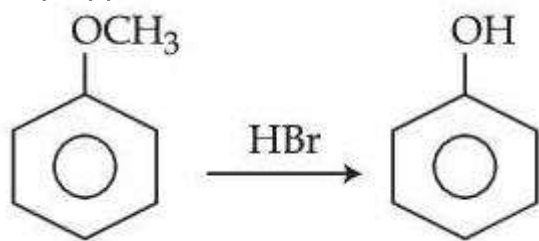
Correct Marks : 4 Wrong Marks : 1

Which one of the following reactions is NOT possible ?

Options :



878270219294.



Question Number : 76 Question Id : 87827055773 Question Type : MCQ Option Shuffling : Yes

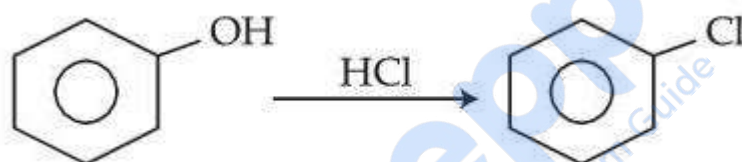
Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A

Minimum Instruction Time : 0

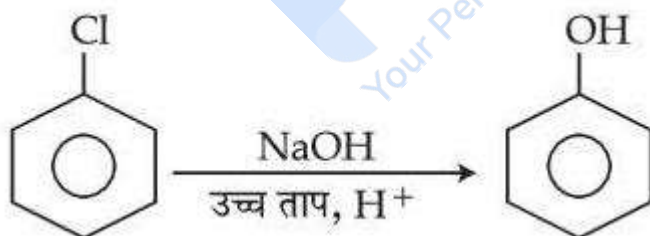
Correct Marks : 4 Wrong Marks : 1

निम्नलिखित में से कौन-सी अभिक्रिया संभव नहीं है?

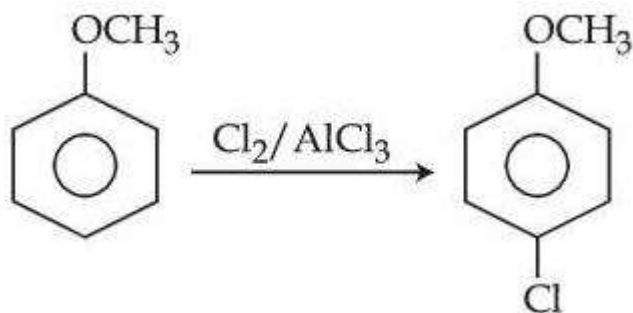
Options :



878270219291.

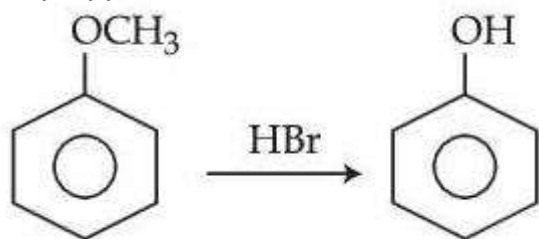


878270219292.



878270219293.

878270219294.



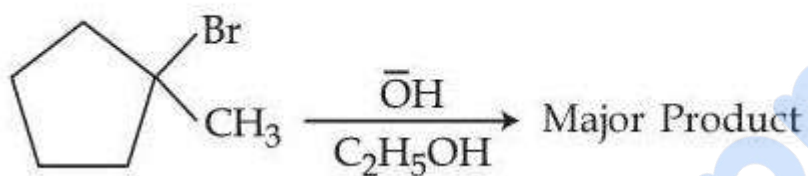
Question Number : 77 Question Id : 87827055774 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

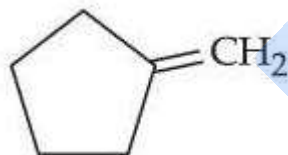
Correct Marks : 4 Wrong Marks : 1

Identify the major product in the following reaction.

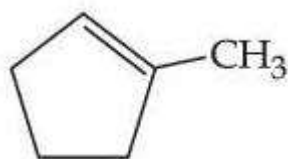


Options :

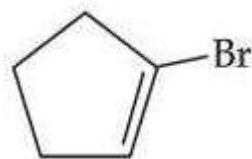
878270219295.



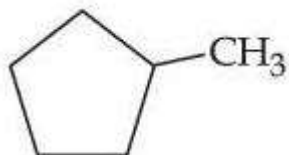
878270219296.



878270219297.



878270219298.



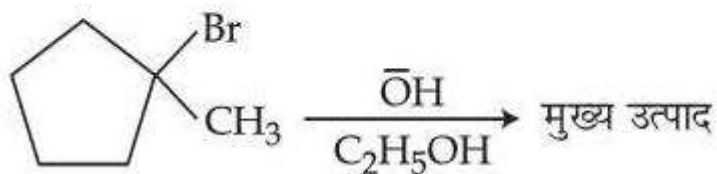
Question Number : 77 Question Id : 87827055774 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

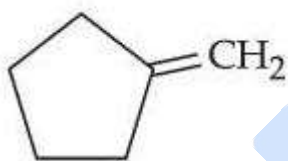
Correct Marks : 4 Wrong Marks : 1

निम्नलिखित अभिक्रिया में मुख्य उत्पाद को पहचानें :

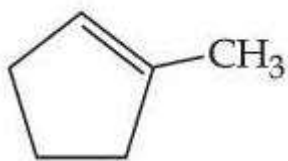


Options :

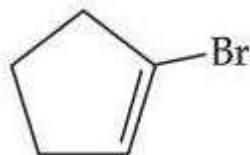
878270219295.



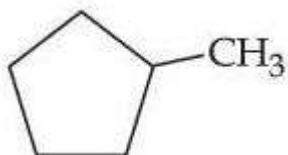
878270219296.



878270219297.



878270219298.

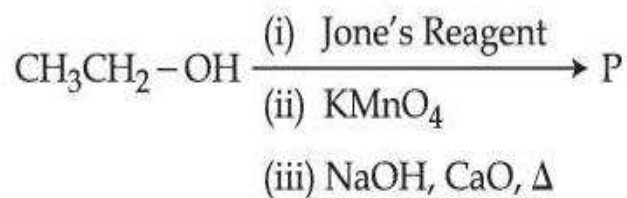


Question Number : 78 Question Id : 87827055775 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1



Consider the above reaction sequence and identify the major product P.

Options :

878270219299. Methanal

878270219300. Methane

878270219301. Methanoic acid

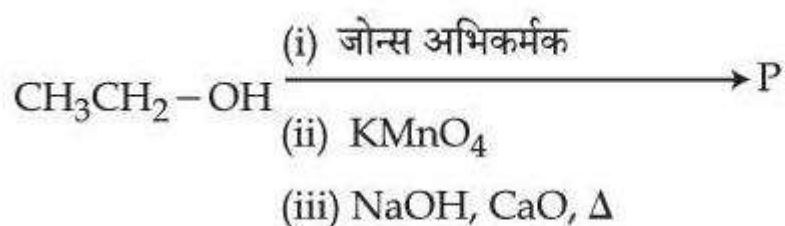
878270219302. Methoxymethane

Question Number : 78 Question Id : 87827055775 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1



उपर्युक्त अभिक्रिया क्रम पर विचार करें एवं मुख्य उत्पाद 'P' को पहचानें :

878270219299. मेथेनैल

878270219300. मेथेन

878270219301. मेथेनॉइक अम्ल

878270219302. मिथाॅक्सी मेथेन

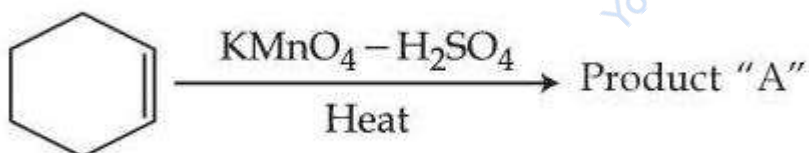
Question Number : 79 Question Id : 87827055776 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Consider the given chemical reaction :



Product "A" is :

Options :

878270219303. acetic acid

878270219304. oxalic acid

878270219305. adipic acid

878270219306. picric acid

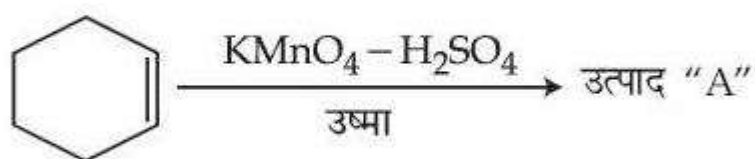
Question Number : 79 Question Id : 87827055776 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

दी गई रासायनिक अभिक्रिया पर विचार करें :



उत्पाद "A" हैं :

Options :

878270219303. ऐसीटिक अम्ल

878270219304. ऑक्सैलिक अम्ल

878270219305. एडिपिक अम्ल

878270219306. पिक्रिक अम्ल

Question Number : 80 Question Id : 87827055777 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Coagulation of egg, on heating is because of :

Options :

878270219307. Breaking of the peptide linkage in the primary structure of protein occurs

878270219308. Biological property of protein remains unchanged

878270219309. The secondary structure of protein remains unchanged

878270219310. Denaturation of protein occurs

Question Number : 80 Question Id : 87827055777 Question Type : MCQ Option Shuffling : Yes

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

गर्म करने पर अण्डे का स्कंदन होता है क्योंकि :

Options :

878270219307. प्रोटीन के प्राथमिक संरचना में पेप्टाइड बंधों का विदलन होता है।

878270219308. प्रोटीन के जैविक गुणधर्मों में कोई परिवर्तन नहीं होता है।

878270219309. प्रोटीन के द्वितीयक संरचना में कोई परिवर्तन नहीं होता है।

878270219310. प्रोटीन का विकृतीकरण होता है।

Chemistry Section B

Section Id :	8782701157
Section Number :	6
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	10
Number of Questions to be attempted :	5
Section Marks :	20
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	8782702064
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 81 Question Id : 87827055778 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

In an atom, total number of electrons having quantum numbers $n=4$, $|m_l|=1$ and $m_s = -\frac{1}{2}$ is

_____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

1

Question Number : 81 Question Id : 87827055778 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

किसी परमाणु में इलेक्ट्रॉनों की कुल संख्या जिनके पास क्वांटम संख्याएँ $n=4, |m_l|=1$ एवं $m_s = -\frac{1}{2}$ हैं, हैं _____।

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 : 87827055779 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Number of compounds from the following with zero dipole moment is _____.
 $\text{HF}, \text{H}_2, \text{H}_2\text{S}, \text{CO}_2, \text{NH}_3, \text{BF}_3, \text{CH}_4, \text{CHCl}_3, \text{SiF}_4, \text{H}_2\text{O}, \text{BeF}_2$

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 : 87827055779 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित में से शून्य द्विध्रुव आघूर्ण वाले यौगिकों की संख्या है _____।

HF, H₂, H₂S, CO₂, NH₃, BF₃, CH₄, CHCl₃, SiF₄, H₂O, BeF₂

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

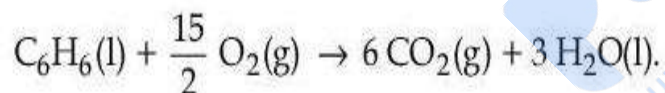
1

Question Number : 83 Question Id : 87827055780 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Combustion of 1 mole of benzene is expressed at

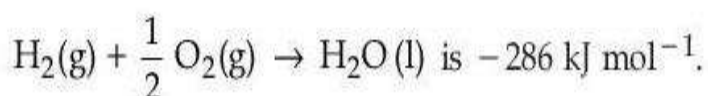


The standard enthalpy of combustion of 2 mol of benzene is $-x$ kJ.

$x =$ _____.

Given :

1. standard Enthalpy of formation of 1 mol of C₆H₆(l), for the reaction
6 C (graphite) + 3 H₂(g) → C₆H₆(l) is 48.5 kJ mol⁻¹.
2. Standard Enthalpy of formation of 1 mol of CO₂(g), for the reaction
C (graphite) + O₂(g) → CO₂(g) is -393.5 kJ mol⁻¹.
3. Standard and Enthalpy of formation of 1 mol of H₂O(l), for the reaction



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Possible Answers :

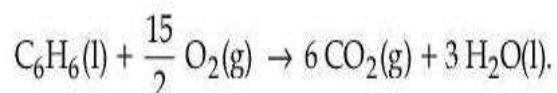
1

Question Number : 83 Question Id : 87827055780 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 बेन्जीन का दहन निम्न प्रकार से लिखा जा सकता है

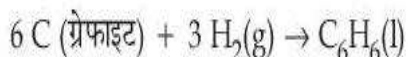


बेन्जीन के 2 मोल का मानक दहन एन्थैल्पी है : - 'x' kJ.

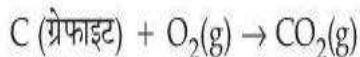
x = _____.

दिया गया है :

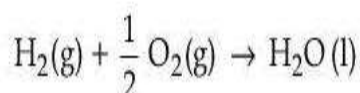
1. निम्न अभिक्रिया के लिए, 1 मोल $\text{C}_6\text{H}_6(\text{l})$ के निर्माण के लिए, मानक एन्थैल्पी है : 48.5 kJ mol^{-1}



2. निम्न अभिक्रिया के लिए, 1 मोल $\text{CO}_2(\text{g})$ के निर्माण के लिए, मानक गठन एन्थैल्पी है : $-393.5 \text{ kJ mol}^{-1}$



3. निम्न अभिक्रिया के लिए, 1 मोल $\text{H}_2\text{O}(\text{l})$ के निर्माण के लिए, मानक गठन एन्थैल्पी है : -286 kJ 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 : 87827055781 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Considering acetic acid dissociates in water, its dissociation constant is 6.25×10^{-5} . If 5 mL of acetic acid is dissolved in 1 litre water, the solution will freeze at $-x \times 10^{-2} ^\circ\text{C}$, provided pure water freezes at $0 ^\circ\text{C}$.

$x = \underline{\hspace{2cm}}$. (Nearest integer)

Given : $(K_f)_{\text{water}} = 1.86 \text{ K kg mol}^{-1}$,

density of acetic acid is 1.2 g mol^{-1} ,

molar mass of water = 18 g mol^{-1} ,

molar mass of acetic acid = 60 g mol^{-1} ,

density of water = 1 g cm^{-3}

Acetic acid dissociates as $\text{CH}_3\text{COOH} \rightleftharpoons \text{CH}_3\text{COO}^\ominus + \text{H}^\oplus$

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 : 87827055781 Question Type : SA Calculator : None**Response Time : N.A Think Time : N.A Minimum Instruction Time : 0****Correct Marks : 4 Wrong Marks : 1**

यह मानते हुए कि ऐसीटिक अम्ल जल में वियोजित होता है, इसका वियोजन स्थिरांक 6.25×10^{-5} है। यदि 5 mL ऐसीटिक अम्ल को 1 लीटर जल में घोला जाए तो विलयन $-x \times 10^{-2}^{\circ}\text{C}$ पर जम जाएगा (यदि शुद्ध जल 0°C पर जमता है)।

$x = \underline{\hspace{2cm}}$. (निकटतम पूर्णांक)

दिया गया है : $(K_f)_{\text{जल}} = 1.86 \text{ K kg mol}^{-1}$.

ऐसीटिक अम्ल का घनत्व $= 1.2 \text{ g mol}^{-1}$.

जल का मोलर द्रव्यमान $= 18 \text{ g mol}^{-1}$.

ऐसीटिक अम्ल का मोलर द्रव्यमान $= 60 \text{ g mol}^{-1}$.

जल का घनत्व $= 1 \text{ g cm}^{-3}$.

ऐसीटिक अम्ल का वियोजन निम्न प्रकार से होता है : $\text{CH}_3\text{COOH} \rightleftharpoons \text{CH}_3\text{COO}^{\ominus} + \text{H}^{\oplus}$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

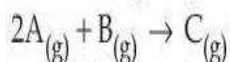
1

Question Number : 85 **Question Id :** 87827055782 **Question Type :** SA **Calculator :** None

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

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

Consider the following single step reaction in gas phase at constant temperature.



The initial rate of the reaction is recorded as r_1 when the reaction starts with 1.5 atm pressure of A and 0.7 atm pressure of B. After some time, the rate r_2 is recorded when the pressure of C becomes 0.5 atm. The ratio $r_1 : r_2$ is $\underline{\hspace{2cm}} \times 10^{-1}$. (Nearest integer)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

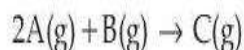
1

Question Number : 85 Question Id : 87827055782 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

स्थिर ताप पर गैसीय प्रावस्था में निम्नलिखित एक-पदीय अभिक्रिया पर विचार करें।



अभिक्रिया की प्रारम्भिक दर को r_1 के रूप में रिकार्ड किया गया जब अभिक्रिया A के 1.5 atm एवं B के 0.7 atm दाब के साथ प्रारम्भ हुई। कुछ समय बाद, जब C का 0.5 atm दाब हुआ तो अभिक्रिया की दर को r_2 के रूप में रिकार्ड किया गया।

अनुपात $r_1 : r_2$ है : _____ $\times 10^{-1}$. (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 : 87827055783 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

The fusion of chromite ore with sodium carbonate in the presence of air leads to the formation of products A and B along with the evolution of CO_2 . The sum of spin-only magnetic moment values of A and B is _____ B.M. (Nearest integer)

[Given atomic number : C : 6, Na : 11, O : 8, Fe : 26, Cr : 24]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

1

Question Number : 86 Question Id : 87827055783 Question Type : SA Calculator : None**Response Time : N.A Think Time : N.A Minimum Instruction Time : 0****Correct Marks : 4 Wrong Marks : 1**

क्रोमाइट अयस्क को वायु की उपस्थिति में सोडियम कार्बोनेट के साथ संगलित करने पर दो उत्पाद A एवं B प्राप्त होते हैं तथा CO_2 निर्मुक्त होती है। A एवं B के 'प्रचक्रण मात्र' चुम्बकीय आघूर्ण मानों का योग है : _____ B.M. (निकटतम पूर्णांक में)

[दिया गया परमाणु क्रमांक है : C : 6, Na : 11, O : 8, Fe : 26, Cr : 24]

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 : 87827055784 Question Type : SA Calculator : None**Response Time : N.A Think Time : N.A Minimum Instruction Time : 0****Correct Marks : 4 Wrong Marks : 1**

In the Claisen-Schmidt reaction to prepare 351 g of dibenzalacetone using 87 g of acetone, the amount of benzaldehyde required is _____ g. (Nearest integer)

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

1

Question Number : 87 Question Id : 87827055784 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

क्लेजन - शिम्ट अभिक्रिया में 87 g ऐसीटोन का उपयोग करते हुए 351 g डाइबेंजल ऐसीटोन के निर्माण के लिए आवश्यक बेन्जैलिडहाइड की मात्रा है : _____ g. (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 : 88 Question Id : 87827055785 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Using the given figure, the ratio of R_f values of sample A and sample C is $x \times 10^{-2}$. Value of x is _____.

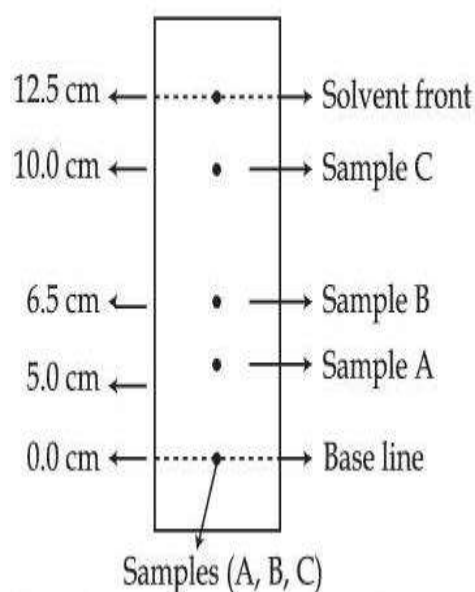


Fig : Paper chromatography of Samples

Response Type : Numeric

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

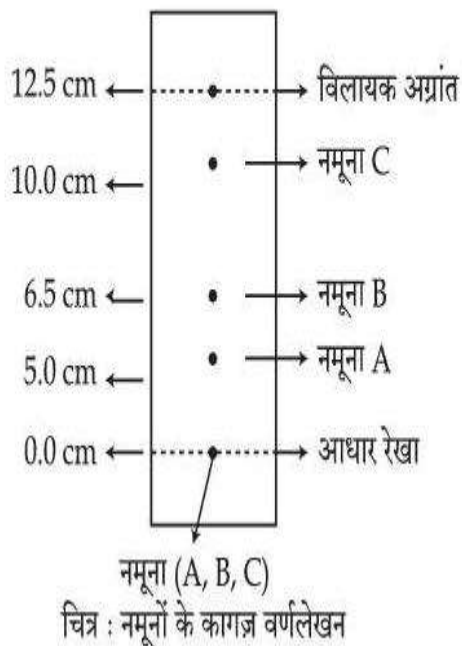
1

Question Number : 88 Question Id : 87827055785 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

दिए गए चित्र का उपयोग करते हुए नमूना A एवं नमूना C के R_f मानों का अनुपात $x \times 10^{-2}$ है। x का मान है :
_____.



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

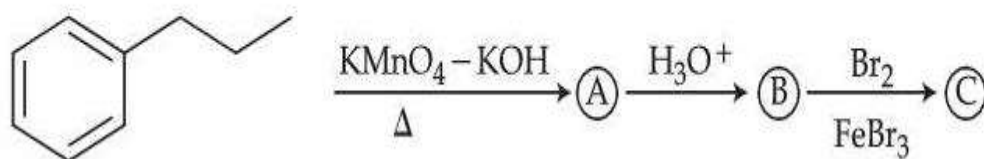
1

Question Number : 89 Question Id : 87827055786 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

The product (C) in the following sequence of reactions has _____ π bonds.



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

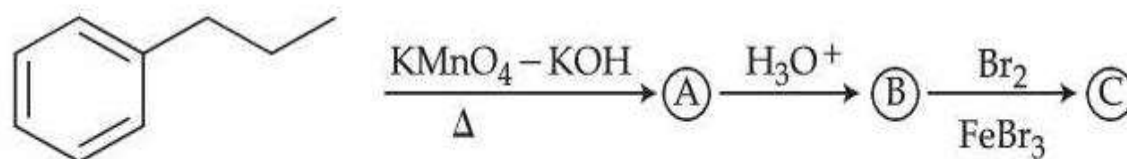
1

Question Number : 89 Question Id : 87827055786 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

अभिक्रिया के निम्न क्रम में उत्पाद (C) के पास _____ π आबन्ध हैं।



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 : 87827055787 Question Type : SA Calculator : None**Response Time : N.A Think Time : N.A Minimum Instruction Time : 0****Correct Marks : 4 Wrong Marks : 1**

X g of ethanamine was subjected to reaction with NaNO_2/HCl followed by hydrolysis to liberate N_2 and HCl . The HCl generated was completely neutralised by 0.2 moles of NaOH . X is _____ g.

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 : 87827055787 Question Type : SA Calculator : None**Response Time : N.A Think Time : N.A Minimum Instruction Time : 0****Correct Marks : 4 Wrong Marks : 1**

एथेनऐमीन के X g की क्रिया NaNO_2/HCl से कराने के उपरान्त जल अपघटन कराने पर N_2 एवं HCl निर्मुक्त हुई। उत्पन्न हुई HCl को NaOH के 0.2 मोल द्वारा पूर्णतया उदासीन किया गया। X _____ g है।

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

1