

National Testing Agency

Question Paper Name :	BTECH E 3rd Sep 2020 Shift 1
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BTECH

Group Number :	1
Group Id :	405036118
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

Mathematics

Section Id :	405036396
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 : 405036759
Question Shuffling Allowed : Yes

Question Number : 51 Question Id : 40503610906 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

Consider the two sets :

$A = \{m \in \mathbb{R} : \text{both the roots of } x^2 - (m+1)x + m + 4 = 0 \text{ are real}\}$ and

$B = [-3, 5)$.

Which of the following is not true ?

Options :

40503639671. $A \cup B = \mathbb{R}$

40503639672. $A \cap B = \{-3\}$

40503639673. $A - B = (-\infty, -3) \cup (5, \infty)$

40503639674. $B - A = (-3, 5)$

Question Number : 51 Question Id : 40503610906 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

निम्न दो समुच्चयों पर विचार कीजिए :

$A = \{m \in \mathbb{R} : x^2 - (m+1)x + m + 4 = 0 \text{ के दोनों मूल वास्तविक हैं}\}$, तथा $B = [-3, 5)$.

निम्न में से कौन सा सत्य नहीं है?

Options :

40503639671. $A \cup B = \mathbb{R}$

40503639672. $A \cap B = \{-3\}$

40503639673. $A - B = (-\infty, -3) \cup (5, \infty)$

40503639674. $B - A = (-3, 5)$

Question Number : 52 Question Id : 40503610907 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 α and β are the roots of the equation

$x^2 + px + 2 = 0$ and $\frac{1}{\alpha}$ and $\frac{1}{\beta}$ are the roots

of the equation $2x^2 + 2qx + 1 = 0$, then

$\left(\alpha - \frac{1}{\alpha}\right)\left(\beta - \frac{1}{\beta}\right)\left(\alpha + \frac{1}{\beta}\right)\left(\beta + \frac{1}{\alpha}\right)$ is equal

to :

Options :

40503639675. $\frac{9}{4}(9 - p^2)$

40503639676. $\frac{9}{4}(9 + p^2)$

40503639677. $\frac{9}{4}(9 + q^2)$

40503639678. $\frac{9}{4}(9 - q^2)$

Question Number : 52 Question Id : 40503610907 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 α तथा β , समीकरण $x^2 + px + 2 = 0$ के मूल

हैं तथा $\frac{1}{\alpha}$ तथा $\frac{1}{\beta}$, समीकरण $2x^2 + 2qx + 1 = 0$

के मूल हैं, तो

$\left(\alpha - \frac{1}{\alpha}\right)\left(\beta - \frac{1}{\beta}\right)\left(\alpha + \frac{1}{\beta}\right)\left(\beta + \frac{1}{\alpha}\right)$ बराबर

है :

Options :

40503639675. $\frac{9}{4}(9 - p^2)$

40503639676. $\frac{9}{4}(9 + p^2)$

40503639677. $\frac{9}{4}(9 + q^2)$

40503639678. $\frac{9}{4}(9 - q^2)$

Question Number : 53 Question Id : 40503610908 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 value of $(2 \cdot {}^1P_0 - 3 \cdot {}^2P_1 + 4 \cdot {}^3P_2 - \dots$ up to 51^{th} term) $+ (1! - 2! + 3! - \dots$ up to 51^{th} term) is equal to :

Options :

40503639679. $1 + (52)!$

40503639680. 1

40503639681. $1 + (51)!$

40503639682. $1 - 51(51)!$

Question Number : 53 Question Id : 40503610908 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

$(2 \cdot {}^1P_0 - 3 \cdot {}^2P_1 + 4 \cdot {}^3P_2 - \dots$ 51वें पद तक) $+ (1! - 2! + 3! - \dots$ 51वें पद तक) का मान बराबर है :

Options :

40503639679. $1 + (52)!$

40503639680. 1

40503639681. $1 + (51)!$

40503639682. $1 - 51(51)!$

Question Number : 54 Question Id : 40503610909 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 $\Delta = \begin{vmatrix} x-2 & 2x-3 & 3x-4 \\ 2x-3 & 3x-4 & 4x-5 \\ 3x-5 & 5x-8 & 10x-17 \end{vmatrix} =$

$Ax^3 + Bx^2 + Cx + D$, then $B + C$ is equal to :

Options :

40503639683. -3

40503639684. -1

40503639685. 1

40503639686. 9

Question Number : 54 Question Id : 40503610909 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

$$\text{यदि } \Delta = \begin{vmatrix} x-2 & 2x-3 & 3x-4 \\ 2x-3 & 3x-4 & 4x-5 \\ 3x-5 & 5x-8 & 10x-17 \end{vmatrix} =$$

$Ax^3 + Bx^2 + Cx + D$ है, तो $B + C$ बराबर है :

Options :

40503639683. -3

40503639684. -1

40503639685. 1

40503639686. 9

Question Number : 55 Question Id : 40503610910 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 number of integral terms in the

expansion of $\left(3^{\frac{1}{2}} + 5^{\frac{1}{8}}\right)^n$ is exactly 33, then

the least value of n is :

Options :

40503639687. 128

40503639688. 248

40503639689. 256

40503639690. 264

Question Number : 55 Question Id : 40503610910 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 $\left(3^{\frac{1}{2}} + 5^{\frac{1}{8}}\right)^n$ के प्रसार में पूर्णांकीय पदों की

संख्या मात्र 33 है, तो n का न्यूनतम मान है :

Options :

40503639687. 128

40503639688. 248

40503639689. 256

40503639690. 264

Question Number : 56 Question Id : 40503610911 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 first term of an A.P. is 3 and the sum of its first 25 terms is equal to the sum of its next 15 terms, then the common difference of this A.P. is :

Options :

40503639691. $\frac{1}{6}$

40503639692. $\frac{1}{4}$

40503639693. $\frac{1}{7}$

40503639694. $\frac{1}{5}$

Question Number : 56 Question Id : 40503610911 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 श्रेढ़ी का प्रथम पद 3 है तथा इसके प्रथम 25 पदों का योग, इसके अगले 15 पदों के योग के बराबर है, तो इस समांतर श्रेढ़ी का सार्वअंतर है :

Options :

40503639691. $\frac{1}{6}$

40503639692. $\frac{1}{4}$

40503639693. $\frac{1}{7}$

40503639694. $\frac{1}{5}$

Question Number : 57 Question Id : 40503610912 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 $y^2 + \log_e(\cos^2 x) = y$, $x \in \left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$,

then :

Options :

40503639695. $|y'(0)| + |y''(0)| = 3$

40503639696. $y''(0) = 0$

40503639697. $|y'(0)| + |y''(0)| = 1$

40503639698. $|y'(0)| = 2$

Question Number : 57 Question Id : 40503610912 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 $y^2 + \log_e(\cos^2 x) = y$, $x \in \left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$ है,

तो :

Options :

40503639695. $|y'(0)| + |y''(0)| = 3$

40503639696. $y''(0) = 0$

40503639697. $|y'(0)| + |y''(0)| = 1$

40503639698. $|y'(0)| = 2$

Question Number : 58 Question Id : 40503610913 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 $[t]$ denote the greatest integer $\leq t$. If for some $\lambda \in \mathbb{R} - \{0, 1\}$,

$$\lim_{x \rightarrow 0} \left| \frac{1 - x + |x|}{\lambda - x + [x]} \right| = L, \text{ then } L \text{ is equal to :}$$

Options :

40503639699. 2

40503639700. 1

40503639701. $\frac{1}{2}$

40503639702. 0

Question Number : 58 Question Id : 40503610913 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 $[t]$ महत्तम पूर्णांक $\leq t$ को दर्शाता है। यदि किसी $\lambda \in \mathbb{R} - \{0, 1\}$ के लिए

$$\lim_{x \rightarrow 0} \left| \frac{1 - x + |x|}{\lambda - x + [x]} \right| = L \text{ है, तो } L \text{ का मान है :}$$

Options :

40503639699. 2

40503639700. 1

40503639701. $\frac{1}{2}$

40503639702. 0

Question Number : 59 Question Id : 40503610914 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 function, $f(x) = (3x - 7)x^{2/3}$, $x \in \mathbb{R}$, is increasing for all x lying in :

Options :

40503639703. $\left(-\infty, \frac{14}{15}\right)$

40503639704. $\left(-\infty, -\frac{14}{15}\right) \cup (0, \infty)$

40503639705. $(-\infty, 0) \cup \left(\frac{14}{15}, \infty\right)$

40503639706. $(-\infty, 0) \cup \left(\frac{3}{7}, \infty\right)$

Question Number : 59 Question Id : 40503610914 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

फलन $f(x) = (3x - 7)x^{2/3}$, $x \in \mathbb{R}$, के वर्धमान होने के लिए, सभी x निम्नलिखित में से किस में स्थित है?

Options :

40503639703. $\left(-\infty, \frac{14}{15}\right)$

40503639704. $\left(-\infty, -\frac{14}{15}\right) \cup (0, \infty)$

40503639705. $(-\infty, 0) \cup \left(\frac{14}{15}, \infty\right)$

40503639706. $(-\infty, 0) \cup \left(\frac{3}{7}, \infty\right)$

Question Number : 60 Question Id : 40503610915 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

$\int_{-\pi}^{\pi} |\pi - |x|| dx$ is equal to :

Options :

40503639707. $\frac{\pi^2}{2}$

40503639708. $2\pi^2$

40503639709. π^2

40503639710. $\sqrt{2}\pi^2$

Question Number : 60 Question Id : 40503610915 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

$\int_{-\pi}^{\pi} |\pi - |x|| dx$ का मान है :

Options :

40503639707. $\frac{\pi^2}{2}$

40503639708. $2\pi^2$

40503639709. π^2

40503639710. $\sqrt{2}\pi^2$

Question Number : 61 Question Id : 40503610916 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 area (in sq. units) of the region
 $\{(x, y) : 0 \leq y \leq x^2 + 1, 0 \leq y \leq x + 1, \frac{1}{2} \leq x \leq 2\}$ is :

Options :

40503639711. $\frac{23}{6}$

40503639712. $\frac{23}{16}$

40503639713. $\frac{79}{16}$

40503639714. $\frac{79}{24}$

Question Number : 61 Question Id : 40503610916 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

क्षेत्र

$\{(x, y) : 0 \leq y \leq x^2 + 1, 0 \leq y \leq x + 1, \frac{1}{2} \leq x \leq 2\}$ का क्षेत्रफल (वर्ग इकाइयों में) है :

Options :

40503639711. $\frac{23}{6}$

$$40503639712. \frac{23}{16}$$

$$40503639713. \frac{79}{16}$$

$$40503639714. \frac{79}{24}$$

Question Number : 62 Question Id : 40503610917 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 solution curve of the differential

$$\text{equation, } (1 + e^{-x})(1 + y^2) \frac{dy}{dx} = y^2,$$

which passes through the point (0, 1), is :

Options :

$$40503639715. y^2 = 1 + y \log_e \left(\frac{1 + e^x}{2} \right)$$

$$40503639716. y^2 + 1 = y \left(\log_e \left(\frac{1 + e^x}{2} \right) + 2 \right)$$

$$40503639717. y^2 = 1 + y \log_e \left(\frac{1 + e^{-x}}{2} \right)$$

$$y^2 + 1 = y \left(\log_e \left(\frac{1 + e^{-x}}{2} \right) + 2 \right)$$

40503639718.

Question Number : 62 Question Id : 40503610917 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

अवकल समीकरण $(1 + e^{-x})(1 + y^2) \frac{dy}{dx} = y^2$

का हल वक्र, जो बिन्दु (0, 1) से होकर जाता है, है :

Options :

$$y^2 = 1 + y \log_e \left(\frac{1 + e^x}{2} \right)$$

40503639715.

$$y^2 + 1 = y \left(\log_e \left(\frac{1 + e^x}{2} \right) + 2 \right)$$

40503639716.

$$y^2 = 1 + y \log_e \left(\frac{1 + e^{-x}}{2} \right)$$

40503639717.

$$y^2 + 1 = y \left(\log_e \left(\frac{1 + e^{-x}}{2} \right) + 2 \right)$$

40503639718.

Question Number : 63 Question Id : 40503610918 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 P be a point on the parabola, $y^2 = 12x$ and N be the foot of the perpendicular drawn from P on the axis of the parabola. A line is now drawn through the mid-point M of PN, parallel to its axis which meets the parabola at Q. If the y -intercept of the line NQ is $\frac{4}{3}$, then :

Options :

40503639719. $MQ = \frac{1}{3}$

40503639720. $MQ = \frac{1}{4}$

40503639721. $PN = 3$

40503639722. $PN = 4$

Question Number : 63 Question Id : 40503610918 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 P परवलय, $y^2 = 12x$ पर एक बिन्दु है और P से परवलय के अक्ष पर डाले गए लम्ब का पाद N है। अब PN के मध्य-बिंदु M से एक सरल रेखा परवलय के अक्ष के समान्तर खींची जाती है जो परवलय को बिन्दु Q पर मिलती है। यदि रेखा NQ का y-अंतर्खंड $\frac{4}{3}$ है, तो :

Options :

40503639719. $MQ = \frac{1}{3}$

40503639720. $MQ = \frac{1}{4}$

40503639721. $PN = 3$

40503639722. $PN = 4$

Question Number : 64 Question Id : 40503610919 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 hyperbola having the transverse axis of length $\sqrt{2}$ has the same foci as that of the ellipse $3x^2 + 4y^2 = 12$, then this hyperbola does not pass through which of the following points ?

Options :

40503639723. $\left(\frac{1}{\sqrt{2}}, 0\right)$

40503639724. $\left(1, -\frac{1}{\sqrt{2}}\right)$

40503639725. $\left(\sqrt{\frac{3}{2}}, \frac{1}{\sqrt{2}}\right)$

40503639726. $\left(-\sqrt{\frac{3}{2}}, 1\right)$

Question Number : 64 Question Id : 40503610919 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 अतिपरवलय जिसके अनुप्रस्थ (transverse) अक्ष की लम्बाई $\sqrt{2}$ है और उसके नाभिकेन्द्र, दीर्घवृत्त $3x^2 + 4y^2 = 12$ के नाभिकेन्द्रों के बराबर हैं। तो अतिपरवलय निम्न में से किस बिन्दु से होकर नहीं जाता ?

Options :

40503639723. $\left(\frac{1}{\sqrt{2}}, 0\right)$

40503639724. $\left(1, -\frac{1}{\sqrt{2}}\right)$

40503639725. $\left(\sqrt{\frac{3}{2}}, \frac{1}{\sqrt{2}}\right)$

40503639726. $\left(-\sqrt{\frac{3}{2}}, 1\right)$

Question Number : 65 Question Id : 40503610920 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 foot of the perpendicular drawn from the point (4, 2, 3) to the line joining the points (1, -2, 3) and (1, 1, 0) lies on the plane :

Options :

40503639727. $x + 2y - z = 1$

40503639728. $x - 2y + z = 1$

40503639729. $x - y - 2z = 1$

40503639730. $2x + y - z = 1$

Question Number : 65 Question Id : 40503610920 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

बिन्दुओं $(1, -2, 3)$ और $(1, 1, 0)$ से होकर जाने वाली सरल रेखा पर बिन्दु $(4, 2, 3)$ से डाले गए लम्ब का पाद जिस समतल पर है, वह है :

Options :

40503639727. $x + 2y - z = 1$

40503639728. $x - 2y + z = 1$

40503639729. $x - y - 2z = 1$

40503639730. $2x + y - z = 1$

Question Number : 66 Question Id : 40503610921 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 lines

$$\vec{r} = (\hat{i} - \hat{j}) + l(2\hat{i} + \hat{k}) \text{ and}$$

$$\vec{r} = (2\hat{i} - \hat{j}) + m(\hat{i} + \hat{j} - \hat{k})$$

Options :

40503639731. intersect when $l = 1$ and $m = 2$

40503639732. intersect when $l = 2$ and $m = \frac{1}{2}$

40503639733. intersect for all values of l and m

do not intersect for any values of

l and m

40503639734.

Question Number : 66 Question Id : 40503610921 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

सरल रेखाएँ

$$\vec{r} = (\hat{i} - \hat{j}) + l(2\hat{i} + \hat{k}) \text{ तथा}$$

$$\vec{r} = (2\hat{i} - \hat{j}) + m(\hat{i} + \hat{j} - \hat{k})$$

Options :

काटती हैं जब $l=1$ तथा $m=2$

40503639731.

काटती हैं जब $l=2$ तथा $m = \frac{1}{2}$

40503639732.

l तथा m के सभी मानों के लिए काटती है

40503639733.

l तथा m के किसी भी मानों के लिए नहीं

काटती

40503639734.

Question Number : 67 Question Id : 40503610922 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

For the frequency distribution :

Variate (x) : $x_1 \quad x_2 \quad x_3 \dots x_{15}$

Frequency (f) : $f_1 \quad f_2 \quad f_3 \dots f_{15}$

where $0 < x_1 < x_2 < x_3 < \dots < x_{15} = 10$ and

$\sum_{i=1}^{15} f_i > 0$, the standard deviation cannot

be :

Options :

40503639735. ⁶

40503639736. ⁴

40503639737. ²

40503639738. ¹

Question Number : 67 Question Id : 40503610922 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

बारंबारता बंटन

चर (x) : $x_1 \quad x_2 \quad x_3 \dots x_{15}$

बारंबारता (f) : $f_1 \quad f_2 \quad f_3 \dots f_{15}$

जहाँ $0 < x_1 < x_2 < x_3 < \dots < x_{15} = 10$ तथा

$\sum_{i=1}^{15} f_i > 0$ है, का मानक विचलन, निम्न में से

कौन-सा नहीं हो सकता ?

Options :

40503639735. $\frac{6}{6}$

40503639736. $\frac{4}{4}$

40503639737. $\frac{2}{2}$

40503639738. $\frac{1}{1}$

Question Number : 68 Question Id : 40503610923 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 die is thrown two times and the sum of the scores appearing on the die is observed to be a multiple of 4. Then the conditional probability that the score 4 has appeared atleast once is :

Options :

40503639739. $\frac{1}{3}$

40503639740. $\frac{1}{9}$

40503639741. $\frac{1}{8}$

40503639742. $\frac{1}{4}$

Question Number : 68 Question Id : 40503610923 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 पासा दो बार फेंका जाता है तथा पासों पर आयी संख्याओं का योगफल 4 का एक गुणज है। तो संख्या 4 के कम से कम एक बार आने की सप्रतिबंध प्रायिकता है :

Options :

40503639739. $\frac{1}{3}$

40503639740. $\frac{1}{9}$

40503639741. $\frac{1}{8}$

40503639742. $\frac{1}{4}$

Question Number : 69 Question Id : 40503610924 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

$2\pi - \left(\sin^{-1} \frac{4}{5} + \sin^{-1} \frac{5}{13} + \sin^{-1} \frac{16}{65} \right)$ is

equal to :

Options :

40503639743. $\frac{5\pi}{4}$

40503639744. $\frac{3\pi}{2}$

40503639745. $\frac{7\pi}{4}$

40503639746. $\frac{\pi}{2}$

Question Number : 69 Question Id : 40503610924 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

$$2\pi - \left(\sin^{-1} \frac{4}{5} + \sin^{-1} \frac{5}{13} + \sin^{-1} \frac{16}{65} \right)$$

बराबर है :

Options :

40503639743. $\frac{5\pi}{4}$

40503639744. $\frac{3\pi}{2}$

40503639745. $\frac{7\pi}{4}$

40503639746. $\frac{\pi}{2}$

Question Number : 70 Question Id : 40503610925 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 proposition $p \rightarrow \sim (p \wedge \sim q)$ is equivalent to :

Options :

40503639747. q

40503639748. $(\sim p) \vee (\sim q)$

40503639749. $(\sim p) \vee q$

40503639750. $(\sim p) \wedge q$

Question Number : 70 Question Id : 40503610925 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

साध्य (proposition) $p \rightarrow \sim (p \wedge \sim q)$ निम्न में से किसके तुल्य है ?

Options :

40503639747. q

40503639748. $(\sim p) \vee (\sim q)$

40503639749. $(\sim p) \vee q$

40503639750. $(\sim p) \wedge q$

Sub-Section Number :

2

Sub-Section Id :

405036760

Question Shuffling Allowed :

Yes

Question Number : 71 Question Id : 40503610926 Question Type : SA Display Question Number : Yes

Correct Marks : 4 Wrong Marks : 0

If $\left(\frac{1+i}{1-i}\right)^{m/2} = \left(\frac{1+i}{i-1}\right)^{n/3} = 1$, $(m, n \in \mathbb{N})$

then the greatest common divisor of the least values of m and n 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 : 40503610926 Question Type : SA Display Question Number : Yes

Correct Marks : 4 Wrong Marks : 0

यदि $\left(\frac{1+i}{1-i}\right)^{m/2} = \left(\frac{1+i}{i-1}\right)^{n/3} = 1$ है, $(m, n \in \mathbb{N})$

तो m तथा n के न्यूनतम मानों का महत्तम उभयनिष्ठ भाजक 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 : 40503610927 Question Type : SA Display Question Number : Yes

Correct Marks : 4 Wrong Marks : 0

Let $A = \begin{bmatrix} x & 1 \\ 1 & 0 \end{bmatrix}$, $x \in \mathbb{R}$ and $A^4 = [a_{ij}]$. If

$a_{11} = 109$, then a_{22} 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 : 72 Question Id : 40503610927 Question Type : SA Display Question Number : Yes

Correct Marks : 4 Wrong Marks : 0

माना $A = \begin{bmatrix} x & 1 \\ 1 & 0 \end{bmatrix}$, $x \in \mathbb{R}$ तथा $A^4 = [a_{ij}]$ है।

यदि $a_{11} = 109$ है, तो a_{22} बराबर 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 : 40503610928 Question Type : SA Display Question Number : Yes

Correct Marks : 4 Wrong Marks : 0

The value of

$$(0.16)^{\log_{2.5}\left(\frac{1}{3} + \frac{1}{3^2} + \frac{1}{3^3} + \dots \text{to } \infty\right)} \text{ is equal to}$$

_____.

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 : 40503610928 Question Type : SA Display Question Number : Yes

Correct Marks : 4 Wrong Marks : 0

$$(0.16)^{\log_{2.5}\left(\frac{1}{3} + \frac{1}{3^2} + \frac{1}{3^3} + \dots \text{to } \infty\right)} \text{ का मान है}$$

_____।

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 : 40503610929 Question Type : SA Display Question Number : Yes

Correct Marks : 4 Wrong Marks : 0

If $\lim_{x \rightarrow 0} \left\{ \frac{1}{x^8} \left(1 - \cos \frac{x^2}{2} - \cos \frac{x^2}{4} + \cos \frac{x^2}{2} \cos \frac{x^2}{4} \right) \right\} = 2^{-k}$, then the value of

k 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 : 40503610929 Question Type : SA Display Question Number : Yes

Correct Marks : 4 Wrong Marks : 0

यदि $\lim_{x \rightarrow 0} \left\{ \frac{1}{x^8} \left(1 - \cos \frac{x^2}{2} - \cos \frac{x^2}{4} + \cos \frac{x^2}{2} \cos \frac{x^2}{4} \right) \right\} = 2^{-k}$, तो k का मान 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 : 40503610930 Question Type : SA Display Question Number : Yes

Correct Marks : 4 Wrong Marks : 0

The diameter of the circle, whose centre lies on the line $x + y = 2$ in the first quadrant and which touches both the lines $x = 3$ and $y = 2$, 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 : 40503610930 Question Type : SA Display Question Number : Yes

Correct Marks : 4 Wrong Marks : 0

वृत्त, जिसका केन्द्र प्रथम चतुर्थांश में रेखा $x + y = 2$ पर है तथा जो दोनों रेखाओं $x = 3$ तथा $y = 2$ को स्पर्श करता है, का व्यास 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