

# Mathematics

Section Id :	405036432
Section Number :	3
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	25
Number of Questions to be attempted :	25
Section Marks :	100
Display Number Panel :	Yes
Group All Questions :	Yes
Mark As Answered Required? :	Yes
Sub-Section Number :	1
Sub-Section Id :	405036831
Question Shuffling Allowed :	Yes

**Question Number : 51 Question Id : 40503611806 Question Type : MCQ Option Shuffling : Yes**  
**Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**  
**Orientation : Vertical**  
**Correct Marks : 4 Wrong Marks : 1**

A survey shows that 73% of the persons working in an office like coffee, whereas 65% like tea. If  $x$  denotes the percentage of them, who like both coffee and tea, then  $x$  cannot be :

**Options :**

40503642731. 38

40503642732. 54

40503642733. 63

40503642734. 36

**Question Number : 51 Question Id : 40503611806 Question Type : MCQ Option Shuffling : Yes**  
**Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**  
**Orientation : Vertical**  
**Correct Marks : 4 Wrong Marks : 1**

एक सर्वेक्षण यह दिखाता है कि एक कार्यालय में कार्यरत 73% व्यक्ति कॉफी पसन्द करते हैं, जबकि 65% चाय पसन्द करते हैं। यदि  $x$  उस प्रतिशत को दर्शाता है, जो कॉफी और चाय दोनों को पसन्द करते हैं, तो  $x$  नहीं हो सकता :

**Options :**

40503642731. 38

40503642732. 54

40503642733. 63

40503642734. 36

**Question Number : 52 Question Id : 40503611807 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

If the four complex numbers  $z$ ,  $\bar{z}$ ,  $\bar{z} - 2\text{Re}(\bar{z})$  and  $z - 2\text{Re}(z)$  represent the vertices of a square of side 4 units in the Argand plane, then  $|z|$  is equal to :

**Options :**

40503642735.  $4\sqrt{2}$

40503642736. 2

40503642737.  $2\sqrt{2}$

40503642738. 4

**Question Number : 52 Question Id : 40503611807 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

यदि आर्गंड तल में, चार सम्मिश्र संख्याएँ  $z, \bar{z}, \bar{z} - 2\text{Re}(\bar{z})$  तथा  $z - 2\text{Re}(z)$ , 4 इकाई भुजा के एक वर्ग के शीर्षों को निरूपित करते हैं, तो  $|z|$  बराबर है :

Options :

40503642735.  $4\sqrt{2}$

40503642736.  $2$

40503642737.  $2\sqrt{2}$

40503642738.  $4$

Question Number : 53 Question Id : 40503611808 Question Type : MCQ Option Shuffling : Yes  
Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option  
Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The product of the roots of the equation

$9x^2 - 18|x| + 5 = 0$ , is :



Options :

40503642739.  $\frac{25}{9}$

40503642740.  $\frac{5}{27}$

40503642741.  $\frac{5}{9}$

40503642742.  $\frac{25}{81}$

Question Number : 53 Question Id : 40503611808 Question Type : MCQ Option Shuffling :  **collegedunia**  
Display Question Number : Yes Is Question Mandatory : No Single Line Question Option :  **Option**  
Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

समीकरण  $9x^2 - 18|x| + 5 = 0$  के मूलों का गुणनफल है :

Options :

40503642739.  $\frac{25}{9}$

40503642740.  $\frac{5}{27}$

40503642741.  $\frac{5}{9}$

40503642742.  $\frac{25}{81}$

Question Number : 54 Question Id : 40503611809 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

If the minimum and the maximum values

of the function  $f : \left[ \frac{\pi}{4}, \frac{\pi}{2} \right] \rightarrow \mathbf{R}$ , defined by

$$f(\theta) = \begin{vmatrix} -\sin^2\theta & -1 - \sin^2\theta & 1 \\ -\cos^2\theta & -1 - \cos^2\theta & 1 \\ 12 & 10 & -2 \end{vmatrix}$$

are  $m$  and  $M$  respectively, then the ordered pair  $(m, M)$  is equal to :

Options :

40503642743.  $(-4, 4)$

40503642744.  $(0, 2\sqrt{2})$

40503642745.  $(-4, 0)$

40503642746. (0, 4)

**Question Number : 54 Question Id : 40503611809 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

$$\text{यदि } f(\theta) = \begin{vmatrix} -\sin^2\theta & -1 - \sin^2\theta & 1 \\ -\cos^2\theta & -1 - \cos^2\theta & 1 \\ 12 & 10 & -2 \end{vmatrix}$$

द्वारा परिभाषित फलन  $f : \left[ \frac{\pi}{4}, \frac{\pi}{2} \right] \rightarrow \mathbf{R}$  के निम्नतम

तथा उच्चतम मान क्रमशः  $m$  तथा  $M$  हैं, तो क्रमित युग्म  $(m, M)$  बराबर है :

**Options :**

40503642743. (-4, 4)

40503642744.  $(0, 2\sqrt{2})$

40503642745. (-4, 0)

40503642746. (0, 4)

**Question Number : 55 Question Id : 40503611810 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

Let  $\lambda \in \mathbf{R}$ . The system of linear equations

$$2x_1 - 4x_2 + \lambda x_3 = 1$$

$$x_1 - 6x_2 + x_3 = 2$$

$$\lambda x_1 - 10x_2 + 4x_3 = 3$$

is inconsistent for :

**Options :**

40503642747. every value of  $\lambda$ .

40503642748. exactly one positive value of  $\lambda$ .

40503642749. exactly one negative value of  $\lambda$ .

40503642750. exactly two values of  $\lambda$ .

**Question Number : 55 Question Id : 40503611810 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

माना  $\lambda \in \mathbb{R}$ . रैखिक समीकरण निकाय

$$2x_1 - 4x_2 + \lambda x_3 = 1$$

$$x_1 - 6x_2 + x_3 = 2$$

$$\lambda x_1 - 10x_2 + 4x_3 = 3$$

असंगत है :

**Options :**

40503642747.  $\lambda$  के प्रत्येक मान के लिए।

40503642748.  $\lambda$  के मात्र एक धनात्मक मान के लिए।

40503642749.  $\lambda$  के मात्र एक ऋणात्मक मान के लिए।

40503642750.  $\lambda$  के मात्र दो मानों के लिए।

**Question Number : 56 Question Id : 40503611811 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

If  $3^{2 \sin 2\alpha - 1}$ , 14 and  $3^{4 - 2 \sin 2\alpha}$  are the first three terms of an A.P. for some  $\alpha$ , then the sixth term of this A.P. is :

**Options :**

40503642751. 81

40503642752. 78

40503642753. 66

40503642754. 65

**Question Number : 56 Question Id : 40503611811 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

यदि किसी  $\alpha$  के लिए  $3^{2\sin 2\alpha - 1}$ , 14 तथा  $3^4 - 2\sin 2\alpha$  एक समान्तर श्रेणी के प्रथम तीन पद हैं, तो इस समान्तर श्रेणी का छठा पद है :

**Options :**

40503642751. 81

40503642752. 78

40503642753. 66

40503642754. 65

**Question Number : 57 Question Id : 40503611812 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

If

$$2^{10} + 2^9 \cdot 3^1 + 2^8 \cdot 3^2 + \dots + 2 \cdot 3^9 + 3^{10} = S - 2^{11},$$

then S is equal to :

**Options :**

40503642755.  $3^{11}$

40503642756.  $2 \cdot 3^{11}$

40503642757.  $3^{11} - 2^{12}$

40503642758.  $\frac{3^{11}}{2} + 2^{10}$

Question Number : 57 Question Id : 40503611812 Question Type : MCQ Option Shuffling : Yes  
Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option  
Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

यदि

$$2^{10} + 2^9 \cdot 3^1 + 2^8 \cdot 3^2 + \dots + 2 \cdot 3^9 + 3^{10} = S - 2^{11},$$

तो S बराबर है :

Options :

40503642755.  $3^{11}$

40503642756.  $2 \cdot 3^{11}$

40503642757.  $3^{11} - 2^{12}$

40503642758.  $\frac{3^{11}}{2} + 2^{10}$

Question Number : 58 Question Id : 40503611813 Question Type : MCQ Option Shuffling : Yes  
Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option  
Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

If  $\alpha$  is the positive root of the equation,

$$p(x) = x^2 - x - 2 = 0, \text{ then}$$

$$\lim_{x \rightarrow \alpha^+} \frac{\sqrt{1 - \cos(p(x))}}{x + \alpha - 4} \text{ is equal to :}$$

Options :

40503642759.  $\frac{1}{2}$

40503642760.  $\frac{1}{\sqrt{2}}$

40503642761.  $\frac{3}{\sqrt{2}}$



40503642762.  $\frac{3}{2}$

**Question Number : 58 Question Id : 40503611813 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

यदि  $\alpha$ , समीकरण  $p(x) = x^2 - x - 2 = 0$  का

धनात्मक मूल है, तो  $\lim_{x \rightarrow \alpha^+} \frac{\sqrt{1 - \cos(p(x))}}{x + \alpha - 4}$

बराबर है :

**Options :**

40503642759.  $\frac{1}{2}$

40503642760.  $\frac{1}{\sqrt{2}}$

40503642761.  $\frac{3}{\sqrt{2}}$

40503642762.  $\frac{3}{2}$

**Question Number : 59 Question Id : 40503611814 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

If the function

$$f(x) = \begin{cases} k_1(x - \pi)^2 - 1, & x \leq \pi \\ k_2 \cos x, & x > \pi \end{cases} \text{ is twice}$$

differentiable, then the ordered pair  $(k_1, k_2)$  is equal to :

**Options :**

40503642763.  $\left(\frac{1}{2}, 1\right)$

40503642764. (1, 1)

40503642765.  $\left(\frac{1}{2}, -1\right)$

40503642766. (1, 0)

**Question Number : 59 Question Id : 40503611814 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

यदि फलन

$$f(x) = \begin{cases} k_1(x - \pi)^2 - 1, & x \leq \pi \\ k_2 \cos x, & x > \pi \end{cases}$$

दो बार अवकलनीय है, तो क्रमित युग्म  $(k_1, k_2)$  बराबर है :

**Options :**

40503642763.  $\left(\frac{1}{2}, 1\right)$

40503642764. (1, 1)

40503642765.  $\left(\frac{1}{2}, -1\right)$

40503642766. (1, 0)

**Question Number : 60 Question Id : 40503611815 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

If the point P on the curve,  $4x^2 + 5y^2 = 20$  is farthest from the point Q(0, -4), then  $PQ^2$  is equal to :

**Options :**

40503642767. 36

40503642768. 29

40503642769. 21

40503642770. 48

**Question Number : 60 Question Id : 40503611815 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

यदि वक्र  $4x^2 + 5y^2 = 20$  पर बिन्दु P, बिन्दु Q(0, -4) से अधिकतम दूरी पर है, तो  $PQ^2$  बराबर है :

**Options :**

40503642767. 36

40503642768. 29

40503642769. 21

40503642770. 48

**Question Number : 61 Question Id : 40503611816 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

If  $\int (e^{2x} + 2e^x - e^{-x} - 1) e^{(e^x + e^{-x})} dx$   
 $= g(x) e^{(e^x + e^{-x})} + c$ , where c is a constant

of integration, then g(0) is equal to :

**Options :**

40503642771. 1

40503642772. 2

40503642773.  $e$

40503642774.  $e^2$

**Question Number : 61 Question Id : 40503611816 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

$$\text{यदि } \int (e^{2x} + 2e^x - e^{-x} - 1) e^{(e^x + e^{-x})} dx$$

$= g(x) e^{(e^x + e^{-x})} + c$  है, जहाँ  $c$  एक समाकलन

अचर है, तो  $g(0)$  बराबर है :

**Options :**

40503642771.  $1$

40503642772.  $2$

40503642773.  $e$

40503642774.  $e^2$

**Question Number : 62 Question Id : 40503611817 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

$$\text{The value of } \int_{-\pi/2}^{\pi/2} \frac{1}{1 + e^{\sin x}} dx \text{ is :}$$

**Options :**

40503642775.  $\frac{3\pi}{2}$

40503642776.  $\frac{\pi}{2}$

40503642777.  $\frac{\pi}{4}$

40503642778.  $\pi$

**Question Number : 62 Question Id : 40503611817 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

$\int_{-\pi/2}^{\pi/2} \frac{1}{1 + e^{\sin x}} dx$  का मान है :

**Options :**

40503642775.  $\frac{3\pi}{2}$

40503642776.  $\frac{\pi}{2}$

40503642777.  $\frac{\pi}{4}$

40503642778.  $\pi$

**Question Number : 63 Question Id : 40503611818 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

If  $y = y(x)$  is the solution of the differential

equation  $\frac{5 + e^x}{2 + y} \cdot \frac{dy}{dx} + e^x = 0$  satisfying

$y(0) = 1$ , then a value of  $y(\log_e 13)$  is :

**Options :**

40503642779. 1

40503642780. -1

40503642781. 0

40503642782. 2

**Question Number : 63 Question Id : 40503611818 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

यदि अवकल समीकरण  $\frac{5 + e^x}{2 + y} \cdot \frac{dy}{dx} + e^x = 0$ ,

का हल  $y = y(x)$  है, जिसके लिए  $y(0) = 1$  है, तो  $y(\log_e 13)$  का एक मान है :

**Options :**

40503642779. 1

40503642780. -1

40503642781. 0

40503642782. 2

**Question Number : 64 Question Id : 40503611819 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

If the common tangent to the parabolas,  $y^2 = 4x$  and  $x^2 = 4y$  also touches the circle,  $x^2 + y^2 = c^2$ , then c is equal to :

**Options :**

40503642783.  $\frac{1}{\sqrt{2}}$

40503642784.  $\frac{1}{2}$

40503642785.  $\frac{1}{4}$

40503642786.  $\frac{1}{2\sqrt{2}}$

**Question Number : 64 Question Id : 40503611819 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

यदि परवलयों  $y^2 = 4x$  तथा  $x^2 = 4y$  की उभयनिष्ठ स्पर्शरेखा, वृत्त  $x^2 + y^2 = c^2$  को भी स्पर्श करती है, तो  $c$  बराबर है :

**Options :**

40503642783.  $\frac{1}{\sqrt{2}}$

40503642784.  $\frac{1}{2}$

40503642785.  $\frac{1}{4}$

40503642786.  $\frac{1}{2\sqrt{2}}$

**Question Number : 65 Question Id : 40503611820 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

If the co-ordinates of two points A and B are  $(\sqrt{7}, 0)$  and  $(-\sqrt{7}, 0)$  respectively and P is any point on the conic,  $9x^2 + 16y^2 = 144$ , then PA + PB is equal to :

**Options :**

40503642787. 16

40503642788. 6

40503642789. 9

40503642790. 8

**Question Number : 65 Question Id : 40503611820 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

यदि दो बिन्दुओं A तथा B के निर्देशांक क्रमशः  $(\sqrt{7}, 0)$  तथा  $(-\sqrt{7}, 0)$  हैं और शंकव (conic)  $9x^2 + 16y^2 = 144$  पर कोई बिन्दु P है, तो PA + PB बराबर है :

**Options :**

40503642787. 16

40503642788. 6

40503642789. 9

40503642790. 8

**Question Number : 66 Question Id : 40503611821 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

If  $(a, b, c)$  is the image of the point  $(1, 2, -3)$  in the line,

$$\frac{x+1}{2} = \frac{y-3}{-2} = \frac{z}{-1}, \text{ then } a+b+c \text{ is}$$

equal to :

**Options :**

40503642791. -1

40503642792. 1



40503642793. 2

40503642794. 3

**Question Number : 66 Question Id : 40503611821 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

यदि बिन्दु  $(1, 2, -3)$  का रेखा

$$\frac{x+1}{2} = \frac{y-3}{-2} = \frac{z}{-1} \text{ में प्रतिबिंब (a, b, c) है,}$$

तो  $a+b+c$  बराबर है :

**Options :**

40503642791. -1

40503642792. 1

40503642793. 2

40503642794. 3

**Question Number : 67 Question Id : 40503611822 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

If the volume of a parallelepiped, whose coterminus edges are given by the vectors

$$\vec{a} = \hat{i} + \hat{j} + n\hat{k}, \quad \vec{b} = 2\hat{i} + 4\hat{j} - n\hat{k} \quad \text{and}$$

$$\vec{c} = \hat{i} + n\hat{j} + 3\hat{k} \quad (n \geq 0), \text{ is } 158 \text{ cu. units,}$$

then :

**Options :**

40503642795.  $n=7$

40503642796.  $n=9$

$$40503642797. \quad \vec{b} \cdot \vec{c} = 10$$

$$40503642798. \quad \vec{a} \cdot \vec{c} = 17$$

**Question Number : 67 Question Id : 40503611822 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

यदि एक समांतर षट्फलक, जिसके एक ही शीर्ष से

जाने वाले किनारे (edges) सदिशों  $\vec{a} = \hat{i} + \hat{j} + n\hat{k}$ ,

$\vec{b} = 2\hat{i} + 4\hat{j} - n\hat{k}$  तथा  $\vec{c} = \hat{i} + n\hat{j} + 3\hat{k}$

( $n \geq 0$ ) द्वारा दिए गए हैं, का आयतन 158 घन इकाइयाँ है, तो :

**Options :**

$$40503642795. \quad n=7$$

$$40503642796. \quad n=9$$

$$40503642797. \quad \vec{b} \cdot \vec{c} = 10$$

$$40503642798. \quad \vec{a} \cdot \vec{c} = 17$$

**Question Number : 68 Question Id : 40503611823 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

The mean and variance of 7 observations are 8 and 16, respectively. If five observations are 2, 4, 10, 12, 14, then the absolute difference of the remaining two observations is :

**Options :**

$$40503642799. \quad 1$$

40503642800. 2

40503642801. 3

40503642802. 4

**Question Number : 68 Question Id : 40503611823 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

7 प्रेक्षणों का माध्य तथा प्रसरण क्रमशः 8 तथा 16 हैं।  
यदि पाँच प्रेक्षण 2, 4, 10, 12, 14 हैं, तो शेष दो प्रेक्षणों  
का निरपेक्ष अंतर है :

**Options :**

40503642799. 1

40503642800. 2

40503642801. 3

40503642802. 4

**Question Number : 69 Question Id : 40503611824 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

If S is the sum of the first 10 terms of the  
series

$$\tan^{-1}\left(\frac{1}{3}\right) + \tan^{-1}\left(\frac{1}{7}\right) + \tan^{-1}\left(\frac{1}{13}\right) + \tan^{-1}\left(\frac{1}{21}\right) + \dots,$$

then  $\tan(S)$  is equal to :

**Options :**

40503642803.  $\frac{5}{6}$

40503642804.  $\frac{10}{11}$

40503642805.  $-\frac{6}{5}$

40503642806.  $\frac{5}{11}$

**Question Number : 69 Question Id : 40503611824 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

यदि श्रेणी

$$\tan^{-1}\left(\frac{1}{3}\right) + \tan^{-1}\left(\frac{1}{7}\right) + \tan^{-1}\left(\frac{1}{13}\right) + \tan^{-1}\left(\frac{1}{21}\right) + \dots,$$

के प्रथम 10 पदों का योग S है, तो  $\tan(S)$  बराबर है :

**Options :**

40503642803.  $\frac{5}{6}$

40503642804.  $\frac{10}{11}$

40503642805.  $-\frac{6}{5}$

40503642806.  $\frac{5}{11}$

**Question Number : 70 Question Id : 40503611825 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

The negation of the Boolean expression

$x \leftrightarrow \sim y$  is equivalent to :

**Options :**

40503642807.  $(x \wedge \sim y) \vee (\sim x \wedge y)$

40503642808.  $(\sim x \wedge y) \vee (\sim x \wedge \sim y)$

40503642809.  $(x \wedge y) \wedge (\sim x \vee \sim y)$

40503642810.  $(x \wedge y) \vee (\sim x \wedge \sim y)$

**Question Number : 70 Question Id : 40503611825 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

बूले के व्यंजक  $x \leftrightarrow \sim y$  का निषेधन निम्न में से किस के समतुल्य है?

**Options :**

40503642807.  $(x \wedge \sim y) \vee (\sim x \wedge y)$

40503642808.  $(\sim x \wedge y) \vee (\sim x \wedge \sim y)$

40503642809.  $(x \wedge y) \wedge (\sim x \vee \sim y)$

40503642810.  $(x \wedge y) \vee (\sim x \wedge \sim y)$

**Sub-Section Number :**

2

**Sub-Section Id :**

405036832

**Question Shuffling Allowed :**

Yes

**Question Number : 71 Question Id : 40503611826 Question Type : SA Display Question Number : Yes Correct Marks : 4 Wrong Marks : 0**

The number of words, with or without meaning, that can be formed by taking 4 letters at a time from the letters of the word 'SYLLABUS' such that two letters are distinct and two letters are alike, is \_\_\_\_\_.

**Response Type : Numeric**

**Evaluation Required For SA : Yes**

**Show Word Count : Yes**

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.002

Question Number : 71 Question Id : 40503611826 Question Type : SA Display Question Number : Yes

Correct Marks : 4 Wrong Marks : 0

'SYLLABUS' शब्द के अक्षरों में से एक बार में 4 अक्षर लेकर बनाए जा सकने वाले शब्दों, अर्थपूर्ण या अर्थहीन, इस प्रकार कि दो अक्षर भिन्न हों तथा दो अक्षर एक समान हों, की संख्या है \_\_\_\_\_ ।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.002

Question Number : 72 Question Id : 40503611827 Question Type : SA Display Question Number : Yes

Correct Marks : 4 Wrong Marks : 0

The natural number  $m$ , for which the coefficient of  $x$  in the binomial expansion

of  $\left(x^m + \frac{1}{x^2}\right)^{22}$  is 1540, is \_\_\_\_\_.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.002

Question Number : 72 Question Id : 40503611827 Question Type : SA Display Question Number : Yes

Correct Marks : 4 Wrong Marks : 0

प्राकृत संख्या  $m$ , जिसके लिए  $\left(x^m + \frac{1}{x^2}\right)^{22}$  के द्विपद प्रसार में  $x$  का गुणांक 1540 है, है \_\_\_\_\_ ।

Response Type : Numeric

**Evaluation Required For SA : Yes**

**Show Word Count : Yes**

**Answers Type : Range**

**Text Areas : PlainText**

**Possible Answers :**

5 to 5.002

**Question Number : 73 Question Id : 40503611828 Question Type : SA Display Question Number : Yes**

**Correct Marks : 4 Wrong Marks : 0**

Let  $f(x) = x \cdot \left[ \frac{x}{2} \right]$ , for  $-10 < x < 10$ , where

$[t]$  denotes the greatest integer function.  
Then the number of points of discontinuity of  $f$  is equal to \_\_\_\_\_.

**Response Type : Numeric**

**Evaluation Required For SA : Yes**

**Show Word Count : Yes**

**Answers Type : Range**

**Text Areas : PlainText**

**Possible Answers :**

5 to 5.002

**Question Number : 73 Question Id : 40503611828 Question Type : SA Display Question Number : Yes**

**Correct Marks : 4 Wrong Marks : 0**

माना  $f(x) = x \cdot \left[ \frac{x}{2} \right]$ ,  $-10 < x < 10$ , है जहाँ  $[t]$

महत्तम पूर्णांक फलन है, तो  $f$  के असंतत बिन्दुओं की संख्या है \_\_\_\_\_।

**Response Type : Numeric**

**Evaluation Required For SA : Yes**

**Show Word Count : Yes**

**Answers Type : Range**

**Text Areas : PlainText**

**Possible Answers :**

5 to 5.002

**Question Number : 74 Question Id : 40503611829 Question Type : SA Display Question Number : Yes**

**Correct Marks : 4 Wrong Marks : 0**

If the line,  $2x - y + 3 = 0$  is at a distance  $\frac{1}{\sqrt{5}}$  and  $\frac{2}{\sqrt{5}}$  from the lines  $4x - 2y + \alpha = 0$  and  $6x - 3y + \beta = 0$ , respectively, then the sum of all possible values of  $\alpha$  and  $\beta$  is \_\_\_\_\_.

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Range

**Text Areas :** PlainText

**Possible Answers :**

5 to 5.002

**Question Number :** 74 **Question Id :** 40503611829 **Question Type :** SA Display **Question Number :** Yes  
**Correct Marks :** 4 **Wrong Marks :** 0

यदि रेखा  $2x - y + 3 = 0$ , रेखाओं  $4x - 2y + \alpha = 0$

तथा  $6x - 3y + \beta = 0$  से क्रमशः  $\frac{1}{\sqrt{5}}$  तथा  $\frac{2}{\sqrt{5}}$  की

दूरी पर है, तो  $\alpha$  तथा  $\beta$  के सभी संभव मानों का योग है \_\_\_\_\_।

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Range

**Text Areas :** PlainText

**Possible Answers :**

5 to 5.002

**Question Number :** 75 **Question Id :** 40503611830 **Question Type :** SA Display **Question Number :** Yes  
**Correct Marks :** 4 **Wrong Marks :** 0

Four fair dice are thrown independently 27 times. Then the expected number of times, at least two dice show up a three or a five, is \_\_\_\_\_.

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Range



**Text Areas :** PlainText

**Possible Answers :**

5 to 5.002

**Question Number : 75 Question Id : 40503611830 Question Type : SA Display Question Number : Yes**

**Correct Marks : 4 Wrong Marks : 0**

चार अनभिन्नत पासों को 27 बार स्वतंत्र रूप से फेंका जाता है। तो कम से कम दो पासों के तीन या पाँच दर्शाने की संभावना कितनी बार है?

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Range

**Text Areas :** PlainText

**Possible Answers :**

5 to 5.002