

National Testing Agency

Question Paper Name :	SET 112
Subject Name :	B TECH
Creation Date :	2023-04-11 23:18:14
Duration :	180
Total Marks :	300
Display Marks:	Yes

B E and B Tech

Group Number :	1
Group Id :	71550545
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 :	715505247
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 :	715505247
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 1 Question Id : 7155054042 Question Type : MCQ Option Shuffling : Yes 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 $A = \{1, 3, 4, 6, 9\}$ and $B = \{2, 4, 5, 8, 10\}$. Let R be a relation defined on $A \times B$ such that $R = \{((a_1, b_1), (a_2, b_2)) : a_1 \leq b_2 \text{ and } b_1 \leq a_2\}$. Then the number of elements in the set R is

Options :

71550512801. 26

71550512802. 52

71550512803. 160

71550512804. 180

Question Number : 1 Question Id : 7155054042 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Correct Marks : 4 Wrong Marks : 1

माना $A = \{1, 3, 4, 6, 9\}$ तथा $B = \{2, 4, 5, 8, 10\}$ हैं। मान लो $A \times B$ पर एक संबंध $R = \{((a_1, b_1), (a_2, b_2)) : a_1 \leq b_2 \text{ तथा } b_1 \leq a_2\}$ है। तो R में अवयवों की संख्या है:

Options :

71550512801. 26

71550512802. 52

71550512803. 160

71550512804. 180

Question Number : 2 Question Id : 7155054043 Question Type : MCQ Option Shuffling : Yes 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 domain of the function $f(x) = \frac{1}{\sqrt{[x]^2 - 3[x] - 10}}$ is (where $[x]$ denotes the greatest integer less than or equal to x)

Options :71550512805. $(-\infty, -2) \cup [6, \infty)$ 71550512806. $(-\infty, -3] \cup [6, \infty)$ 71550512807. $(-\infty, -2) \cup (5, \infty)$ 71550512808. $(-\infty, -3] \cup (5, \infty)$

Question Number : 2 Question Id : 7155054043 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

फलन $f(x) = \frac{1}{\sqrt{[x]^2 - 3[x] - 10}}$, जहाँ $[x]$ महत्तम पूर्णांक $\leq x$ है, का प्रांत है

Options :

71550512805. $(-\infty, -2) \cup [6, \infty)$

71550512806. $(-\infty, -3] \cup [6, \infty)$

71550512807. $(-\infty, -2) \cup (5, \infty)$

71550512808. $(-\infty, -3] \cup (5, \infty)$

Question Number : 3 Question Id : 7155054044 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

For $a \in \mathbb{C}$, let $A = \{z \in \mathbb{C} : \operatorname{Re}(a + \bar{z}) > \operatorname{Im}(\bar{a} + z)\}$ and $B = \{z \in \mathbb{C} : \operatorname{Re}(a + \bar{z}) < \operatorname{Im}(\bar{a} + z)\}$. Then among the two statements:

(S1) : If $\operatorname{Re}(a), \operatorname{Im}(a) > 0$, then the set A contains all the real numbers

(S2) : If $\operatorname{Re}(a), \operatorname{Im}(a) < 0$, then the set B contains all the real numbers,

Options :

71550512809. both are true

71550512810. both are false

71550512811. only (S1) is true

71550512812. only (S2) is true

Question Number : 3 Question Id : 7155054044 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

$a \in \mathbb{C}$ के लिए, माना $A = \{z \in \mathbb{C} : \operatorname{Re}(a + \bar{z}) > \operatorname{Im}(\bar{a} + z)\}$ तथा $B = \{z \in \mathbb{C} : \operatorname{Re}(a + \bar{z}) < \operatorname{Im}(\bar{a} + z)\}$ हैं। तो दो कथनों:

(S1) : यदि $\operatorname{Re}(a), \operatorname{Im}(a) > 0$ है, तो सभी वास्तविक संख्याएँ A में हैं

(S2) : यदि $\operatorname{Re}(a), \operatorname{Im}(a) < 0$ हैं, तो सभी वास्तविक संख्याएँ B में हैं इनमें से

Options :

71550512809. दोनों सत्य हैं

71550512810. दोनों असत्य हैं

71550512811. केवल (S1) सत्य है

71550512812. केवल (S2) सत्य है

Question Number : 4 Question Id : 7155054045 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

If the system of linear equations

$$7x + 11y + \alpha z = 13$$

$$5x + 4y + 7z = \beta$$

$$175x + 194y + 57z = 361$$

has infinitely many solutions, then $\alpha + \beta + 2$ is equal to:

Options :

71550512813. 3

71550512814. 4

71550512815. 5

71550512816. 6

Question Number : 4 Question Id : 7155054045 Question Type : MCQ Option Shuffling : Yes 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 रेखिक समीकरण निकाय

$$7x + 11y + \alpha z = 13$$

$$5x + 4y + 7z = \beta$$

$$175x + 194y + 57z = 361$$

के अनंत हल हैं, तो $\alpha + \beta + 2$ बराबर है:

Options :

71550512813. 3

71550512814. 4

71550512815. 5

71550512816. 6

Question Number : 5 Question Id : 7155054046 Question Type : MCQ Option Shuffling : Yes 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 $\begin{vmatrix} x+1 & x & x \\ x & x+\lambda & x \\ x & x & x+\lambda^2 \end{vmatrix} = \frac{9}{8}(103x+81)$, then $\lambda, \frac{\lambda}{3}$ are the roots of the equation

Options :

71550512817. $4x^2 + 24x - 27 = 0$

71550512818. $4x^2 - 24x - 27 = 0$

71550512819. $4x^2 + 24x + 27 = 0$

71550512820. $4x^2 - 24x + 27 = 0$

Question Number : 5 Question Id : 7155054046 Question Type : MCQ Option Shuffling : Yes 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 $\begin{vmatrix} x+1 & x & x \\ x & x+\lambda & x \\ x & x & x+\lambda^2 \end{vmatrix} = \frac{9}{8}(103x+81)$ है, तो $\lambda, \frac{\lambda}{3}$ किस समीकरण के मूल हैं?

Options :

71550512817. $4x^2 + 24x - 27 = 0$

71550512818. $4x^2 - 24x - 27 = 0$

71550512819. $4x^2 + 24x + 27 = 0$

71550512820. $4x^2 - 24x + 27 = 0$

Question Number : 6 Question Id : 7155054047 Question Type : MCQ Option Shuffling : Yes 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 letters of the word MATHS are permuted and all possible words so formed are arranged as in a dictionary with serial numbers, then the serial number of the word THAMS is

Options :

71550512821. 101

71550512822. 102

71550512823. 103

71550512824. 104

Question Number : 6 Question Id : 7155054047 Question Type : MCQ Option Shuffling : Yes 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 MATHS शब्द के अक्षरों के क्रमचयों से बने सभी शब्दों को एक शब्दकोश की तरह क्रम संख्या के साथ व्यवस्थित किया जाता है, तो शब्द THAMS की क्रम संख्या है -

Options :

71550512822. 102

71550512823. 103

71550512824. 104

Question Number : 7 Question Id : 7155054048 Question Type : MCQ Option Shuffling : Yes 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 1011^{th} term from the end in the binominal expansion of $\left(\frac{4x}{5} - \frac{5}{2x}\right)^{2022}$ is 1024 times 1011^{th} term from the beginning, then $|x|$ is equal to

Options :

71550512825. 8

71550512826. 10

71550512827. 12

71550512828. 15

Question Number : 7 Question Id : 7155054048 Question Type : MCQ Option Shuffling : Yes 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 $\left(\frac{4x}{5} - \frac{5}{2x}\right)^{2022}$ के द्विपद प्रसार में अंत से 1011^{वाँ} पद, आरंभ से 1011^{वें} पद का 1024 गुना है, तो $|x|$ बराबर है -

Options :

71550512825. 8

71550512826. 10

71550512827. 12

71550512828. 15

Question Number : 8 Question Id : 7155054049 Question Type : MCQ Option Shuffling : Yes 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 sum of the coefficients of three consecutive terms in the binomial expansion of $(1 + x)^{n+2}$, which are in the ratio 1:3:5, is equal to

Options :

71550512829. 25

71550512830. 41

71550512831. 63

71550512832. 92

Question Number : 8 Question Id : 7155054049 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

$(1+x)^{n+2}$ के द्विपद प्रसार में तीन क्रमागत पदों के गुणांकों, जो 1:3:5 के अनुपात में हैं, का योग बराबर है -

Options :

71550512829. 25

71550512830. 41

71550512831. 63

71550512832. 92

Question Number : 9 Question Id : 7155054050 Question Type : MCQ Option Shuffling : Yes 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, b, c and d be positive real numbers such that $a + b + c + d = 11$. If the maximum value of $a^5 b^3 c^2 d$ is 3750β , then the value of β is

Options :

71550512833. 55

71550512834. 90

71550512835. 108

71550512836. 110

Question Number : 9 Question Id : 7155054050 Question Type : MCQ Option Shuffling : Yes Is**Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum****Instruction Time : 0**

Correct Marks : 4 Wrong Marks : 1

माना a, b, c तथा d धनात्मक वास्तविक संख्याएँ हैं तथा $a + b + c + d = 11$ है।
यदि $a^5 b^3 c^2 d$ का उच्चतम मान 3750β है, तो β का मान है -

Options :

71550512833. 55

71550512834. 90

71550512835. 108

71550512836. 110

Question Number : 10 Question Id : 7155054051 Question Type : MCQ Option Shuffling : Yes 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 and g be two functions defined by

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

Then $(g \circ f)(x)$ is

Options :

71550512837. differentiable everywhere

71550512838. not continuous at $x = -1$

71550512839. continuous everywhere but not differentiable at $x = 1$

71550512840. continuous everywhere but not differentiable exactly at one point

Question Number : 10 Question Id : 7155054051 Question Type : MCQ Option Shuffling : Yes 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 फलन f तथा g ,

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

द्वारा परिभाषित हैं। तो $(g \circ f)(x)$

Options :

71550512837. $\mathbb{R}$ पर अवकलनीय है

71550512838. $x = -1$ पर संतत नहीं हैं

71550512839. $\mathbb{R}$ पर संतत है परन्तु $x = 1$ पर अवकलनीय नहीं है

71550512840. $\mathbb{R}$ पर संतत है परन्तु मात्र एक बिंदु पर अवकलनीय नहीं है

Question Number : 11 Question Id : 7155054052 Question Type : MCQ Option Shuffling : Yes 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 function $f: [0,2] \rightarrow \mathbb{R}$ be defined as

$$f(x) = \begin{cases} e^{\min\{x^2, x - [x]\}}, & x \in [0,1) \\ e^{[x - \log_e x]}, & x \in [1,2] \end{cases}$$

where $[t]$ denotes the greatest integer less than or equal to t . Then the value of the integral $\int_0^2 xf(x) dx$ is

Options :

71550512841.

$$1 + \frac{3e}{2}$$

$$71550512842. 2e - 1$$

$$71550512843. 2e - \frac{1}{2}$$

$$71550512844. (e-1)\left(e^2 + \frac{1}{2}\right)$$

Question Number : 11 Question Id : 7155054052 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

$$\text{माना } f: [0,2] \rightarrow \mathbb{R}, f(x) = \begin{cases} e^{\min\{x^2, x - [x]\}}, & x \in [0,1) \\ e^{[x - \log_e x]}, & x \in [1,2] \end{cases}$$

द्वारा परिभाषित है, जहाँ $[t]$ का महत्तम पूर्णांक $\leq t$ है। तो समाकलन $\int_0^2 xf(x) dx$ का मान है -

Options :

$$71550512841. 1 + \frac{3e}{2}$$

$$71550512842. 2e - 1$$

$$71550512843. 2e - \frac{1}{2}$$

$$71550512844.$$

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

Question Number : 12 Question Id : 7155054053 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

If $f: \mathbb{R} \rightarrow \mathbb{R}$ be a continuous function satisfying

$$\int_0^{\frac{\pi}{2}} f(\sin 2x) \sin x \, dx + \alpha \int_0^{\frac{\pi}{4}} f(\cos 2x) \cos x \, dx = 0, \text{ then the value of } \alpha \text{ is}$$

Options :

71550512845. $-\sqrt{2}$

71550512846. $\sqrt{2}$

71550512847. $-\sqrt{3}$

71550512848. $\sqrt{3}$

Question Number : 12 Question Id : 7155054053 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

यदि $f: \mathbb{R} \rightarrow \mathbb{R}$ एक संतत फलन है तथा

$$\int_0^{\frac{\pi}{2}} f(\sin 2x) \sin x \, dx + \alpha \int_0^{\frac{\pi}{4}} f(\cos 2x) \cos x \, dx = 0 \text{ है, तो } \alpha \text{ का मान है}$$

Options :

71550512845. $-\sqrt{2}$

71550512846. $\sqrt{2}$

71550512847. $-\sqrt{3}$

71550512848. $\sqrt{3}$

Question Number : 13 Question Id : 7155054054 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

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

$$\frac{dy}{dx} + \frac{5}{x(x^5+1)}y = \frac{(x^5+1)^2}{x^7}, x > 0. \text{ If } y(1) = 2, \text{ then } y(2) \text{ is equal to}$$

Options :

71550512849. $\frac{637}{128}$

71550512850. $\frac{679}{128}$

71550512851. $\frac{693}{128}$

71550512852. $\frac{697}{128}$

Question Number : 13 Question Id : 7155054054 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Correct Marks : 4 Wrong Marks : 1

माना अवकल समीकरण $\frac{dy}{dx} + \frac{5}{x(x^5+1)}y = \frac{(x^5+1)^2}{x^7}, x > 0$ का हल $y = y(x)$ है।

यदि $y(1) = 2$ है, तो $y(2)$ बराबर है

Options :

71550512849. $\frac{637}{128}$

71550512850. $\frac{679}{128}$

71550512851. $\frac{693}{128}$

71550512852. $\frac{697}{128}$

Question Number : 14 Question Id : 7155054055 Question Type : MCQ Option Shuffling : Yes 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 radius of the largest circle with centre $(2,0)$ inscribed in the ellipse $x^2+4y^2 = 36$ is r , then $12r^2$ is equal to

Options :

71550512853. 69

71550512854. 72

71550512855. 92

Question Number : 14 Question Id : 7155054055 Question Type : MCQ Option Shuffling : Yes 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 दीर्घवृत्त $x^2 + 4y^2 = 36$ के अंतर्गत, केन्द्र $(2,0)$ के सबसे बड़े वृत्त की त्रिज्या r है, तो $12r^2$ बराबर है -

Options :

71550512853. 69

71550512854. 72

71550512855. 92

71550512856. 115

Question Number : 15 Question Id : 7155054056 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Let P be the plane passing through the points $(5,3,0)$, $(13,3,-2)$ and $(1,6,2)$.
For $\alpha \in \mathbb{N}$, if the distances of the points A $(3, 4, \alpha)$ and B $(2, \alpha, a)$ from the plane P are 2 and 3 respectively, then the positive value of a is

Options :

71550512857. 3

71550512858. 4

71550512859. 5

Question Number : 15 Question Id : 7155054056 Question Type : MCQ Option Shuffling : Yes 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 समतल P, बिंदुओं $(5, 3, 0)$, $(13, 3, -2)$ तथा $(1, 6, 2)$ से होकर जाता है। $\alpha \in \mathbb{N}$ के लिए यदि बिंदुओं A $(3, 4, \alpha)$ तथा B $(2, \alpha, a)$ की समतल P से दूरियाँ क्रमशः 2 तथा 3 है, तो a का धनात्मक मान है -

Options :

71550512857. 3

71550512858. 4

71550512859. 5

71550512860. 6

Question Number : 16 Question Id : 7155054057 Question Type : MCQ Option Shuffling : Yes 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 line passing through the points P $(2, -1, 2)$ and Q $(5, 3, 4)$ meet the plane $x - y + z = 4$ at the point R. Then the distance of the point R from the plane $x + 2y + 3z + 2 = 0$ measured parallel to the line $\frac{x-7}{2} = \frac{y+3}{2} = \frac{z-2}{1}$ is equal to

Options :

71550512861. 3

71550512862. $\sqrt{31}$

71550512863. $\sqrt{61}$

71550512864. $\sqrt{189}$

Question Number : 16 Question Id : 7155054057 Question Type : MCQ Option Shuffling : Yes 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 बिंदुओं P (2, -1, 2) तथा Q (5, 3, 4) से होकर जाने वाली रेखा, समतल $x - y + z = 4$ को बिंदु R पर मिलती है। तो बिंदु R की समतल $x + 2y + 3z + 2 = 0$ से, रेखा $\frac{x-7}{2} = \frac{y+3}{2} = \frac{z-2}{1}$ के समांतर मापी गई, दूरी है -

Options :

71550512861. 3

71550512862. $\sqrt{31}$

71550512863. $\sqrt{61}$

71550512864. $\sqrt{189}$

Question Number : 17 Question Id : 7155054058 Question Type : MCQ Option Shuffling : Yes 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 four distinct points with position vectors $\vec{a}, \vec{b}, \vec{c}$ and $\vec{d}$ are coplanar, then $[\vec{a} \vec{b} \vec{c}]$ is equal to

Options :

$$71550512865. [\vec{d} \vec{b} \vec{a}] + [\vec{a} \vec{c} \vec{d}] + [\vec{d} \vec{b} \vec{c}]$$

$$71550512866. [\vec{d} \vec{c} \vec{a}] + [\vec{b} \vec{d} \vec{a}] + [\vec{c} \vec{d} \vec{b}]$$

$$71550512867. [\vec{a} \vec{d} \vec{b}] + [\vec{d} \vec{c} \vec{a}] + [\vec{d} \vec{b} \vec{c}]$$

$$71550512868. [\vec{b} \vec{c} \vec{d}] + [\vec{d} \vec{a} \vec{c}] + [\vec{d} \vec{b} \vec{a}]$$

Question Number : 17 Question Id : 7155054058 Question Type : MCQ Option Shuffling : Yes 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 चार भिन्न बिंदु, जिनके स्थिति सदिश $\vec{a}, \vec{b}, \vec{c}$ तथा $\vec{d}$ हैं, सहतलीय हैं, तो $[\vec{a} \vec{b} \vec{c}]$ बराबर है -

Options :

$$71550512865. [\vec{d} \vec{b} \vec{a}] + [\vec{a} \vec{c} \vec{d}] + [\vec{d} \vec{b} \vec{c}]$$

$$71550512866. [\vec{d} \vec{c} \vec{a}] + [\vec{b} \vec{d} \vec{a}] + [\vec{c} \vec{d} \vec{b}]$$

$$71550512867. [\vec{a} \vec{d} \vec{b}] + [\vec{d} \vec{c} \vec{a}] + [\vec{d} \vec{b} \vec{c}]$$

$$71550512868. [\vec{b} \vec{c} \vec{d}] + [\vec{d} \vec{a} \vec{c}] + [\vec{d} \vec{b} \vec{a}]$$

Question Number : 18 Question Id : 7155054059 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Let the mean of 6 observations 1, 2, 4, 5, x and y be 5 and their variance be 10.
Then their mean deviation about the mean is equal to

Options :

71550512869. $\frac{7}{3}$

71550512870. $\frac{8}{3}$

71550512871. 3

71550512872. $\frac{10}{3}$

Question Number : 18 Question Id : 7155054059 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

माना 6 प्रक्षेणों 1, 2, 4, 5, x तथा y का माध्य 5 है तथा इनका प्रसरण 10 है। तो इनका माध्य के सापेक्ष माध्य विचलन है

Options :

71550512869. $\frac{7}{3}$

71550512870. $\frac{8}{3}$

71550512871. 3

71550512872. $\frac{10}{3}$

Question Number : 19 Question Id : 7155054060 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The angle of elevation of the top P of a tower from the feet of one person standing due South of the tower is 45° and from the feet of another person standing due west of the tower is 30° . If the height of the tower is 5 meters, then the distance (in meters) between the two persons is equal to

Options :

71550512873. 5

71550512874. $5\sqrt{5}$

71550512875. $\frac{5}{2}\sqrt{5}$

71550512876. 10

Question Number : 19 Question Id : 7155054060 Question Type : MCQ Option Shuffling : Yes 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, जो एक मीनार के दक्षिण की ओर खड़ा है, के पैर से मीनार के शिखर P का उन्नयन कोण 45° है तथा एक अन्य व्यक्ति, जो मीनार के पश्चिम की ओर खड़ा है, के पैर से P का उन्नयन कोण 30° है। यदि मीनार की ऊँचाई 5 मीटर है, तो इन दो व्यक्तियों के बीच की दूरी (मीटर में) है -

Options :

71550512873. 5

71550512875. $\frac{5}{2}\sqrt{5}$

71550512876. 10

Question Number : 20 Question Id : 7155054061 Question Type : MCQ Option Shuffling : Yes 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 converse of $((\sim p) \wedge q) \Rightarrow r$ is

Options :

71550512877. $(p \vee (\sim q)) \Rightarrow (\sim r)$

71550512878. $((\sim p) \vee q) \Rightarrow r$

71550512879. $(\sim r) \Rightarrow p \wedge q$

71550512880. $(\sim r) \Rightarrow ((\sim p) \wedge q)$

Question Number : 20 Question Id : 7155054061 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

$((\sim p) \wedge q) \Rightarrow r$ का विलोम है -

Options :

71550512877. $(p \vee (\sim q)) \Rightarrow (\sim r)$

71550512879. $(\sim r) \Rightarrow p \wedge q$ 71550512880. $(\sim r) \Rightarrow ((\sim p) \wedge q)$

Mathematics Section B

Section Id :	715505248
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 :	715505248
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 21 Question Id : 7155054062 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Let $S = \left\{ z \in \mathbb{C} - \{i, 2i\} : \frac{z^2 + 8iz - 15}{z^2 - 3iz - 2} \in \mathbb{R} \right\}$. If $\alpha - \frac{13}{11}i \in S$, $\alpha \in \mathbb{R} - \{0\}$, then

$242\alpha^2$ is equal to _____.

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 21 Question Id : 7155054062 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

माना $S = \left\{ z \in \mathbb{C} - \{i, 2i\} : \frac{z^2 + 8iz - 15}{z^2 - 3iz - 2} \in \mathbb{R} \right\}$ है। यदि $\alpha - \frac{13}{11}i \in S$, $\alpha \in \mathbb{R} - \{0\}$ है, तो $242\alpha^2$ बराबर है _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 22 Question Id : 7155054063 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Let $A = \{1, 2, 3, 4, 5\}$ and $B = \{1, 2, 3, 4, 5, 6\}$. Then the number of functions $f: A \rightarrow B$ satisfying $f(1) + f(2) = f(4) - 1$ is equal to _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Possible Answers :

10

Question Number : 22 Question Id : 7155054063 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

माना $A = \{1, 2, 3, 4, 5\}$ तथा $B = \{1, 2, 3, 4, 5, 6\}$ हैं। तो $f(1) + f(2) = f(4) - 1$ को संतुष्ट करने वाले फलनों $f: A \rightarrow B$ की संख्या है _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 23 Question Id : 7155054064 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

For $k \in \mathbb{N}$, if the sum of the series $1 + \frac{4}{k} + \frac{8}{k^2} + \frac{13}{k^3} + \frac{19}{k^4} + \dots$ is 10, then the value of k is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 23 Question Id : 7155054064 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

$k \in \mathbb{N}$ के लिए, यदि श्रेणी $1 + \frac{4}{k} + \frac{8}{k^2} + \frac{13}{k^3} + \frac{19}{k^4} + \dots$ का योग 10 है, तो k का मान है

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 24 Question Id : 7155054065 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 points, where the curve $f(x) = e^{8x} - e^{6x} - 3e^{4x} - e^{2x} + 1, x \in \mathbb{R}$ cuts x -axis, is equal to _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 24 Question Id : 7155054065 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

उन बिन्दुओं, जहाँ वक्र $f(x) = e^{8x} - e^{6x} - 3e^{4x} - e^{2x} + 1, x \in \mathbb{R}$, x -अक्ष को काटता है, की संख्या है _____

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

10

Question Number : 25 Question Id : 7155054066 Question Type : SA Calculator : None**Response Time : N.A Think Time : N.A Minimum Instruction Time : 0****Correct Marks : 4 Wrong Marks : 1**

If A is the area in the first quadrant enclosed by the curve C: $2x^2 - y + 1 = 0$, the tangent to C at the point (1, 3) and the line $x + y = 1$, then the value of 60A is _____.

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

10

Question Number : 25 Question Id : 7155054066 Question Type : SA Calculator : None**Response Time : N.A Think Time : N.A Minimum Instruction Time : 0****Correct Marks : 4 Wrong Marks : 1**

यदि वक्र C: $2x^2 - y + 1 = 0$, C के बिंदु (1, 3) पर स्पर्श रेखा तथा रेखा $x + y = 1$ से घिरे, प्रथम चतुर्थांश में, क्षेत्र का क्षेत्रफल A है, तो 60A बराबर है _____.

Response Type : Numeric**Evaluation Required For SA : Yes****Show Word Count : Yes****Answers Type : Equal**

Possible Answers :

10

Question Number : 26 Question Id : 7155054067 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

If the line $l_1 : 3y - 2x = 3$ is the angular bisector of the lines $l_2 : x - y + 1 = 0$ and $l_3 : \alpha x + \beta y + 17 = 0$, then $\alpha^2 + \beta^2 - \alpha - \beta$ is equal to _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 26 Question Id : 7155054067 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

यदि रेखा $l_1 : 3y - 2x = 3$ रेखाओं $l_2 : x - y + 1 = 0$ तथा $l_3 : \alpha x + \beta y + 17 = 0$ की कोण समद्विभादक है, तो $\alpha^2 + \beta^2 - \alpha - \beta$ बराबर है _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 27 Question Id : 7155054068 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 tangent to the parabola $y^2 = 12x$ at the point $(3, \alpha)$ be perpendicular to the line $2x + 2y = 3$. Then the square of distance of the point $(6, -4)$ from the normal to the hyperbola $\alpha^2 x^2 - 9y^2 = 9\alpha^2$ at its point $(\alpha - 1, \alpha + 2)$ is equal to _____.

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

10

Question Number : 27 Question Id : 7155054068 Question Type : SA Calculator : None**Response Time : N.A Think Time : N.A Minimum Instruction Time : 0****Correct Marks : 4 Wrong Marks : 1**

माना परवलय $y^2 = 12x$ के बिंदु $(3, \alpha)$ पर स्पर्श रेखा, रेखा $2x + 2y = 3$ के लंबवत है। तो बिंदु $(6, -4)$ की, अतिपरवलय $\alpha^2 x^2 - 9y^2 = 9\alpha^2$ के बिंदु $(\alpha - 1, \alpha + 2)$ पर अभिलंब से दूरी का वर्ग है _____

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

10

Question Number : 28 Question Id : 7155054069 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 line $l : x = \frac{1-y}{-2} = \frac{z-3}{\lambda}, \lambda \in \mathbb{R}$ meet the plane $P : x + 2y + 3z = 4$ at

the point (α, β, γ) . If the angle between the line l and the plane P is $\cos^{-1}\left(\sqrt{\frac{5}{14}}\right)$, then $\alpha + 2\beta + 6\gamma$ is equal to _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 28 **Question Id :** 7155054069 **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 $l : x = \frac{1-y}{-2} = \frac{z-3}{\lambda}, \lambda \in \mathbb{R}$ समतल $P : x + 2y + 3z = 4$ को

बिंदु (α, β, γ) पर मिलती है। यदि रेखा l तथा समतल P के बीच का कोण $\cos^{-1}\left(\sqrt{\frac{5}{14}}\right)$ है,

तो $\alpha + 2\beta + 6\gamma$ बराबर है _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 29 **Question Id :** 7155054070 **Question Type :** SA **Calculator :** None

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

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

Let $\vec{a} = \hat{i} + 2\hat{j} + 3\hat{k}$ and $\vec{b} = \hat{i} + \hat{j} - \hat{k}$. If $\vec{c}$ is a vector such that $\vec{a} \cdot \vec{c} = 11$, $\vec{b} \cdot (\vec{a} \times \vec{c}) = 27$ and $\vec{b} \cdot \vec{c} = -\sqrt{3}|\vec{b}|$, then $|\vec{a} \times \vec{c}|^2$ is equal to _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 29 **Question Id :** 7155054070 **Question Type :** SA **Calculator :** None

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

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

माना $\vec{a} = \hat{i} + 2\hat{j} + 3\hat{k}$ तथा $\vec{b} = \hat{i} + \hat{j} - \hat{k}$ हैं। यदि एक सदिश $\vec{c}$ के लिए $\vec{a} \cdot \vec{c} = 11$, $\vec{b} \cdot (\vec{a} \times \vec{c}) = 27$ तथा $\vec{b} \cdot \vec{c} = -\sqrt{3}|\vec{b}|$ हैं, तो $|\vec{a} \times \vec{c}|^2$ बराबर है _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 30 **Question Id :** 7155054071 **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 probability of getting head for a biased coin be $\frac{1}{4}$. It is tossed repeatedly until a head appears. Let N be the number of tosses required. If the probability that the equation $64x^2 + 5Nx + 1 = 0$ has no real root is $\frac{p}{q}$, where p and q are co-prime, then $q - p$ is equal to _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 30 **Question Id :** 7155054071 **Question Type :** SA **Calculator :** None

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

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

माना एक अभिनत सिक्के के लिए चित आने की प्रायिकता $\frac{1}{4}$ है। इस बार बार उछाला जाता है जब तक कि चित प्राप्त न हो जाए। माना सिक्के को उछालने की आवश्यक संख्या N है। यदि समीकरण $64x^2 + 5Nx + 1 = 0$ के वास्तविक हल न होने की प्रायिकता $\frac{p}{q}$ है, जहाँ p तथा q असहभाज्य हैं, तो $q - p$ बराबर है _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Physics Section A

Section 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 :	715505249
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 31 Question Id : 7155054072 Question Type : MCQ Option Shuffling : Yes 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 car P travelling at 20 ms^{-1} sounds its horn at a frequency of 400 Hz. Another car Q is travelling behind the first car in the same direction with a velocity 40 ms^{-1} . The frequency heard by the passenger of the car Q is approximately [Take, velocity of sound = 360 ms^{-1}]

Options :

71550512891. 514 Hz

71550512892. 421 Hz

71550512893. 485 Hz

71550512894. 471 Hz

Question Number : 31 Question Id : 7155054072 Question Type : MCQ Option Shuffling : Yes Is**Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum****Instruction Time : 0****Correct Marks : 4 Wrong Marks : 1**

20 ms^{-1} से चलती एक कार अपने हॉर्न द्वारा 400 Hz आवृत्ति की ध्वनि उत्पन्न करती है। दूसरी कार पहली कार के पीछे 40 ms^{-1} वेग से समान दिशा में चल रही है। दूसरी कार के यात्री द्वारा सुनी आवृत्ति लगभग है (लिया है, ध्वनि का वेग $= 360 \text{ ms}^{-1}$)

Options :

71550512891. 514 Hz

71550512892. 421 Hz

71550512893. 485 Hz

71550512894. 471 Hz

Question Number : 32 Question Id : 7155054073 Question Type : MCQ Option Shuffling : Yes 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 root mean square speed of molecules of nitrogen gas at 27°C is approximately : (Given mass of a nitrogen molecule $= 4.6 \times 10^{-26} \text{ kg}$ and take Boltzmann constant $k_B = 1.4 \times 10^{-23} \text{ JK}^{-1}$)

Options :

71550512895. 27.4 m/s

71550512896. 91 m/s

71550512897. 523 m/s

71550512898. 1260 m/s

Question Number : 32 Question Id : 7155054073 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

27°C पर नाइट्रोजन गैस के अणुओं की वर्ग माध्य मूल चाल लगभग है : (दिया है, नाइट्रोजन के एक अणु का द्रव्यमान = 4.6×10^{-26} kg एवं बोल्ट्समैन नियतांक $k_B = 1.4 \times 10^{-23} \text{JK}^{-1}$)

Options :

71550512895. 27.4 m/s

71550512896. 91 m/s

71550512897. 523 m/s

71550512898. 1260 m/s

Question Number : 33 Question Id : 7155054074 Question Type : MCQ Option Shuffling : Yes 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 space ship of mass 2×10^4 kg is launched into a circular orbit close to the earth surface. The additional velocity to be imparted to the space ship in the orbit to overcome the gravitational pull will be (if $g = 10 \text{ m/s}^2$ and radius of earth = 6400 km):

Options :

71550512899. $11.2 (\sqrt{2} - 1) \text{ km/s}$

71550512900. $7.4 (\sqrt{2} - 1) \text{ km/s}$

71550512901. $8 (\sqrt{2} - 1) \text{ km/s}$

71550512902. $7.9 (\sqrt{2} - 1) \text{ km/s}$

Question Number : 33 Question Id : 7155054074 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

$2 \times 10^4 \text{ kg}$ द्रव्यमान के एक खगोलीय यॉन पृथ्वी की निकटवर्ती एक वृत्ताकार कक्षा में छोड़ा जाता है। गुरुत्वाकर्षण बल से बाहर जाने के लिए कक्षा में खगोलीय यॉन को दिया अतिरिक्त वेग होगा
(यदि $g = 10 \text{ m/s}^2$ एवं पृथ्वी की त्रिज्या = 6400 km):

Options :

71550512899. $11.2 (\sqrt{2} - 1) \text{ km/s}$

71550512900. $7.4 (\sqrt{2} - 1) \text{ km/s}$

71550512901. $8 (\sqrt{2} - 1) \text{ km/s}$

71550512902. $7.9 (\sqrt{2} - 1) \text{ km/s}$

Question Number : 34 Question Id : 7155054075 Question Type : MCQ Option Shuffling : Yes 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 Thermodynamic process, in which internal energy of the system remains constant is

Options :

71550512903. Adiabatic

71550512904. Isochoric

71550512905. Isobaric

71550512906. Isothermal

Question Number : 34 Question Id : 7155054075 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

ऊष्मागतिक प्रक्रम जिसमें निकाय की आन्तरिक ऊर्जा नियत रहती है:

Options :

71550512903. रुद्धोष्म

71550512904. समआयतनिक

71550512905. समदाबी

71550512906. समतापी

Question Number : 35 Question Id : 7155054076 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

A body of mass 500 g moves along x-axis such that it's velocity varies with displacement x according to the relation $v = 10\sqrt{x}$ m/s the force acting on the body is:-

Options :

71550512908. 25 N

71550512909. 125 N

71550512910. 166 N

Question Number : 35 Question Id : 7155054076 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

500g द्रव्यमान का एक पिण्ड x-अक्ष के अनुदिश इस प्रकार गति करता है कि इसका वेग विस्थापन x के साथ $v = 10\sqrt{x}$ m/s संबंध के अनुसार बदलता है। पिण्ड पर लगने वाला बल है:

Options :

71550512907. 5 N

71550512908. 25 N

71550512909. 125 N

71550512910. 166 N

Question Number : 36 Question Id : 7155054077 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Eight equal drops of water are falling through air with a steady speed of 10 cm/s. If the drops coalesce, the new velocity is:-

71550512911. 5 cm/s

71550512912. 10 cm/s

71550512913. 16 cm/s

71550512914. 40 cm/s

Question Number : 36 Question Id : 7155054077 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

पानी की आठ बूँदे वायु में एक स्थिर चाल 10 cm/s से गिर रही हैं। यदि बूँदे मिल कर एक हो जाती हैं, नया वेग है:

Options :

71550512911. 5 cm/s

71550512912. 10 cm/s

71550512913. 16 cm/s

71550512914. 40 cm/s

Question Number : 37 Question Id : 7155054078 Question Type : MCQ Option Shuffling : Yes 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 V is the gravitational potential due to sphere of uniform density on its surface, then its value at the center of sphere will be:-

71550512915. V

71550512916. $\frac{V}{2}$

71550512917. $\frac{3V}{2}$

71550512918. $\frac{4}{3}V$

Question Number : 37 Question Id : 7155054078 Question Type : MCQ Option Shuffling : Yes 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 एकसमान घनत्व के गोले के कारण इसके पृष्ठ पर गुरुत्वीय विभव V हो, तो गोले के केन्द्र पर इसका मान होगा:

Options :

71550512915. V

71550512916. $\frac{V}{2}$

71550512917. $\frac{3V}{2}$

71550512918. $\frac{4}{3}V$

Question Number : 38 Question Id : 7155054079 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

When vector $\vec{A} = 2\hat{i} + 3\hat{j} + 2\hat{k}$ is subtracted from vector $\vec{B}$, it gives a vector equal to $2\hat{j}$. Then the magnitude of vector $\vec{B}$ will be :

Options :

71550512919. 3

71550512920. $\sqrt{5}$

71550512921. $\sqrt{13}$

71550512922. $\sqrt{6}$

Question Number : 38 Question Id : 7155054079 Question Type : MCQ Option Shuffling : Yes 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 सदिश $\vec{B}$ से सदिश $\vec{A} = 2\hat{i} + 3\hat{j} + 2\hat{k}$ को घटाने पर यह $2\hat{j}$ के बराबर एक सदिश देता है। तब सदिश $\vec{B}$ का परिमाण होगा:

Options :

71550512919. 3

71550512920. $\sqrt{5}$

71550512921. $\sqrt{13}$

71550512922. $\sqrt{6}$

Question Number : 39 Question Id : 7155054080 Question Type : MCQ Option Shuffling : Yes 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 projectile is projected at 30° from horizontal with initial velocity 40 ms^{-1} . The velocity of the projectile at $t = 2 \text{ s}$ from the start will be :
(Given $g = 10 \text{ m/s}^2$)

Options :

71550512923. Zero

71550512924. $20\sqrt{3} \text{ ms}^{-1}$

71550512925. 20 ms^{-1}

71550512926. $40\sqrt{3} \text{ ms}^{-1}$

Question Number : 39 Question Id : 7155054080 Question Type : MCQ Option Shuffling : Yes 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 प्रक्षेप्य क्षैतिज से 30° के कोण पर 40 ms^{-1} के प्रारम्भिक वेग से प्रक्षेपित किया जाता है। प्रारम्भ से $t = 2 \text{ s}$ पर प्रक्षेप्य का वेग होगा
(दिया है $g = 10 \text{ m/s}^2$):

Options :

71550512923. शून्य

71550512924. $20\sqrt{3} \text{ ms}^{-1}$

71550512925. 20 ms^{-1}

71550512926. $40\sqrt{3} \text{ ms}^{-1}$

Question Number : 40 Question Id : 7155054081 Question Type : MCQ Option Shuffling : Yes 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 force (F), velocity (V) and time (T) are considered as fundamental physical quantity, then dimensional formula of density will be :

Options :

71550512927. $F^2V^{-2}T^6$

71550512928. FV^4T^{-6}

71550512929. $FV^{-4}T^{-2}$

71550512930. $FV^{-2}T^2$

Question Number : 40 Question Id : 7155054081 Question Type : MCQ Option Shuffling : Yes 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 बल (F), वेग (V) तथा समय (T) को मूल भौतिक मान लिया जाये, तो घनत्व का विमीय सूत्र होगा:

Options :

71550512927. $F^2V^{-2}T^6$

71550512928. FV^4T^{-6}

71550512930. $FV^{-2}T^2$

Question Number : 41 Question Id : 7155054082 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

In satellite communication, the uplink frequency band used is :

Options :

71550512931. 76 – 88 MHz

71550512932. 420 – 890 MHz

71550512933. 3.7 – 4.2 GHz

71550512934. 5.925 – 6.425 GHz

Question Number : 41 Question Id : 7155054082 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

उपग्रह संदेश वाहन में उपयुक्त उच्च आवृत्ति बैंड है:

Options :

71550512931. 76 – 88 MHz

71550512932. 420 – 890 MHz

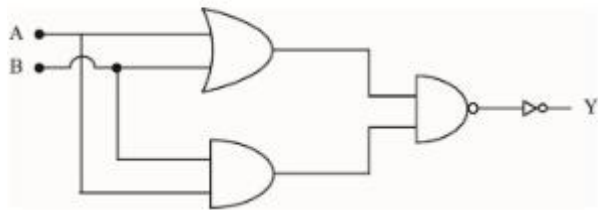
71550512933. 3.7 – 4.2 GHz

71550512934. 5.925 – 6.425 GHz

Question Number : 42 Question Id : 7155054083 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The logic operations performed by the given digital circuit is equivalent to:



Options :

71550512935. AND

71550512936. OR

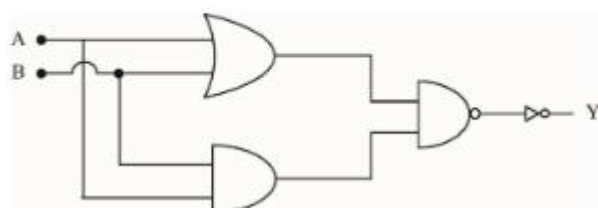
71550512937. NAND

71550512938. NOR

Question Number : 42 Question Id : 7155054083 Question Type : MCQ Option Shuffling : Yes 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 आंकिक परिपथ द्वारा की गई तार्किक प्रक्रिया किसके समतुल्य है:



Options :

71550512936. OR

71550512937. NAND

71550512938. NOR

Question Number : 43 Question Id : 7155054084 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

When one light ray is reflected from a plane mirror with 30° angle of reflection, the angle of deviation of the ray after reflection is:

Options :

71550512939. 110°

71550512940. 120°

71550512941. 130°

71550512942. 140°

Question Number : 43 Question Id : 7155054084 Question Type : MCQ Option Shuffling : Yes 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 एक प्रकाश किरण किसी तल द्वारा 30° के परावर्तन कोण से परावर्तित होती है, परावर्तन के उपरान्त किरण का विचलन कोण है:

Options :

71550512940. 120°

71550512941. 130°

71550512942. 140°

Question Number : 44 Question Id : 7155054085 Question Type : MCQ Option Shuffling : Yes 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 energy of He^+ ion in its first excited state is, (The ground state energy for the Hydrogen atom is -13.6 eV):

Options :

71550512943. -54.4 eV

71550512944. -13.6 eV

71550512945. -3.4 eV

71550512946. -27.2 eV

Question Number : 44 Question Id : 7155054085 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

He^+ आयन की इसकी प्रथम उत्तेजित अवस्था में ऊर्जा है (हाइड्रोजन परमाणु की स्थाई अवस्था में ऊर्जा -13.6 eV है):

Options :

71550512944. -13.6 eV

71550512945. -3.4 eV

71550512946. -27.2 eV

Question Number : 45 Question Id : 7155054086 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The ratio of the de-Broglie wavelengths of proton and electron having same Kinetic energy :
(Assume $m_p = m_e \times 1849$)

Options :

71550512947. 2:43

71550512948. 1:62

71550512949. 1:30

71550512950. 1:43

Question Number : 45 Question Id : 7155054086 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

समान गतिज ऊर्जा के प्रोटॉन तथा इलेक्ट्रॉन की तरंगदैर्घ्यों का अनुपात (माना, $m_p = m_e \times 1849$) है:

Options :

71550512948. 1:62

71550512949. 1:30

71550512950. 1:43

Question Number : 46 Question Id : 7155054087 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

A plane electromagnetic wave of frequency 20 MHz propagates in free space along x-direction. At a particular space and time, $\vec{E} = 6.6 \hat{j} \text{ V/m}$. What is $\vec{B}$ at this point?

Options :

71550512951. $2.2 \times 10^{-8} \hat{k} T$

71550512952. $-2.2 \times 10^{-8} \hat{k} T$

71550512953. $2.2 \times 10^{-8} \hat{i} T$

71550512954. $-2.2 \times 10^{-8} \hat{i} T$

Question Number : 46 Question Id : 7155054087 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

20 MHz आवृत्ति की एक समतल वैद्युतचुंबकीय तरंग मुक्त आकाश में x-दिशा के अनुदिश संचरित होती है। एक निश्चित स्थान एवं समय पर, $\vec{E} = 6.6 \hat{j} \text{ V/m}$ हो। इस बिन्दु पर $\vec{B}$ क्या है?

Options :

71550512951. $2.2 \times 10^{-8} \hat{k} T$

71550512952. $-2.2 \times 10^{-8} \hat{k} T$

71550512953. $2.2 \times 10^{-8} \hat{i} T$

71550512954. $-2.2 \times 10^{-8} \hat{i} T$

Question Number : 47 Question Id : 7155054088 Question Type : MCQ Option Shuffling : Yes 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: A bar magnet dropped through a metallic cylindrical pipe takes more time to come down compared to a non-magnetic bar with same geometry and mass.

Reason R: For the magnetic bar, Eddy currents are produced in the metallic pipe which oppose the motion of the magnetic bar.

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

Options :

71550512955. Both **A** and **R** are true and **R** is the correct explanation of **A**

71550512956. Both **A** and **R** are true but **R** is **NOT** the correct explanation of **A**

71550512957. **A** is true but **R** is false

71550512958. A is false but R is true

Question Number : 47 Question Id : 7155054088 Question Type : MCQ Option Shuffling : Yes 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: एक को **अभिकथन A** तथा दूसरे को कारण **कारण R** से चिह्नित किया गया है।

अभिकथन A: एक छड़ चुम्बक को एक धात्विक बेलनाकार पाइप से होकर गिराने पर यह समान आकार व द्रव्यमान की एक अचुम्बकीय छड़ की तुलना में नीचे बाहर आने में अधिक समय लेती है।

कारण R: चुम्बकीय छड़ के लिए, धात्विक पाइप में भँवर धाराएँ उत्पन्न होती हैं जो चुम्बकीय छड़ की गति का विरोध करती हैं।
उपरोक्त कथनों के संदर्भ में, नीचे दिये गये विकल्पों में से सही उत्तर चुनिए:

Options :

71550512955. दोनों **A** तथा **R** सही हैं एवं **R, A** की सही व्याख्या है

71550512956. दोनों **A** तथा **R** सही हैं परन्तु **R, A** की सही व्याख्या नहीं है

71550512957. **A** सही है परन्तु **R** गलत है

71550512958. **A** गलत है परन्तु **R** सही है

Question Number : 48 Question Id : 7155054089 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

An electron is allowed to move with constant velocity along the axis of current carrying straight solenoid.

- A. The electron will experience magnetic force along the axis of the solenoid.
- B. The electron will not experience magnetic force.
- C. The electron will continue to move along the axis of the solenoid.
- D. The electron will be accelerated along the axis of the solenoid
- E. The electron will follow parabolic path-inside the solenoid.

Choose the correct answer from the options given below:

Options :

71550512959. A and D only

71550512960. B and C only

71550512961. B, C and D only

71550512962. B and E only

Question Number : 48 Question Id : 7155054089 Question Type : MCQ Option Shuffling : Yes 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 इलैक्ट्रान एक सीधी धारावाही परिनालिका की अक्ष के अनुदिश नियत वेग से गति करता है।

- A. इलैक्ट्रान, परिनालिका की अक्ष के अनुदिश चुम्बकीय बल का अनुभव करेगा।
- B. इलैक्ट्रान, चुम्बकीय बल का अनुभव नहीं करेगा।
- C. इलैक्ट्रान, परिनालिका की अक्ष के अनुदिश लगातार गति करेगा।
- D. इलैक्ट्रान, परिनालिका की अक्ष के अनुदिश त्वरित होगा।
- E. इलैक्ट्रान, परिनालिका के अन्दर परवलयकार पथ का अनुसरण करेगा।

नीचे दिये गये विकल्पों में से सही उत्तर चुनिए:

Options :

71550512959. केवल A तथा D

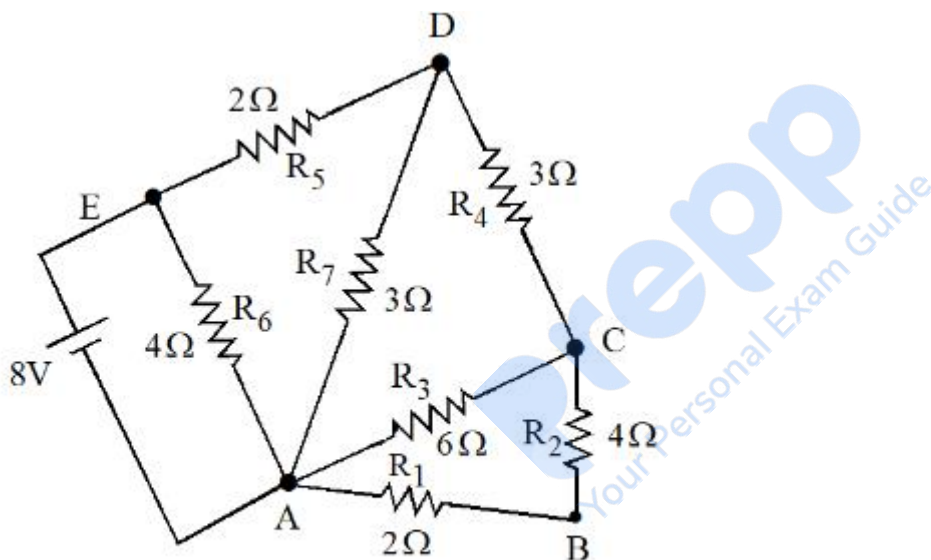
71550512960.

71550512961. केवल B, C तथा D

71550512962. केवल B तथा E

Question Number : 49 Question Id : 7155054090 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1



The current flowing through R_2 is :

Options :

71550512963. $\frac{1}{2}$ A

71550512964. $\frac{1}{4}$ A

71550512965. $\frac{1}{3}$ A

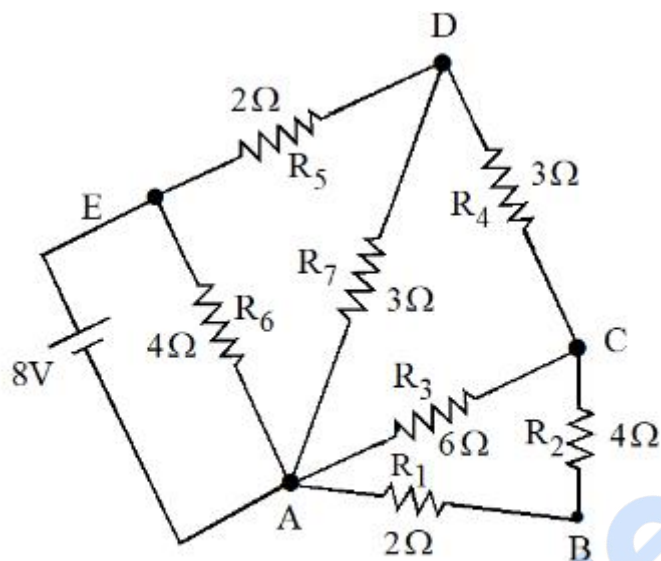
71550512966. $\frac{2}{3}$ A

Question Number : 49 Question Id : 7155054090 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1



R_2 में प्रवाहित धारा है :

Options :

71550512963. $\frac{1}{2}$ A

71550512964. $\frac{1}{4}$ A

71550512965. $\frac{1}{3}$ A

71550512966. $\frac{2}{3}$ A

Question Number : 50 Question Id : 7155054091 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

A capacitor of capacitance C is charged to a potential V . The flux of the electric field through a closed surface enclosing the positive plate of the capacitor is :

Options :

71550512967. $\frac{CV}{\epsilon_0}$

71550512968. $\frac{2CV}{\epsilon_0}$

71550512969. $\frac{CV}{2\epsilon_0}$

71550512970. Zero

Question Number : 50 Question Id : 7155054091 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

C धारिता के एक संधारित्र को एक V विभव तक आवेशित किया जाता है। संधारित्र की धनात्मक प्लेट को घेरे हुए एक बन्द पृष्ठ से गुजरने वाला विद्युत क्षेत्र का फ्लक्स है:

Options :

71550512967. $\frac{CV}{\epsilon_0}$

71550512968. $\frac{2CV}{\epsilon_0}$

71550512969. $\frac{CV}{2\epsilon_0}$

71550512970. शून्य

Physics Section B

Section Id :	715505250
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 :	715505250
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 51 Question Id : 7155054092 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 density $8 \times 10^3 \text{ kg/m}^3$ is stretched between two clamps 0.5 m apart. The extension developed in the wire is $3.2 \times 10^{-4} \text{ m}$. If $Y = 8 \times 10^{10} \text{ N/m}^2$, the fundamental frequency of vibration in the wire will be _____ Hz.

Response Type : Numeric

Evaluation Required For SA : Yes

Answers Type : Equal**Text Areas** : PlainText**Possible Answers** :

10

Question Number : 51 **Question Id** : 7155054092 **Question Type** : SA **Calculator** : None**Response Time** : N.A **Think Time** : N.A **Minimum Instruction Time** : 0**Correct Marks** : 4 **Wrong Marks** : 1

$8 \times 10^3 \text{ kg/m}^3$ घनत्व के एक तार को 0.5 m की दूरी पर स्थित दो क्लेम्प के बीच खींचा जाता है। तार में उत्पन्न विस्तार $3.2 \times 10^{-4} \text{ m}$ है। यदि तार के पदार्थ का यंग प्रत्यास्थता गुणांक $Y = 8 \times 10^{10} \text{ N/m}^2$ तार में कम्पन्न की मूल आवृत्ति _____ Hz होगी।

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

10

Question Number : 52 **Question Id** : 7155054093 **Question Type** : SA **Calculator** : None**Response Time** : N.A **Think Time** : N.A **Minimum Instruction Time** : 0**Correct Marks** : 4 **Wrong Marks** : 1

The surface tension of soap solution is $3.5 \times 10^{-2} \text{ Nm}^{-1}$. The amount of work done required to increase the radius of soap bubble from 10 cm to 20 cm is _____ $\times 10^{-4} \text{ J}$.

(take $\pi = 22/7$)**Response Type** : Numeric**Evaluation Required For SA** : Yes**Show Word Count** : Yes**Answers Type** : Equal

Possible Answers :

10

Question Number : 52 Question Id : 7155054093 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

साबुन के घोल का पृष्ठ तनाव $3.5 \times 10^{-2} \text{ Nm}^{-1}$ है। साबुन के बुलबुले की त्रिज्या 10 cm से 20 cm तक बढ़ाने में आवश्यक कार्य की मात्रा _____ $\times 10^{-4} \text{ J}$ है।
(लिया है, $\pi = 22/7$)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 53 Question Id : 7155054094 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

A circular plate is rotating in horizontal plane, about an axis passing through its center and perpendicular to the plate, with an angular velocity ω . A person sits at the center having two dumbbells in his hands. When he stretches out his hands, the moment of inertia of the system becomes triple. If E be the initial Kinetic energy of the system, then final Kinetic energy will be $\frac{E}{x}$. 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 :

Question Number : 53 Question Id : 7155054094 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

एक वृत्ताकार चकती क्षैतिज तल में, चकती के लम्बवत इसके केन्द्रससे गुजरने वाली अक्ष के परितः एक कोणीय वेग ω से, घूर्णन कर रही है। एक व्यक्ति अपने दोनों हाथों में दो डम्बल लेकर इसके केन्द्र पर बैठ जाता है। जब वह अपने हाथों को फैलाता है तो निकाय का जड़त्व आघूर्ण तीन गुना हो जाता है। यदि निकाय की प्रारम्भिक गतिज ऊर्जा E हो, तो अन्तिम गतिज ऊर्जा $\frac{E}{x}$ होगी। x का मान _____ है।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 54 Question Id : 7155054095 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

A block of mass 5 kg starting from rest pulled up on a smooth incline plane making an angle of 30° with horizontal with an effective acceleration of 1 ms^{-2} . The power delivered by the pulling force at $t = 10 \text{ s}$ from the start is _____ W
[use $g = 10 \text{ ms}^{-2}$]
(calculate the nearest integer value)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 54 Question Id : 7155054095 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

5 kg द्रव्यमान का एक गुटके को क्षैतिज से 30° कोण बनाने वाले। चिकने नत समतल पर विराम से ऊपर की ओर खींचा जाता है। इसका प्रभावी त्वरण 1 ms^{-2} है। प्रारम्भ से $t = 10 \text{ s}$ पर खिचाव बल द्वारा दी गई शक्ति _____ W (निकटतम पूर्णांक में) है (दिया है $g = 10 \text{ ms}^{-2}$)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 55 Question Id : 7155054096 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

A nucleus disintegrates into two nuclear parts, in such a way that ratio of their nuclear sizes is $1 : 2^{1/3}$. Their respective speed have a ratio of $n : 1$. The value of n is _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 55 Question Id : 7155054096 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

एक नाभिक दो नाभिकीय खण्डों में इस प्रकार विखण्डित होता है कि उनके नाभिकीय आकारों का अनुपात $1 : 2^{1/3}$ है। उनकी क्रमशः चालों का अनुपात $n : 1$ है। n का मान _____ है।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 56 **Question Id :** 7155054097 **Question Type :** SA **Calculator :** None

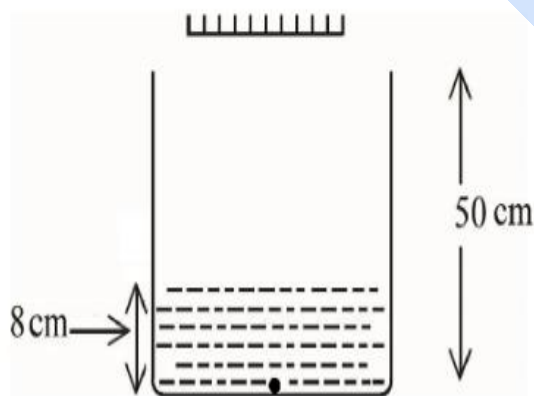
Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

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

As shown in the figure, a plane mirror is fixed at a height of 50 cm from the bottom of tank containing water

$\left(\mu = \frac{4}{3}\right)$. The height of water in the tank is 8 cm. A small bulb is placed at the bottom of the water tank.

The distance of image of the bulb formed by mirror from the bottom of the tank is _____ cm.



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

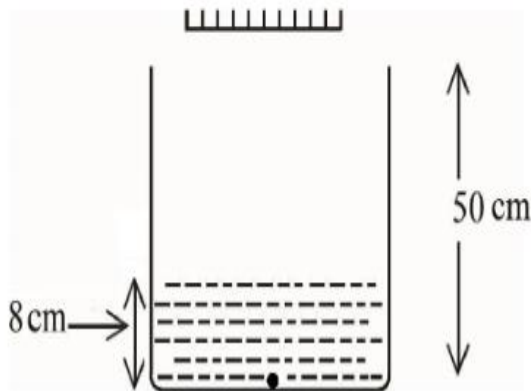
10

Question Number : 56 Question Id : 7155054097 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

प्रदर्शित चित्रानुसार, पानी $\left(\mu = \frac{4}{3}\right)$ के टैंक की तली के 50 cm ऊपर एक समतल दर्पण लगा है। टैंक में पानी की ऊँचाई 8 cm है। पानी के टैंक की तली पर एक छोटा बल्ब रखा है। टैंक की तली से दर्पण द्वारा बने बल्ब के प्रतिबिम्ब की दूरी _____ cm है।



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 57 Question Id : 7155054098 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

A coil has an inductance of 2H and resistance of $4\ \Omega$. A 10 V is applied across the coil. The energy stored in the magnetic field after the current has built up to its equilibrium value will be _____ $\times 10^{-2}$ J.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Possible Answers :

10

Question Number : 57 Question Id : 7155054098 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

एक कुण्डली का प्रेरकत्व 2 H तथा प्रतिरोध 4Ω है। कुण्डली के सिरों के बीच 10 V विद्युत वाहक बल आरोपित है। धारा में इसके साम्य मान उत्पन्न होने के उपरान्त चुम्बकीय क्षेत्र में संचित ऊर्जा का मान $\times 10^{-2} \text{ J}$ होगा।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

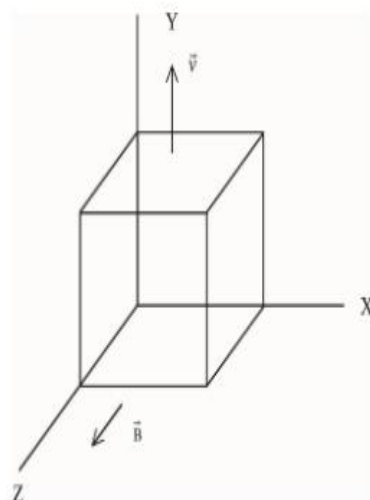
10

Question Number : 58 Question Id : 7155054099 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

A metallic cube of side 15 cm moving along y -axis at a uniform velocity of 2 ms^{-1} . In a region of uniform magnetic field of magnitude 0.5 T directed along z -axis. In equilibrium the potential difference between the faces of higher and lower potential developed because of the motion through the field will be _____ mV .



Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

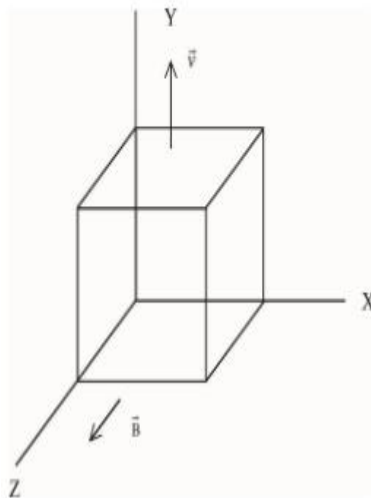
10

Question Number : 58 Question Id : 7155054099 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

15 cm भुजा का एक धात्वय घन y-अक्ष के अनुदिश 2 ms^{-1} के एकसमान वेग से गति करता है। इस परिसर में 0.5T परिमाण के एकसमान चुम्बकीय क्षेत्र की दिशा z-अक्ष के अनुदिश है। क्षेत्र में गति के कारण साम्यवस्था में उच्च तथा निम्न विभव के सतहों के बीच उत्पन्न विभवान्तर _____ mV होगा।



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 59 Question Id : 7155054100 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

Two identical cells each of emf 1.5 V are connected in series across a $10\ \Omega$ resistance. An ideal voltmeter connected across $10\ \Omega$ resistance reads 1.5 V. The internal resistance of each cell is _____ Ω .

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 59 Question Id : 7155054100 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

1.5 V विद्युत वाहक बल के दो एकसमान सेल एक $10\ \Omega$ प्रतिरोध के सिरों से श्रेणी क्रम में जुड़े हैं। $10\ \Omega$ प्रतिरोध के सिरों से जुड़ा एक आदर्श वोल्टमीटर 1.5 V पाठ्यांक देता है। प्रत्येक सेल का आन्तरिक प्रतिरोध _____ Ω है।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

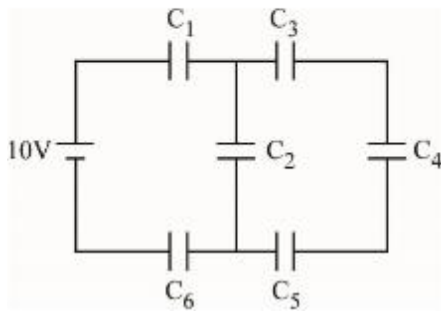
Question Number : 60 Question Id : 7155054101 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

In the given circuit,

$C_1 = 2 \mu\text{F}$, $C_2 = 0.2 \mu\text{F}$, $C_3 = 2 \mu\text{F}$, $C_4 = 4 \mu\text{F}$, $C_5 = 2 \mu\text{F}$, $C_6 = 2 \mu\text{F}$, The charge stored on capacitor C_4 is _____ μC .



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

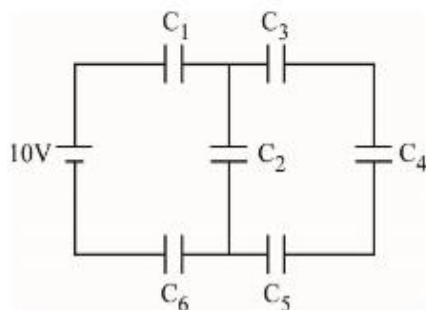
Question Number : 60 **Question Id :** 7155054101 **Question Type :** SA **Calculator :** None

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

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

दिये गये परिपथ में,

$C_1 = 2 \mu\text{F}$, $C_2 = 0.2 \mu\text{F}$, $C_3 = 2 \mu\text{F}$, $C_4 = 4 \mu\text{F}$, $C_5 = 2 \mu\text{F}$, $C_6 = 2 \mu\text{F}$, संधारित्र C_4 पर संचित आवेश _____ μC है।



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Possible Answers :

10

Chemistry Section A

Section Id :	715505251
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 :	715505251
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 61 Question Id : 7155054102 Question Type : MCQ Option Shuffling : Yes 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 pairs is an example of polar molecular solids?

Options :

71550512981. $\text{SO}_2(\text{s}), \text{NH}_3(\text{s})$

71550512982. $\text{SO}_2(\text{s}), \text{CO}_2(\text{s})$

71550512983. HCl (s) , AlN (s)

71550512984. MgO (s) , $\text{SO}_2(\text{s})$

Question Number : 61 Question Id : 7155054102 Question Type : MCQ Option Shuffling : Yes 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 सा जोड़ा ध्रुवीय आण्विक ठोसों का उदाहरण है?

Options :

71550512981. $\text{SO}_2(\text{s})$, $\text{NH}_3(\text{s})$

71550512982. $\text{SO}_2(\text{s})$, $\text{CO}_2(\text{s})$

71550512983. HCl (s) , AlN (s)

71550512984. MgO (s) , $\text{SO}_2(\text{s})$

Question Number : 62 Question Id : 7155054103 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

What weight of glucose must be dissolved in 100 g of water to lower the vapour pressure by 0.20 mm Hg ?

(Assume dilute solution is being formed)

Given : Vapour pressure of pure water is 54.2 mm Hg at room temperature. Molar mass of glucose is 180 g mol^{-1}

Options :

71550512985. 3.69 g

71550512986. 4.69 g

71550512987. 2.59 g

71550512988. 3.59 g

Question Number : 62 Question Id : 7155054103 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

जल के वाष्प दाब को 0.20 mm Hg तक घटाने के लिये ग्लूकोस के कितने भार को 100 g पानी में घोलना चाहिए।

(मान लिया जाय कि तनु विलयन बनता है)

दिया गया है : कमरे के ताप पर शुद्ध जल का वाष्प दाब 54.2 mm Hg है। ग्लूकोस का मोलर द्रव्यमान 180 g mol^{-1} है।

Options :

71550512985. 3.69 g

71550512986. 4.69 g

71550512987. 2.59 g

71550512988. 3.59 g

Question Number : 63 Question Id : 7155054104 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

For a chemical reaction $A + B \rightarrow \text{Product}$, the order is 1 with respect to A and B.

Rate $\text{mol L}^{-1} \text{S}^{-1}$	[A] mol L^{-1}	[B] mol L^{-1}
0.10	20	0.5
0.40	x	0.5
0.80	40	y

What is the value of x and y ?

Options :

71550512989. 80 and 2

71550512990. 40 and 4

71550512991. 160 and 4

71550512992. 80 and 4

Question Number : 63 Question Id : 7155054104 Question Type : MCQ Option Shuffling : Yes 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 $A + B \rightarrow \text{उत्पाद}$, के लिए अभिक्रिया की कोटि A और B की तुलना में 1 है।

वेग $\text{mol L}^{-1} \text{S}^{-1}$	[A] mol L^{-1}	[B] mol L^{-1}
0.10	20	0.5
0.40	x	0.5
0.80	40	y

x और y का मान क्या है ?

Options :

71550512989. 80 और 2

71550512990. 40 और 4

71550512992. 80 और 4

Question Number : 64 Question Id : 7155054105 Question Type : MCQ Option Shuffling : Yes 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 solution is prepared by adding 2 g of "X" to 1 mole of water. Mass percent of "X" in the solution is

Options :

71550512993. 2%

71550512994. 5%

71550512995. 10%

71550512996. 20%

Question Number : 64 Question Id : 7155054105 Question Type : MCQ Option Shuffling : Yes Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

"X" के 2 g को 1 मोल पानी में घोलकर विलयन बनाया जाता है। विलयन में "X" का द्रव्यमान प्रतिशत है।

Options :

71550512993. 2%

71550512994. 5%

71550512996. 20%

Question Number : 65 Question Id : 7155054106 Question Type : MCQ Option Shuffling : Yes 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 : In the metallurgy process, sulphide ore is converted to oxide before reduction.

Statement II : Oxide ores in general are easier to reduce.

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

Options :

71550512997. Both Statement I and Statement II are correct

71550512998. Both Statement I and Statement II are incorrect

71550512999. Statement I is correct but Statement II is incorrect

71550513000. Statement I is incorrect but Statement II is correct

Question Number : 65 Question Id : 7155054106 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

कथन I : धातुकर्म प्रक्रम में सल्फाइड अयस्क को अपचयित से पहले ऑक्साइड में परिवर्तित किया जाता है।

कथन II : ऑक्साइड अयस्कों को अपचयित करना आसान होता है।
उपरोक्त कथनों के आधार पर नीचे दिये गये विकल्पों में से सही से उचित उत्तर को चुनें:

71550512997. कथन I और II दोनों हैं।

71550512998. कथन I और II दोनों असत्य हैं।

71550512999. कथन I सत्य परन्तु कथन II असत्य है।

71550513000. कथन I असत्य परन्तु कथन II सत्य है।

Question Number : 66 Question Id : 7155054107 Question Type : MCQ Option Shuffling : Yes 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 hydride among the following is less stable?

Options :

71550513001. LiH

71550513002. BeH_2

71550513003. NH_3

71550513004. HF

Question Number : 66 Question Id : 7155054107 Question Type : MCQ Option Shuffling : Yes 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 हाइड्राइड में सबसे कम स्थाई है?

71550513001. LiH

71550513002. BeH_2

71550513003. NH_3

71550513004. HF

Question Number : 67 Question Id : 7155054108 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

One mole of P_4 reacts with 8 moles of SOCl_2 to give 4 moles of A, x mole of SO_2 and 2 moles of B. A, B and x respectively are

Options :

71550513005. PCl_3 , S_2Cl_2 and 4

71550513006. POCl_3 , S_2Cl_2 and 2

71550513007. PCl_3 , S_2Cl_2 and 2

71550513008. POCl_3 , S_2Cl_2 and 4

Question Number : 67 Question Id : 7155054108 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

P_4 का एक मोल $SOCl_2$ के 8 मोलों से अभिक्रिया करके A का 4 मोल, SO_2 का x और B का 2 मोल देता है। A, B और x क्रमशः हैं

Options :

71550513005. PCl_3 , S_2Cl_2 और 4

71550513006. $POCl_3$, S_2Cl_2 और 2

71550513007. PCl_3 , S_2Cl_2 और 2

71550513008. $POCl_3$, S_2Cl_2 और 4

Question Number : 68 Question Id : 7155054109 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Alkali metal from the following with least melting point is:

Options :

71550513009. Na

71550513010. K

71550513011. Rb

71550513012. Cs

Question Number : 68 Question Id : 7155054109 Question Type : MCQ Option Shuffling : Yes 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 सबसे कम जलनांक वाली क्षारीय धातु है:

Options :

71550513009. Na

71550513010. K

71550513011. Rb

71550513012. Cs

Question Number : 69 Question Id : 7155054110 Question Type : MCQ Option Shuffling : Yes 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 magnetic moment is measured in Bohr Magneton (BM).

Spin only magnetic moment of Fe in $[\text{Fe}(\text{H}_2\text{O})_6]^{3+}$ and $[\text{Fe}(\text{CN})_6]^{3-}$ complexes respectively is:**Options :**

71550513013. 6.92 B.M. in both

71550513014. 4.89 B.M. and 6.92 B.M.

71550513015. 5.92 B.M. and 1.732 B.M.

71550513016. 3.87 B.M. and 1.732 B.M.

Question Number : 69 Question Id : 7155054110 Question Type : MCQ Option Shuffling : Yes Is**Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum****Instruction Time : 0**

Correct Marks : 4 Wrong Marks : 1

चुम्बकीय आघूर्ण को बोअर मैग्नेटॉन (BM) में मापा जाता है।

Fe का केवल प्रचरण चुम्बकीय आघूर्ण संकुलों $[\text{Fe}(\text{H}_2\text{O})_6]^{3+}$ और $[\text{Fe}(\text{CN})_6]^{3-}$ में क्रमशः है:

Options :

71550513013. दोनों में 6.92 B.M.

71550513014. 4.89 B.M. और 6.92 B.M.

71550513015. 5.92 B.M. और 1.732 B.M.

71550513016. 3.87 B.M. और 1.732 B.M.

Question Number : 70 Question Id : 7155054111 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

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

Assertion A : $[\text{CoCl}(\text{NH}_3)_5]^{2+}$ absorbs at lower wavelength of light with respect to $[\text{Co}(\text{NH}_3)_5(\text{H}_2\text{O})]^{3+}$

Reason R : It is because the wavelength of the light absorbed depends on the oxidation state of the metal ion.

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

Options :

71550513017. Both A and R are true and R is the correct explanation of A

71550513018. Both A and R are true but R is NOT the correct explanation of A

71550513019. A is true but R is false

71550513020. A is false but R is true

Question Number : 70 Question Id : 7155054111 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

अभिकथन A : $[\text{CoCl}(\text{NH}_3)_5]^{2+}$ की तुलना में $[\text{Co}(\text{NH}_3)_5(\text{H}_2\text{O})]^{3+}$ प्रकाश की कम तरंग-दैर्घ्य पर अवशोषित होता है।

कारण R : क्योंकि अवशोषित प्रकाश का तरंग दैर्घ्य धातु आयन की आक्सीकरण अवस्था पर निर्भर करता है।

उपरोक्त कथनों के आधार पर नीचे दिये गये विकल्पों में से सही से उचित उत्तर को चुनें:

Options :

71550513017. Both A and R are true and R is the correct explanation of A

71550513018. Both A and R are true but R is NOT the correct explanation of A

71550513019. A is true but R is false

71550513020. A is false but R is true

Question Number : 71 Question Id : 7155054112 Question Type : MCQ Option Shuffling : Yes 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 compounds is an example of Freon?

Options :

71550513021. $\text{C}_2\text{Cl}_2\text{F}_2$

71550513023. C_2HF_3

71550513024. C_2F_4

Question Number : 71 Question Id : 7155054112 Question Type : MCQ Option Shuffling : Yes 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 सा यौगिक फ्रेयोन का उदाहरण है?

Options :

71550513021. $C_2Cl_2F_2$

71550513022. $C_2H_2F_2$

71550513023. C_2HF_3

71550513024. C_2F_4

Question Number : 72 Question Id : 7155054113 Question Type : MCQ Option Shuffling : Yes 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 Ni^{2+} is replaced by Pt^{2+} in the complex $[NiCl_2Br_2]^{2-}$, which of the following properties are expected to get changed ?

- A. Geometry
- B. Geometrical isomerism
- C. Optical isomerism
- D. Magnetic properties

71550513025. A and D

71550513026. B and C

71550513027. A, B and C

71550513028. A, B and D

Question Number : 72 Question Id : 7155054113 Question Type : MCQ Option Shuffling : Yes 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 संकुल $[\text{NiCl}_2\text{Br}_2]^{2-}$ में Ni^{2+} को Pt^{2+} से प्रतिस्थापित कर दिया जाय तो निम्नलिखित में से किन गुणधर्मों परिवर्तन सम्भव है?

- A. ज्योमिती
- B. ज्यामिती समावयवता
- C. ध्रुवण समावयवता
- D. चुम्बकीय गुणधर्म

Options :

71550513025. A और D

71550513026. B और C

71550513027. A, B और C

71550513028. A, B और D

Question Number : 73 Question Id : 7155054114 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Match List I with List II

LIST I Complex		LIST II Colour	
A.	$\text{Mg}(\text{NH}_4)\text{PO}_4$	I.	brown
B.	$\text{K}_3[\text{Co}(\text{NO}_2)_6]$	II.	white
C.	$\text{MnO}(\text{OH})_2$	III.	yellow
D.	$\text{Fe}_4[\text{Fe}(\text{CN})_6]_3$	IV.	blue

Choose the correct answer from the options given below:

Options :

71550513029. A-II, B-III, C-I, D-IV

71550513030. A-III, B-IV, C-II, D-I

71550513031. A-II, B-IV, C-I, D-III

71550513032. A-II, B-III, C-IV, D-I

Question Number : 73 Question Id : 7155054114 Question Type : MCQ Option Shuffling : Yes 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 को II से सुमेलित करें:

सूची I संकुल		सूची II रंग	
A.	$\text{Mg}(\text{NH}_4)\text{PO}_4$	I.	भूरा
B.	$\text{K}_3[\text{Co}(\text{NO}_2)_6]$	II.	सफेद
C.	$\text{MnO}(\text{OH})_2$	III.	पीला
D.	$\text{Fe}_4[\text{Fe}(\text{CN})_6]_3$	IV.	नीला

नीचे दिये गये विकल्पों में से सही उत्तर को चुनें:

Options :

71550513030. A-III, B-IV, C-II, D-I

71550513031. A-II, B-IV, C-I, D-III

71550513032. A-II, B-III, C-IV, D-I

Question Number : 74 Question Id : 7155054115 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

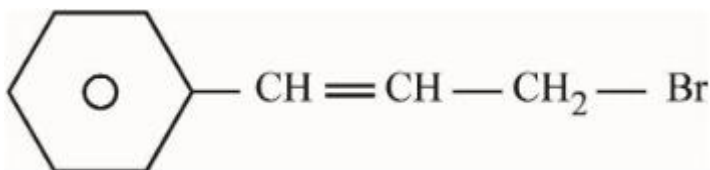
Compound from the following that will not produce precipitate on reaction with AgNO_3 is :

Options :

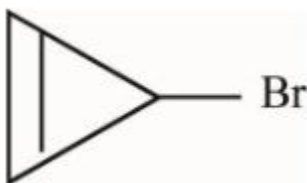
71550513033.



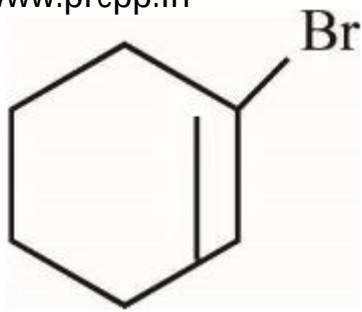
71550513034.



71550513035.



71550513036.



Question Number : 74 Question Id : 7155054115 Question Type : MCQ Option Shuffling : Yes Is

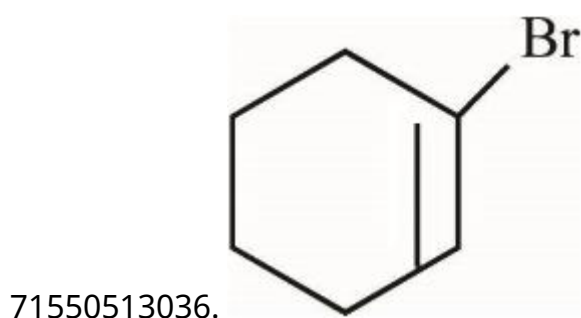
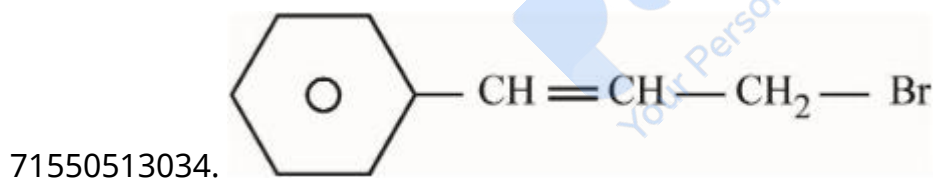
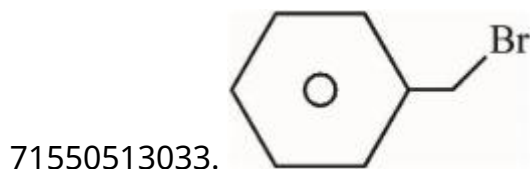
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

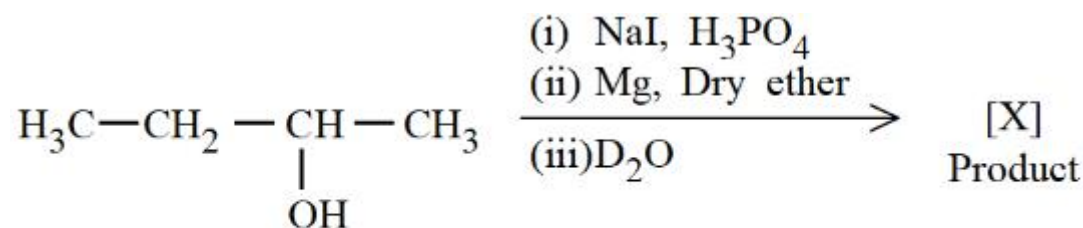
निम्नलिखित में से यौगिक जोकि AgNO_3 के साथ अभिक्रिया से अवक्षेपण नहीं देता है:

Options :



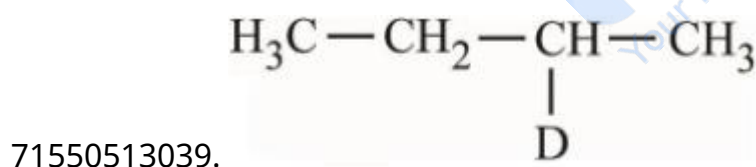
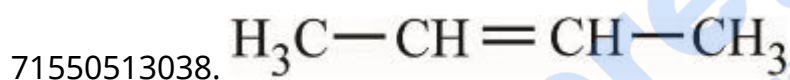
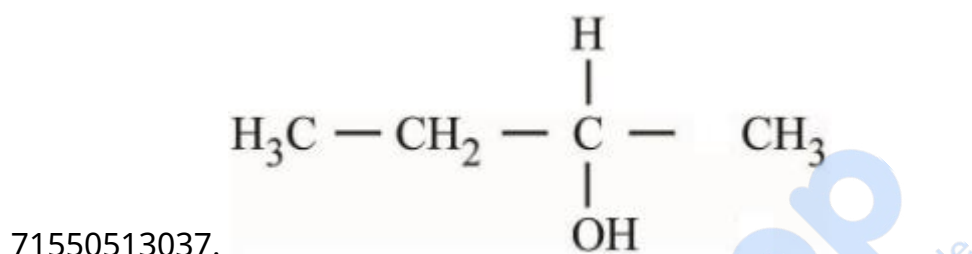
Question Number : 75 Question Id : 7155054116 Question Type : MCQ Option Shuffling : Yes Is
 Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
 Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1



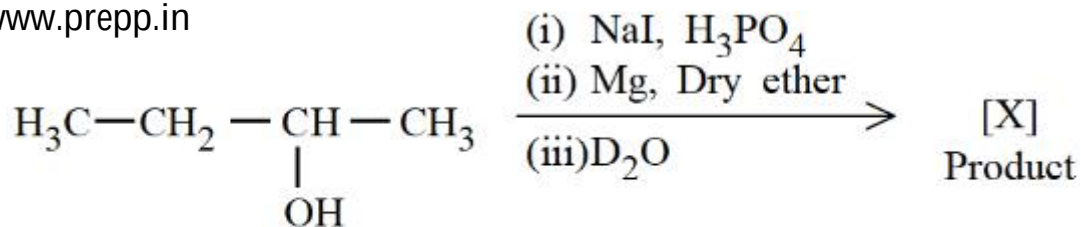
Product [X] formed in the above reaction is :

Options :



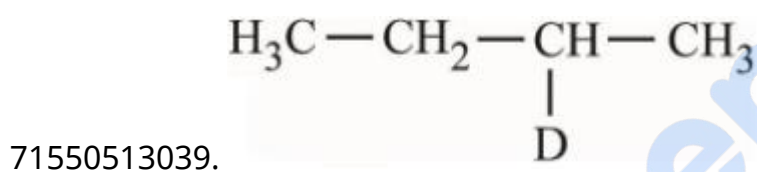
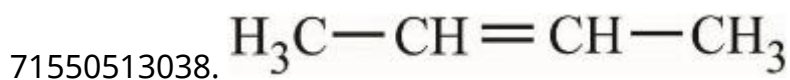
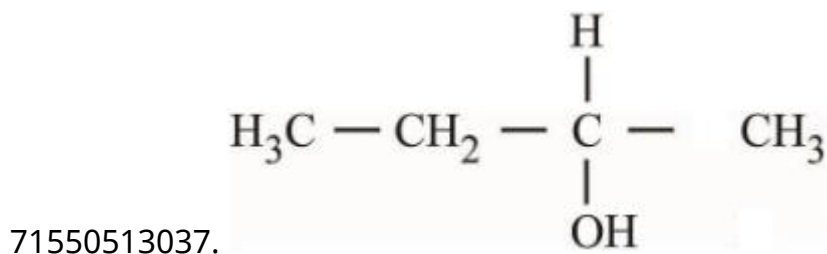
Question Number : 75 Question Id : 7155054116 Question Type : MCQ Option Shuffling : Yes Is
 Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
 Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1



उपरोक्त अभिक्रिया में बना उत्पाद [X] है:

Options :



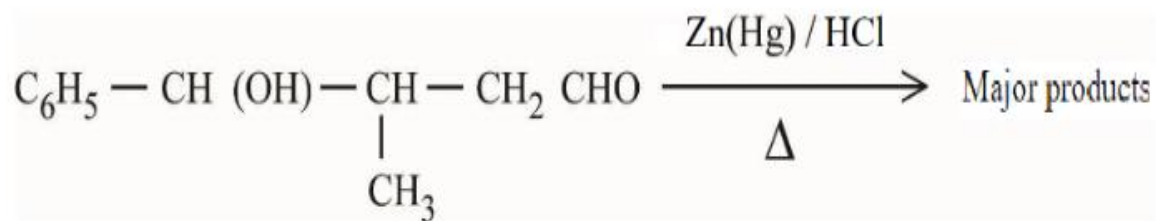
Question Number : 76 Question Id : 7155054117 Question Type : MCQ Option Shuffling : Yes Is

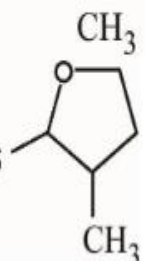
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The major product formed in the following reaction is



- A. $\text{C}_6\text{H}_5 - \text{CH}(\text{OH}) - \underset{\text{CH}_3}{\text{CH}} - \text{C}_2\text{H}_5$
- B. $\text{C}_6\text{H}_5 - \text{CH} = \underset{\text{CH}_3}{\text{C}} - \text{C}_2\text{H}_5$
- C. $\text{C}_6\text{H}_5 - \underset{\text{CH}_3}{\text{C}} = \text{CH} - \text{C}_2\text{H}_5$
- D. 

Choose the correct answer from the options given below:

Options :

71550513041. B only

71550513042. A only

71550513043. D only

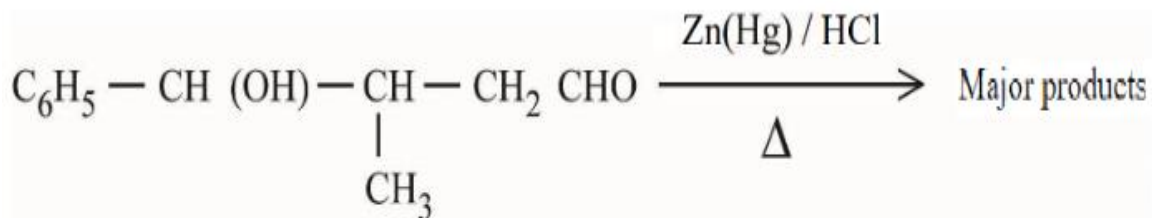
71550513044. C only

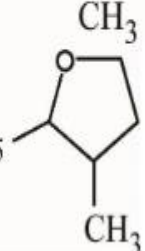
Question Number : 76 Question Id : 7155054117 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1



- A. $\text{C}_6\text{H}_5 - \text{CH}(\text{OH}) - \underset{\text{CH}_3}{\text{CH}} - \text{C}_2\text{H}_5$
- B. $\text{C}_6\text{H}_5 - \text{CH} = \underset{\text{CH}_3}{\text{C}} - \text{C}_2\text{H}_5$
- C. $\text{C}_6\text{H}_5 - \underset{\text{CH}_3}{\text{C}} = \text{CH} - \text{C}_2\text{H}_5$
- D. 

नीचे दिये गये विकल्पों में से सही उत्तर को चुनें:

Options :

71550513041. केवल B

71550513042. केवल A

71550513043. केवल D

71550513044. केवल C

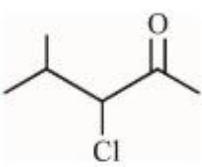
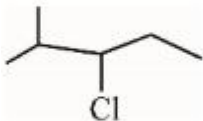
Question Number : 77 Question Id : 7155054118 Question Type : MCQ Option Shuffling : Yes Is

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 :  can be subjected to Wolff-Kishner reduction to give 

Reason R : Wolff-Kishner reduction is used to convert  into $\text{>CH}_2\text{<}$

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

Options :

71550513045. Both A and R are true and R is the correct explanation of A

71550513046. Both A and R are true but R is NOT the correct explanation of A

71550513047. A is true but R is false

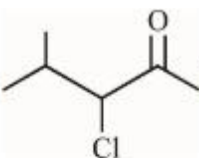
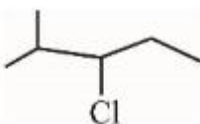
71550513048. A is false but R is true

Question Number : 77 Question Id : 7155054118 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

अभिकथन A :  वोल्फ किश्रर अपचयन से  दे सकता है।

कारण R : वोल्फ किश्रर अपचयन का उपयोग  को $\text{>CH}_2\text{<}$ में परिवर्तित करने में होता है।

उपरोक्त कथनों के सन्दर्भ में नीचे दिये गये विकल्पों में से सही उत्तर को चुनें:

Options :

71550513045. A और R दोनों सही हैं और R, A की सही व्याख्या है।

71550513046. A और R दोनों सही है परन्तु R, A की सही व्याख्या नहीं है।

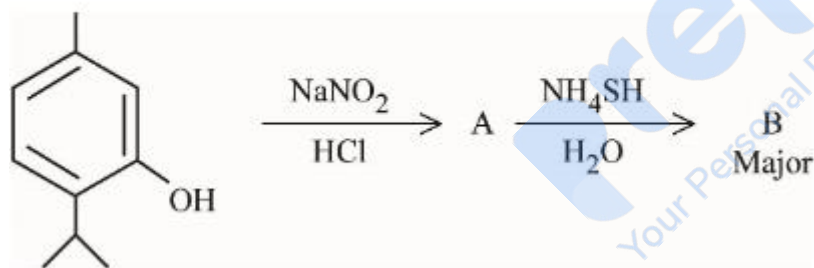
71550513047. A सत्य है परन्तु R असत्य है

71550513048. A असत्य है परन्तु R सत्य है

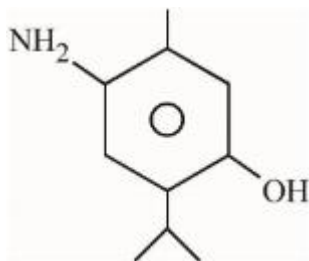
Question Number : 78 Question Id : 7155054119 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

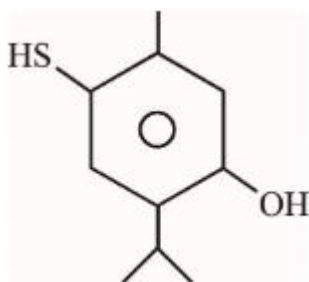
Compound 'B' is



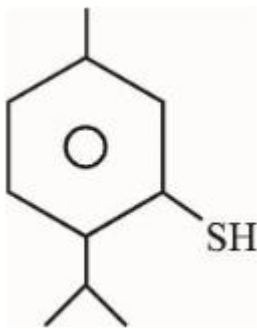
Options :



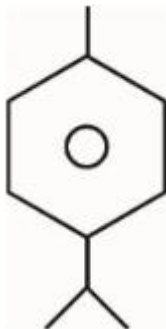
71550513049.



71550513050.



71550513051.

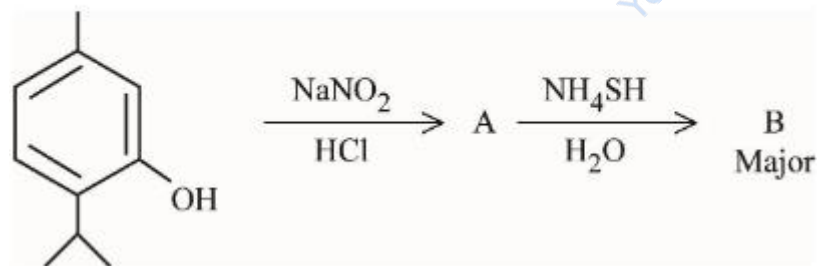


71550513052.

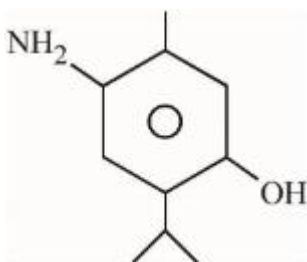
Question Number : 78 Question Id : 7155054119 Question Type : MCQ Option Shuffling : Yes Is
 Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
 Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

यौगिक 'B' है:

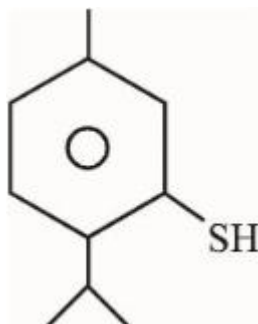
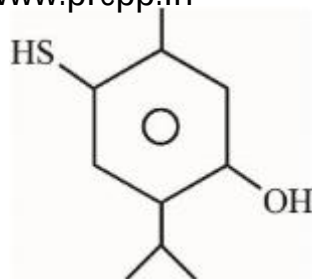


Options :

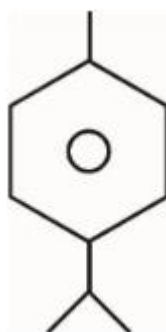


71550513049.

71550513050.



71550513051.



71550513052.

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Question Number : 79 Question Id : 7155054120 Question Type : MCQ Option Shuffling : Yes 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 : A solution of the product obtained by heating a mole of glycine with a mole of chlorine in presence of red phosphorous generates chiral carbon atom.

Reason R : A molecule with 2 chiral carbons is always optically active.

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

Options :

71550513053. Both A and R are true and R is the correct explanation of A

71550513054. Both A and R are true but R is NOT the correct explanation of A

71550513055. A is true but R is false

71550513056. A is false but R is true

Question Number : 79 Question Id : 7155054120 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

अभिकथन A : लाल फास्फोरस की उपस्थिति में एक मोल ग्लाइसीन को एक मोल क्लोरीन से गर्म करने पर प्राप्त उत्पाद को विलयन काइरल कार्बन परमाणु उत्पन्न करता है।

कारण R : दो काइरल केन्द्रों वाला अणु हमेशा ध्रुवण सक्रिय होता है।

उपरोक्त कथनों के सन्दर्भ में नीचे दिये गये विकल्पों से सही उत्तर को चुनें:

Options :

71550513053. A और R दोनों सत्य है और R, A की सही व्याख्या है

71550513054. A और R दोनों सत्य है परन्तु R, A की सही व्याख्या नहीं है

71550513055. A सत्य है परन्तु R असत्य है

71550513056. A असत्य है परन्तु R सत्य है

Question Number : 80 Question Id : 7155054121 Question Type : MCQ Option Shuffling : Yes 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 : Ethene at 333 to 343K and 6-7 atm pressure in the presence of AlEt_3 and TiCl_4 undergoes addition polymerization to give LDP.

Statement II : Caprolactam at 533-543K in H_2O through step growth polymerizes to give Nylon 6.

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

Options :

71550513057. Both Statement I and Statement II are true

71550513058. Both Statement I and Statement II are false

71550513059. Statement I is true but Statement II is false

71550513060. Statement I is false but Statement II is true

Question Number : 80 Question Id : 7155054121 Question Type : MCQ Option Shuffling : Yes Is

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

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

कथन I : एथेन 333 से 343K ताप और 6-7 atm दाब पर AlEt_3 और TiCl_4 की उपस्थिति में योगात्मक बहुलक से LDP देता है।

कथन II : कैप्रोलैक्टम 533-543K ताप पर H_2O वृद्धि बहुलकन से नाइलॉन 6 देता है।

उपरोक्त कथनों के सन्दर्भ में नीचे दिये गये विकल्पों में से सही उत्तर को चुनें:

Options :

71550513057. कथन I और II दोनों सत्य है

71550513058. कथन I और II दोनों असत्य है

71550513059. कथन I सत्य है परन्तु कथन II असत्य है

71550513060. कथन I असत्य है परन्तु कथन II सत्य है

Chemistry Section B

Section Id :	715505252
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 :	715505252
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 81 Question Id : 7155054122 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

The volume of hydrogen liberated at STP by treating 2.4 g of magnesium with excess of hydrochloric acid is _____ $\times 10^{-2}$ L

Given : Molar volume of gas is 22.4L at STP.

Molar mass of magnesium is 24 g mol⁻¹

Response Type : Numeric

Evaluation Required For SA : Yes

Answers Type : Equal**Text Areas** : PlainText**Possible Answers** :

10

Question Number : 81 **Question Id** : 7155054122 **Question Type** : SA **Calculator** : None**Response Time** : N.A **Think Time** : N.A **Minimum Instruction Time** : 0**Correct Marks** : 4 **Wrong Marks** : 1

2.4 g मैग्नीशियम को हायड्रोक्लोरिक अम्ल के अधिक्य में अभिक्रिया से STP पर उत्पन्न हाइड्रोजन का आयतन _____ $\times 10^{-2}$ L

दिया गया है : STP पर गैस का मोलर आयतन 22.4L है।
मैग्नीशियम का मोलर द्रव्यमान 24 g mol^{-1} है।

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

10

Question Number : 82 **Question Id** : 7155054123 **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 number of lone pairs of electrons on the central atom from the following species is _____

ClO_3^- , XeF_4 , SF_4 and I_3^-

Response Type : Numeric**Evaluation Required For SA** : Yes**Show Word Count** : Yes**Answers Type** : Equal

Possible Answers :

10

Question Number : 82 Question Id : 7155054123 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित जातियों में केन्द्रिय परमाणु पर अधिकतम एकाकी युग्म इलेक्ट्रॉनों की संख्या _____ है।

ClO_3^- , XeF_4 , SF_4 and I_3^-

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 83 Question Id : 7155054124 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 correct statements from the following is _____.

- A. For 1s orbital, the probability density is maximum at the nucleus
- B. For 2s orbital, the probability density first increases to maximum and then decreases sharply to zero.
- C. Boundary surface diagrams of the orbitals encloses a region of 100% probability of finding the electron.
- D. p and d-orbitals have 1 and 2 angular nodes respectively
- E. probability density of p-orbital is zero at the nucleus

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

Question Number : 83 Question Id : 7155054124 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 सही कथनों की संख्या है:

- A. $1s$ कक्षक के लिए प्रायिकता घनत्व नाभिक पर अधिकतम है
- B. $2s$ कक्षक के लिए प्रायिकता घनत्व पहले अधिकतम तक बढ़ती है फिर तेजी से शून्य तक घटता है।
- C. आर्बिटलों के सीमा सतह आरेख इलेक्ट्रॉनों के पाये जाने की 100 % प्रायिकता वाले क्षेत्र को धेरते हैं।
- D. p और d -कक्षकों में क्रमशः 1 और 2 कोणीय नोड हैं।
- E. नाभिक पर p - कक्षक का प्रायिकता घनत्व शून्य है

नीचे दिये गये विकल्पों से सबसे उचित उत्तर को चुनें:

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 84 Question Id : 7155054125 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

The total number of intensive properties from the following is _____
Volume, Molar heat capacity, Molarity, E^θ cell, Gibbs free energy change, Molar mass, Mole

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

Question Number : 84 Question Id : 7155054125 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 गहन गुणों की कुल संख्या _____ है।
आयतन, मोलर ऊष्माधारिता, मोलरता, E^θ सेल, गिब्स मुक्त ऊर्जा परिवर्तन, मोलर
द्रव्यमान, मोल

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 85 Question Id : 7155054126 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

4.5 moles each of hydrogen and iodine is heated in a sealed ten litre vessel. At equilibrium, 3 moles of HI were found. The equilibrium constant for $\text{H}_2(\text{g}) + \text{I}_2(\text{g}) \rightleftharpoons 2\text{HI}(\text{g})$ is _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 85 Question Id : 7155054126 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

हाइड्रोजन और आयोडीन प्रत्येक के 4.5 मोल को एक दस लीटर बन्द पात्र में गर्म किया गया। साम्यावस्था पर HI के 3 मोल मिले। $\text{H}_2(\text{g}) + \text{I}_2(\text{g}) \rightleftharpoons 2\text{HI}(\text{g})$ के लिए साम्यावस्था स्थिरांक _____ है।

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

10

Question Number : 86 Question Id : 7155054127 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 correct statements from the following is _____

- A. E_{cell} is an intensive parameter
- B. A negative $E^\ominus$ means that the redox couple is a stronger reducing agent than the H^+/H_2 couple.
- C. The amount of electricity required for oxidation or reduction depends on the stoichiometry of the electrode reaction.
- D. The amount of chemical reaction which occurs at any electrode during electrolysis by a current is proportional to the quantity of electricity passed through the electrolyte.

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

10

Question Number : 86 Question Id : 7155054127 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 सही कथनों की संख्या _____ है।

- A. E सेल एक गहन गुण है
- B. ऋणात्मक $E^\ominus$ का अर्थ है कि रेडॉक्स युग्म H^+/H_2 की तुलना में प्रबल अपचायक है।
- C. ऑक्सीकरण अथवा अपचयन के लिए आवश्यक विद्युत धारा की मात्रा इलेक्ट्रोड अभिक्रिया के स्टाइकियोमिटी पर निर्भर करती है।
- D. विद्युत धारा द्वारा वैद्युत अपघटन में रासायनिक विघटन की मात्रा वैद्युतअपघट्य में प्रवाहित विद्युत धारा की मात्रा के समानुपाती होती है।

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

10

Question Number : 87 Question Id : 7155054128 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 correct statements about modern adsorption theory of heterogeneous catalysis from the following is _____

- A. The catalyst is diffused over the surface of reactants.
- B. Reactants are adsorbed on the surface of the catalyst.
- C. Occurrence of chemical reaction on the catalyst's surface through formation of an intermediate.
- D. It is a combination of intermediate compound formation theory and the old adsorption theory.
- E. It explains the action of the catalyst as well as those of catalytic promoters and poisons.

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

10

Question Number : 87 Question Id : 7155054128 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 आधुनिक विषमांगी उत्प्रेरण के अधिशोषण सिद्धान्त के लिए सही कथनों की संख्या _____ है।

- A. अभिकारकों की सतह पर उत्प्रेरक विसरण होता है।
- B. अभिकारक उत्प्रेरक की सतह पर अधिशोषित हो जाते हैं।
- C. अभिकारकों की सतह पर रसायनिक प्रतिक्रिया एक मध्यवर्ती संगठन की माध्यम से होता है।
- D. यह मध्यवर्ती यौगिक सिद्धान्त और पुरानी अधिशोषण सिद्धान्त का योग है।
- E. यह उत्प्रेरक की क्रिया के साथ-साथ उत्प्रेरक वर्धक और विषकारक की क्रिया की भी व्याख्या करता है।

नीचे दिये गये विकल्पों में से सही उत्तर को चुनें :

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

10

Question Number : 88 Question Id : 7155054129 Question Type : SA Calculator : None**Response Time : N.A Think Time : N.A Minimum Instruction Time : 0****Correct Marks : 4 Wrong Marks : 1** $\text{Mg}(\text{NO}_3)_2 \cdot \text{XH}_2\text{O}$ and $\text{Ba}(\text{NO}_3)_2 \cdot \text{YH}_2\text{O}$, represent formula of the crystalline forms of nitrate salts. Sum of X and Y is _____**Response Type : Numeric****Evaluation Required For SA : Yes****Show Word Count : Yes****Answers Type : Equal**

Possible Answers :

10

Question Number : 88 Question Id : 7155054129 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

$\text{Mg}(\text{NO}_3)_2 \cdot \text{XH}_2\text{O}$ और $\text{Ba}(\text{NO}_3)_2 \cdot \text{YH}_2\text{O}$ नाइट्रेट लवणों के क्रिस्टलीकृत रूप के सूत्र को निरूपित करते हैं। X और Y का योग _____ है।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 89 Question Id : 7155054130 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 which will not produce orange red precipitate with Benedict solution is _____

Glucose, maltose, sucrose, ribose, 2-deoxyribose, amylose, lactose

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 89 Question Id : 7155054130 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 यौगिकों की संख्या है जोकि बेनेडिक्ट विलयन से सन्तरी लाल अवक्षेप नहीं देते हैं।

ग्लूकोस, माल्टोस, सुक्रोस, राइबोस, 2-डीऑक्सीराइबोस, एमाइलोस, लैक्टोस

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 90 Question Id : 7155054131 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 possible isomeric products formed when 3-chloro-1-butene reacts with HCl through carbocation formation is _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 90 Question Id : 7155054131 Question Type : SA Calculator : None

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

Correct Marks : 4 Wrong Marks : 1

संभावित बने समावयवी उत्पादों की संख्या _____ है जब 3-क्लोरो-1-ब्यूटेन HCl के साथ अभिक्रिया कार्बधनायन मध्यवर्ती से होता है।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10