

# National Testing Agency

|                              |                                    |
|------------------------------|------------------------------------|
| <b>Question Paper Name :</b> | Statistics 22nd March 2024 Shift 3 |
| <b>Subject Name :</b>        | Statistics                         |
| <b>Creation Date :</b>       | 2024-03-23 12:55:32                |
| <b>Duration :</b>            | 105                                |
| <b>Total Marks :</b>         | 300                                |
| <b>Display Marks:</b>        | Yes                                |

## Statistics

|                                      |           |
|--------------------------------------|-----------|
| <b>Group Number :</b>                | 1         |
| <b>Group Id :</b>                    | 680191161 |
| <b>Group Maximum Duration :</b>      | 0         |
| <b>Group Minimum Duration :</b>      | 105       |
| <b>Show Attended Group? :</b>        | No        |
| <b>Edit Attended Group? :</b>        | No        |
| <b>Break time :</b>                  | 0         |
| <b>Group Marks :</b>                 | 300       |
| <b>Is this Group for Examiner? :</b> | No        |
| <b>Examiner permission :</b>         | Cant View |
| <b>Show Progress Bar? :</b>          | No        |

## Statistics

|                         |           |
|-------------------------|-----------|
| <b>Section Id :</b>     | 680191194 |
| <b>Section Number :</b> | 1         |

|   |           |
|---|-----------|
| <b>Section type :</b>   | Online    |
| <b>Mandatory or Optional :</b>                                      | Mandatory |
| <b>Number of Questions :</b>  | 75        |
| <b>Number of Questions to be attempted :</b>                        | 75        |
| <b>Section Marks :</b>  | 300       |
| <b>Enable Mark as Answered Mark for Review and Clear Response :</b> | Yes       |
| <b>Maximum Instruction Time :</b>                                   | 0         |
| <b>Sub-Section Number :</b>   | 1         |
| <b>Sub-Section Id :</b>   | 680191275 |
| <b>Question Shuffling Allowed :</b>                                 | Yes       |
| <b>Is Section Default? :</b>  | null      |

**Question Number : 1 Question Id : 68019112271 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

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

$$\lim_{x \rightarrow \infty} \frac{1}{n} \left\{ 1 + 2^{\frac{1}{2}} + 3^{\frac{1}{3}} + \dots + n^{\frac{1}{n}} \right\} \text{ is equal to}$$

1. 0
2. 1
3. 3
4.  $\infty$

**Options :**

- 68019148401. 1
- 68019148402. 2
- 68019148403. 3
- 68019148404. 4

**Question Number : 1 Question Id : 68019112271 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

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

$\lim_{x \rightarrow \infty} \frac{1}{n} \left\{ 1 + 2^{\frac{1}{2}} + 3^{\frac{1}{3}} + \dots + n^{\frac{1}{n}} \right\}$  के समतुल्य है

1. 0
2. 1
3. 3
4.  $\infty$

**Options :**

68019148401. 1

68019148402. 2

68019148403. 3

68019148404. 4

**Question Number : 2 Question Id : 68019112272 Question Type : MCQ Option Shuffling : No 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  $\langle x_n \rangle$  be a real sequence such that  $\lim_{n \rightarrow \infty} \frac{a_{n+1}}{a_n} = l$  where  $|l| < 1$  then  $\lim_{n \rightarrow \infty} a_n =$  \_\_\_\_\_.

1. 0
2. 1
3.  $\frac{1}{2}$
4.  $\infty$

**Options :**

68019148405. 1

68019148406. 2

68019148407. 3

68019148408. 4

**Question Number : 2 Question Id : 68019112272 Question Type : MCQ Option Shuffling : No 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  $\langle x_n \rangle$  एक वास्तविक अनुक्रम है कि  $\lim_{n \rightarrow \infty} \frac{a_{n+1}}{a_n} = l$  जहाँ  $|l| < 1$  तो  $\lim_{n \rightarrow \infty} a_n =$

\_\_\_\_\_.

1. 0
2. 1
3.  $\frac{1}{2}$
4.  $\infty$

**Options :**

68019148405. 1

68019148406. 2

68019148407. 3

68019148408. 4

**Question Number : 3 Question Id : 68019112273 Question Type : MCQ Option Shuffling : No 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 real series  $\sum_{n=1}^{\infty} \frac{n^2 - 1}{n^2 + 1} x^n, x > 0$  is

1. Convergent if  $x > 1$
2. Convergent if  $x \geq 1$
3. Convergent if  $x < 1$
4. Convergent if  $x \leq 1$

**Options :**

68019148409. 1

68019148410. 2

68019148411. 3

68019148412. 4

**Question Number : 3 Question Id : 68019112273 Question Type : MCQ Option Shuffling : No Is**

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

**Instruction Time : 0**

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

वास्तविक श्रृंखला  $\sum_{n=1}^{\infty} \frac{n^2 - 1}{n^2 + 1} x^n, x > 0$  है

1. अभिसारी यदि  $x > 1$
2. अभिसारी यदि  $x \geq 1$
3. अभिसारी यदि  $x < 1$
4. अभिसारी यदि  $x \leq 1$

**Options :**

68019148409. 1

68019148410. 2

68019148411. 3

68019148412. 4

**Question Number : 4 Question Id : 68019112274 Question Type : MCQ Option Shuffling : No 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). A bounded sequence of real number which does not converge has atleast two limit points  
(B). An unbounded of real number from below then  $-\infty$  is a limit point of the sequence  
(C).  $\lim_{n \rightarrow \infty} \sqrt[n]{a} = 1, \text{if } a < 0$   
(D). A sequence  $\langle x_n \rangle$  defined as  $x_{n+1} = \sqrt{3x_n}, x_1 = 1, \forall n \geq 1$  converges to zero

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

1. A, C, D
2. A, B
3. A, B, C
4. B, C, D

**Options :**

68019148413. 1

68019148414. 2

68019148415. 3

68019148416. 4

**Question Number : 4 Question Id : 68019112274 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

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

इन विकल्पों में से कौन से सही है।

(A). वास्तविक संख्या का एक सीमित अनुक्रम जो अभिसरण नहीं करता है, उसके कम से कम दो सीमा बिंदु होते हैं।

(B).  $-\infty$  से नीचे वास्तविक संख्या के किसी असीमांकित के अनुक्रम का एक सीमा बिंदु है।

(C).  $\lim_{n \rightarrow \infty} \sqrt[n]{a} = 1, \text{ if } a < 0$

(D). एक अनुक्रम  $\langle x_n \rangle$  को  $x_{n+1} = \sqrt{3x_n}, x_1 = 1, \forall n \geq 1$  के रूप में परिभाषित किया गया है जो शून्य में अभिसारी हो जाता है।

नीचे दिए गए विकल्पों में से सही उत्तर चुनें।

1. A, C, D
2. A, B
3. A, B, C
4. B, C, D

**Options :**

68019148413. 1

68019148414. 2

68019148415. 3

68019148416. 4

**Question Number : 5 Question Id : 68019112275 Question Type : MCQ Option Shuffling : No 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  $Ax = b$  be non-homogenous system of linear equations. The augmented matrix  $[A : b]$  is given by

$$\begin{bmatrix} 1 & 1 & -2 & 1 & 1 \\ -1 & 2 & 3 & -1 & 0 \\ 0 & 3 & 1 & 0 & -1 \end{bmatrix}$$

Which of the following statement is true?

1. Rank of A is 3
2. The system has no solution
3. The system has unique solution
4. The system has infinite number of solution

**Options :**

68019148417. 1

68019148418. 2

68019148419.3

68019148420.4

**Question Number : 5 Question Id : 68019112275 Question Type : MCQ Option Shuffling : No Is**

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

**Instruction Time : 0**

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

मान लीजिए कि  $Ax = b$  रेखिक समीकरणों की गैर-समरूप प्रणाली है। संवर्धित मैट्रिक्स  $[A : b]$  द्वारा दिया गया है

$$\left[ \begin{array}{cccc|c} 1 & 1 & -2 & 1 & 1 \\ -1 & 2 & 3 & -1 & 0 \\ 0 & 3 & 1 & 0 & -1 \end{array} \right]$$

निम्नलिखित में से कौन सा कथन सत्य है?

1. A की रैंक 3 है
2. व्यवस्था के पास कोई समाधान नहीं है
3. इस प्रणाली के पास अनूठा समाधान है
4. प्रणाली में अनंत संख्या में समाधान हैं

**Options :**

68019148417.1

68019148418.2

68019148419.3

68019148420.4

**Question Number : 6 Question Id : 68019112276 Question Type : MCQ Option Shuffling : No 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 function  $f(x)$  defined on  $\mathbb{R}$  by  $f(x) = \begin{cases} x; & x \text{ is rational number} \\ -x; & x \text{ is irrational number} \end{cases}$  is

1. discontinuous at every real numbers
2. discontinuous at  $x = 0$
3. continues at  $x = 0$
4. continuous at all non-zero real numbers

**Options :**

68019148421.1

68019148422. 2

68019148423. 3

68019148424. 4

**Question Number : 6 Question Id : 68019112276 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

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

कोई फलन  $f(x), f(x) = \begin{cases} x; x \text{ परिमेय संख्या है} \\ x; x \text{ अपरिमेय संख्या है} \end{cases}$  द्वारा एक परिभाषित है

1. प्रत्येक वास्तविक संख्या पर असंतत
2.  $x = 0$  पर असंतत
3.  $x = 0$  पर संतत
4. सभी गैर-शून्य वास्तविक संख्याओं पर संतत

**Options :**

68019148421. 1

68019148422. 2

68019148423. 3

68019148424. 4

**Question Number : 7 Question Id : 68019112277 Question Type : MCQ Option Shuffling : No 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<br>Function |               | LIST II<br>Their Series Expansion |   |
|--------------------|---------------|-----------------------------------|---|
| A.                 | $\log(1+x)$   | I.                                | $1 - \frac{1}{2} + \frac{1}{3} - \frac{1}{4} + \dots$                           |
| B.                 | $\cos x$      | II.                               | $\frac{x^2}{2} + \frac{x^4}{12} + \dots$  |
| C.                 | $\log 2$      | III.                              | $x - \frac{x^2}{2} + \frac{x^3}{3} - \frac{x^4}{4} + \dots$ for $-1 < x \leq 1$ |
| D.                 | $\log \sec x$ | IV.                               | $1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \frac{x^6}{6!} + \dots \forall x \in R$  |

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

1. A-IV, B-III, C-I, D-II
2. A-IV, B-I, C-III, D-II
3. A-III, B-IV, C-I, D-II
4. A-II, B-III, C-I, D-IV

**Options :**

68019148425. 1

68019148426. 2

68019148427. 3

68019148428. 4

**Question Number : 7 Question Id : 68019112277 Question Type : MCQ Option Shuffling : No 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 के साथ सूची-II को सुमेलित करें

| सूची I<br>फलन |               | सूची II<br>उनका श्रृंखला प्रसार |  |
|---------------|---------------|---------------------------------|--|
| A.            | $\log(1+x)$   | I.                              | $1 - \frac{1}{2} + \frac{1}{3} - \frac{1}{4} + \dots$                                  |
| B.            | $\cos x$      | II.                             | $\frac{x^2}{2} + \frac{x^4}{12} + \dots$   |
| C.            | $\log 2$      | III.                            | $x - \frac{x^2}{2} + \frac{x^3}{3} - \frac{x^4}{4} + \dots \text{ for } -1 < x \leq 1$ |
| D.            | $\log \sec x$ | IV.                             | $1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \frac{x^6}{6!} + \dots \forall x \in R$         |

नीचे दिए गए विकल्पों में से सही उत्तर चुनें।

1. A-IV, B-III, C-I, D-II
2. A-IV, B-I, C-III, D-II
3. A-III, B-IV, C-I, D-II
4. A-II, B-III, C-I, D-IV

**Options :**

68019148425. 1

68019148426. 2

68019148427. 3

68019148428. 4

**Question Number : 8 Question Id : 68019112278 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

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

$$\lim_{x \rightarrow 0} \frac{(1+x)^{\frac{1}{x}} - e}{x} \text{ is}$$

1. e
2. -e
3.  $\frac{e}{2}$
4.  $-\frac{e}{2}$

**Options :**

68019148429. 1

68019148430. 2

68019148431. 3

68019148432. 4

**Question Number : 8 Question Id : 68019112278 Question Type : MCQ Option Shuffling : No Is**

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

**Instruction Time : 0**

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

$$\lim_{x \rightarrow 0} \frac{(1+x)^{\frac{1}{x}} - e}{x}$$

1. e
2. -e
3.  $\frac{e}{2}$
4.  $-\frac{e}{2}$

**Options :**

68019148429. 1

68019148430. 2

68019148431. 3

68019148432. 4

**Question Number : 9 Question Id : 68019112279 Question Type : MCQ Option Shuffling : No 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 function  $f(x) = (x - 3)^5 (x + 1)^4$  has

1.  $x = -1$  is point of maxima and  $x = \frac{7}{9}$  is point of minima
2.  $x = \frac{7}{2}$  is point of maxima and  $x = -1$  is point of minima
3.  $x = -1$  and  $x = 3$  are point of maxima and  $x = \frac{7}{9}$  is point of minima
4. neither a point of maxima nor a point of minima

**Options :**

68019148433. 1

68019148434. 2

68019148435. 3

68019148436. 4

**Question Number : 9 Question Id : 68019112279 Question Type : MCQ Option Shuffling : No 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  $f(x) = (x - 3)^5 (x + 1)^4$  है

1.  $x = -1$  अधिकतम का बिंदु है और  $x = \frac{7}{9}$  न्यूनतम का बिंदु है
2.  $x = \frac{7}{2}$  अधिकतम का बिंदु है और  $x = -1$  न्यूनतम का बिंदु है
3.  $x = -1$  और  $x = 3$  अधिकतम का बिंदु हैं और  $x = \frac{7}{9}$  न्यूनतम का बिन्दु है
4. न तो अधिकतम का एक बिंदु और न ही न्यूनतम का एक बिंदु

**Options :**

68019148433. 1

68019148434. 2

68019148435. 3

68019148436. 4

**Question Number : 10 Question Id : 68019112280 Question Type : MCQ Option Shuffling : No**

**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 point of local minima of the function  $f(x, y) = x^4 + y^4 - 2x^2 + 4xy - 2y^2$  is

1.  $(\sqrt{2}, -\sqrt{2})$
2.  $(-\sqrt{2}, -\sqrt{2})$
3.  $(\sqrt{2}, \sqrt{2})$
4.  $(0, 0)$

**Options :**

68019148437. 1

68019148438. 2

68019148439. 3

68019148440. 4

Question Number : 10 Question Id : 68019112280 Question Type : MCQ Option Shuffling : No

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  $f(x,y) = x^4 + y^4 - 2x^2 + 4xy - 2y^2$  का स्थानीय न्यूनतम बिंदु है

1.  $(\sqrt{2}, -\sqrt{2})$
2.  $(-\sqrt{2}, -\sqrt{2})$
3.  $(\sqrt{2}, \sqrt{2})$
4.  $(0, 0)$

Options :

68019148437. 1

68019148438. 2

68019148439. 3

68019148440. 4

Question Number : 11 Question Id : 68019112281 Question Type : MCQ Option Shuffling : No

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 region R is bounded by  $x = 0, x = 2, y = x$  and  $y = x + 2$  then  $\iint_R (x + y) dy dx$  is equal to

1. 3 units
2. 6 units
3. 9 units
4. 12 unit

Options :

68019148441. 1

68019148442. 2

68019148443. 3

68019148444. 4

Question Number : 11 Question Id : 68019112281 Question Type : MCQ Option Shuffling : No

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

**Minimum Instruction Time : 0**

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

क्षेत्र  $R$   $x = 0$ ,  $x = 2$ ,  $y = x$  और  $y = x + 2$  द्वारा परिबद्ध है तब  $\iint_R (x + y) dy dx$  समतुल्य है

1. 3 इकाइयाँ
2. 6 इकाइयाँ
3. 9 इकाइयाँ
4. 12 इकाइयाँ

**Options :**

68019148441. 1

68019148442. 2

68019148443. 3

68019148444. 4

**Question Number : 12 Question Id : 68019112282 Question Type : MCQ Option Shuffling : No**

**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 region  $R$  be bounded by  $x = 0$ ,  $y = 0$ ,  $z = 0$  and  $x + y + z = a$  ( $a > 0$ ) then the value of

$$\iiint_R (x^2 + y^2 + z^2) dx dy dz \text{ is}$$

1.  $a^5/20$
2.  $a^5/10$
3.  $a^5/5$
4.  $a^5/2$

**Options :**

68019148445. 1

68019148446. 2

68019148447. 3

68019148448. 4

**Question Number : 12 Question Id : 68019112282 Question Type : MCQ Option Shuffling : No**

**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  $R$  क्षेत्र  $x = 0, y = 0, z = 0$  और  $x + y + z = a$  ( $a > 0$ ) से घिरा हुआ है, तब

$\iiint_R (x^2 + y^2 + z^2) dx dy dz$  का मान है।

1.  $a^5/20$
2.  $a^5/10$
3.  $a^5/5$
4.  $a^5/2$

**Options :**

68019148445. 1

68019148446. 2

68019148447. 3

68019148448. 4

**Question Number : 13 Question Id : 68019112283 Question Type : MCQ Option Shuffling : No**

**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 system of linear equation  $x + y + z = 6$   
 $x + 2y + 3z = 10$   
 $x + 2y + \lambda z = \mu$   
has infinite number of solution. The value of  $\lambda$  and  $\mu$  are

1.  $\lambda = 3, \mu = -10$
2.  $\lambda = 3, \mu = 10$
3.  $\lambda \neq 3$ , whatever  $\mu$  may be
4.  $\lambda = 3, \mu \neq 10$

**Options :**

68019148449. 1

68019148450. 2

68019148451. 3

68019148452. 4

Question Number : 13 Question Id : 68019112283 Question Type : MCQ Option Shuffling : No

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

रैखिक समीकरण का निकाय 
$$\begin{aligned} x + y + z &= 6 \\ x + 2y + 3z &= 10 \\ x + 2y + \lambda z &= \mu \end{aligned}$$
 के अनंत संख्या में समाधान है।  $\lambda$  और  $\mu$  का मान है।

1.  $\lambda = 3, \mu = -10$
2.  $\lambda = 3, \mu = 10$
3.  $\lambda \neq 3$ , जो भी  $\mu$  संभव हो सकता है
4.  $\lambda = 3, \mu \neq 10$

Options :

68019148449. 1

68019148450. 2

68019148451. 3

68019148452. 4

Question Number : 14 Question Id : 68019112284 Question Type : MCQ Option Shuffling : No

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

$$f(x) = \begin{cases} x^2 \sin \frac{1}{x}, & \text{if } x \neq 0 \\ 0 & \text{if } x = 0 \end{cases}, \text{ then}$$

1.  $f'(x)$  is continue at  $x = 0$
2.  $f''(x)$  is continue at  $x = 0$
3.  $f'(0)$  exists
4.  $f''(0)$  exists

Options :

68019148453. 1

68019148454. 2

68019148455. 3

68019148456. 4



Question Number : 14 Question Id : 68019112284 Question Type : MCQ Option Shuffling : No  
Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A  
Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

माना  $f(x) = \begin{cases} x^2 \sin \frac{1}{x}, & \text{यदि } x \neq 0 \\ 0 & , \text{ यदि } x = 0 \end{cases}$

1.  $f'(x)$  पर निरंतर है,  $x = 0$
2.  $f''(x)$  निरंतर है,  $x = 0$
3.  $f'(0)$  मौजूद है
4.  $f''(0)$  मौजूद है

Options :

68019148453. 1

68019148454. 2

68019148455. 3

68019148456. 4

Question Number : 15 Question Id : 68019112285 Question Type : MCQ Option Shuffling : No  
Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A  
Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Consider the following two series then

$$S_1 = \sum_{k=1}^{\infty} \frac{1}{(k+1)(k+3)}, S_2 = \sum_{k=1}^{\infty} \frac{1}{\sqrt{(k+1)}\sqrt{(k+3)}}$$

1. S1 and S2 converge
2. S1 diverges S2 converge
3. S1 converges S2 converge
4. S1 and S2 diverge

Options :

68019148457. 1

68019148458. 2

68019148459. 3

68019148460. 4

**Question Number : 15 Question Id : 68019112285 Question Type : MCQ Option Shuffling : No**

**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 दो श्रृंखलाओं पर विचार करें

$$S_1 = \sum_{k=1}^{\infty} \frac{1}{(k+1)(k+3)}, S_2 = \sum_{k=1}^{\infty} \frac{1}{\sqrt{(k+1)}\sqrt{(k+3)}} \text{ तब}$$

1.  $S_1$  और  $S_2$  अभिसरण करें
2.  $S_1$  अलग हो जाता है और  $S_2$  मिलाते हैं
3.  $S_1$  मिलाते हैं  $S_2$  अलग हो जाता है
4.  $S_1$  और  $S_2$  अलग हो जाते हैं।

**Options :**

68019148457. 1

68019148458. 2

68019148459. 3

68019148460. 4

**Question Number : 16 Question Id : 68019112286 Question Type : MCQ Option Shuffling : No**

**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 solution of  $\frac{d^2y}{dx^2} - 4\frac{dy}{dx} + 13y = e^{2x} \cos 3x$

where  $c_1$  and  $c_2$  are arbitrary constants

1.  $y = e^{2x}(c_1 \cos 3x + c_2 \sin 3x) - \frac{1}{6} x e^{2x} \sin 3x$
2.  $y = e^{3x}(c_1 \cos 2x + c_2 \sin 2x) + \frac{1}{6} x e^{2x} \sin 3x$
3.  $y = e^{2x}(c_1 \cos 3x + c_2 \sin 3x) + \frac{1}{6} x e^{2x} \sin 3x$
4.  $y = e^{3x}(c_1 \cos 2x + c_2 \sin 2x) - \frac{1}{6} x e^{2x} \sin 3x$

**Options :**

68019148461. 1

68019148462. 2

68019148463. 3

68019148464. 4

**Question Number : 16 Question Id : 68019112286 Question Type : MCQ Option Shuffling : No**

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

**Minimum Instruction Time : 0**

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

$\frac{d^2y}{dx^2} - 4\frac{dy}{dx} + 13y = e^{2x} \cos 3x$  का समाधान  
जहाँ  $C_1$  और  $C_2$  स्वेच्छ नियतांक है

1.  $y = e^{2x}(c_1 \cos 3x + c_2 \sin 3x) - \frac{1}{6} x e^{2x} \sin 3x$
2.  $y = e^{3x}(c_1 \cos 2x + c_2 \sin 2x) + \frac{1}{6} x e^{2x} \sin 3x$
3.  $y = e^{2x}(c_1 \cos 3x + c_2 \sin 3x) + \frac{1}{6} x e^{2x} \sin 3x$
4.  $y = e^{3x}(c_1 \cos 2x + c_2 \sin 2x) - \frac{1}{6} x e^{2x} \sin 3x$

**Options :**

68019148461. 1

68019148462. 2

68019148463. 3

68019148464. 4

**Question Number : 17 Question Id : 68019112287 Question Type : MCQ Option Shuffling : No**

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

**Minimum Instruction Time : 0**

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

Solution of the differential equation  $\frac{dy}{dx} = \frac{y+x-2}{y-x-4}$  is  
where  $c$  is an arbitrary constant

1.  $x^2 - y^2 - 4x - 8y - 14 = c$
2.  $x^2 + 2xy - 4x - 8y - 14 = c$
3.  $x^2 + 2xy - y^2 - 4x + 8y - 14 = c$
4.  $x^2 - 2xy - y^2 - 4x - 8y - 14 = c$

**Options :**

68019148465. 1

68019148466. 2

68019148467. 3

68019148468. 4

**Question Number : 17 Question Id : 68019112287 Question Type : MCQ Option Shuffling : No**

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

**Minimum Instruction Time : 0**

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

अवकल समीकरण  $\frac{dy}{dx} = \frac{y+x-2}{y-x-4}$  का समाधान है,  
जहाँ  $c$  स्वेच्छ नियतांक है

1.  $x^2 - y^2 - 4x - 8y - 14 = c$

2.  $x^2 + 2xy - 4x - 8y - 14 = c$

3.  $x^2 + 2xy - y^2 - 4x + 8y - 14 = c$

4.  $x^2 - 2xy - y^2 - 4x - 8y - 14 = c$

**Options :**

68019148465. 1

68019148466. 2

68019148467. 3

68019148468. 4

**Question Number : 18 Question Id : 68019112288 Question Type : MCQ Option Shuffling : No**

**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 A is a skew-Hermitian matrix then for matrix B of appropriate order  $B^\theta A B$  is a ...  
where  $B^\theta$  is transpose conjugate of B

1. Hermitian matrix

2. Skew - Hermitian matrix

3. Either Hermitian or skew- Hermitian matrix

4. Neither Hermitian nor skew- Hermitian matrix

**Options :**

68019148469. 1

68019148470. 2

68019148471. 3

68019148472. 4

**Question Number : 18 Question Id : 68019112288 Question Type : MCQ Option Shuffling : No**

**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 A एक तिर्यक-हर्मिशियन मैट्रिक्स है तो मैट्रिक्स B के लिए उपयुक्त क्रम  $B^{\theta_{AB}}$  के मैट्रिक्स B के लिए...

जहाँ  $B^{\theta}$ , B का ट्रांसपोज संयुग्म है

1. हर्मिशियन मैट्रिक्स
2. तिर्यक-हर्मिशियन मैट्रिक्स
3. या तो हर्मिटन या तिर्यक-हर्मिशियन मैट्रिक्स
4. न तो हर्मिटन और न ही तिर्यक-हर्मिशियन मैट्रिक्स

**Options :**

68019148469. 1

68019148470. 2

68019148471. 3

68019148472. 4

**Question Number : 19 Question Id : 68019112289 Question Type : MCQ Option Shuffling : No**

**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 eigen values of the matrix  $\begin{bmatrix} 2 & 1 & 0 \\ 9 & 2 & 1 \\ 0 & 0 & 2 \end{bmatrix}$  are

1. -2, 5, -1
2. 2, 5, -1
3. 2, 2, 5
4. 1, 2, 5

**Options :**

68019148473. 1

68019148474. 2

68019148475. 3

68019148476. 4

**Question Number : 19 Question Id : 68019112289 Question Type : MCQ Option Shuffling : No**

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

**Minimum Instruction Time : 0**

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

मैट्रिक्स  $\begin{bmatrix} 2 & 1 & 0 \\ 9 & 2 & 1 \\ 0 & 0 & 2 \end{bmatrix}$  का आइगेन मान है।

1. -2, 5, -1

2. 2, 5, -1

3. 2, 2, 5

4. 1, 2, 5

**Options :**

68019148473. 1

68019148474. 2

68019148475. 3

68019148476. 4

**Question Number : 20 Question Id : 68019112290 Question Type : MCQ Option Shuffling : No**

**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<br>Matrixe |                       | LIST II<br>Characteristics Root |                               |
|-------------------|-----------------------|---------------------------------|-------------------------------|
| A.                | Hermitian matrix      | I.                              | Unit modules                  |
| B.                | Skew-Hermitian matrix | II.                             | Diagonal elements of matrix   |
| C.                | Unitary matrix        | III.                            | Real                          |
| D.                | Diagonal matrix       | IV.                             | Either zero or pure imaginary |

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

1. A-IV, B-III, C-I, D-II
2. A-IV, B-III, C-II, D-I
3. A-III, B-IV, C-II, D-I
4. A-III, B-IV, C-I, D-II

**Options :**

68019148477. 1

68019148478. 2

68019148479. 3

68019148480. 4

**Question Number : 20 Question Id : 68019112290 Question Type : MCQ Option Shuffling : No**

**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 के साथ सूची-II को सुमेलित करें

| सूची-I<br>मैट्रिक्स |                            | सूची-II<br>विशेषतापरक मूल |                               |
|---------------------|----------------------------|---------------------------|-------------------------------|
| A.                  | हर्मिशियन मैट्रिक्स        | I.                        | इकाई मॉड्यूल                  |
| B.                  | तिर्यक-हर्मिशियन मैट्रिक्स | II.                       | मैट्रिक्स के विकर्ण तत्व      |
| C.                  | एकात्मक मैट्रिक्स          | III.                      | वास्तविक                      |
| D.                  | विकर्ण मैट्रिक्स           | IV.                       | या तो शून्य या शुद्ध काल्पनिक |

नीचे दिए गए विकल्पों में से सही उत्तर चुनें।

1. A-IV, B-III, C-I, D-II
2. A-IV, B-III, C-II, D-I
3. A-III, B-IV, C-II, D-I
4. A-III, B-IV, C-I, D-II

**Options :**

68019148477. 1

68019148478. 2

68019148479. 3

68019148480. 4

**Question Number : 21 Question Id : 68019112291 Question Type : MCQ Option Shuffling : No**

**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 characteristic root of a non singular matrix  $A$  is  $\lambda$  then characteristics root of  $\text{adj } A$  is

1.  $\lambda|A|$
2.  $\frac{\lambda}{|A|}$
3.  $\frac{|A|}{\lambda}$
4. independent of  $\lambda$  and  $|A|$

**Options :**

68019148481. 1

68019148482. 2

68019148483. 3

68019148484. 4

**Question Number : 21 Question Id : 68019112291 Question Type : MCQ Option Shuffling : No**

**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 किसी गैर-एकल मैट्रिक्स की विशेषतापरक मूल  $A$  is  $\lambda$  है, तब  $\text{adj } A$  की विशेषतापरक मूल है

1.  $\lambda|A|$
2.  $\frac{\lambda}{|A|}$
3.  $\frac{|A|}{\lambda}$
4.  $\lambda$  और  $|A|$  से स्वतंत्र

**Options :**

68019148481. 1

68019148482. 2



68019148483. 3

68019148484. 4

**Question Number : 22 Question Id : 68019112292 Question Type : MCQ Option Shuffling : No**

**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 matrix  $A = \begin{bmatrix} 1 & 2 \\ 4 & 3 \end{bmatrix}$  then matrix  $A^5$  is

1.  $\begin{bmatrix} 1041 & 1042 \\ 2084 & 2083 \end{bmatrix}$
2.  $\begin{bmatrix} -1041 & 1042 \\ 1042 & 2083 \end{bmatrix}$
3.  $\begin{bmatrix} -1041 & 1042 \\ 1042 & -2083 \end{bmatrix}$
4.  $\begin{bmatrix} -1041 & -1042 \\ -2084 & -2083 \end{bmatrix}$

**Options :**

68019148485. 1

68019148486. 2

68019148487. 3

68019148488. 4

**Question Number : 22 Question Id : 68019112292 Question Type : MCQ Option Shuffling : No**

**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 मैट्रिक्स  $A = \begin{bmatrix} 1 & 2 \\ 4 & 3 \end{bmatrix}$  तब मैट्रिक्स  $A^5$  है।

1.  $\begin{bmatrix} 1041 & 1042 \\ 2084 & 2083 \end{bmatrix}$
2.  $\begin{bmatrix} -1041 & 1042 \\ 1042 & 2083 \end{bmatrix}$
3.  $\begin{bmatrix} -1041 & 1042 \\ 1042 & -2083 \end{bmatrix}$
4.  $\begin{bmatrix} -1041 & -1042 \\ -2084 & -2083 \end{bmatrix}$

**Options :**

68019148485. 1

68019148486. 2

68019148487. 3

68019148488. 4

**Question Number : 23 Question Id : 68019112293 Question Type : MCQ Option Shuffling : No**

**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 value of  $c$  for which Rolle's Theorem holds for the function  $f(x) = \cos x + \cos^2 x$  for  $\frac{\pi}{2} \leq x \leq \pi$  is

1.  $\frac{\pi}{3}$
2.  $\frac{2\pi}{3}$
3.  $\frac{5\pi}{6}$
4.  $\frac{3\pi}{4}$

**Options :**

68019148489. 1

68019148490. 2

68019148491. 3

68019148492. 4

**Question Number : 23 Question Id : 68019112293 Question Type : MCQ Option Shuffling : No**

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

**Minimum Instruction Time : 0**

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

$c$  का मान जो फलन  $\frac{\pi}{2} \leq x \leq \pi$  के लिए  $f(x) = \cos x + \cos^2 x$  हेतु रोल की प्रमेय धारण करता है

1.  $\frac{\pi}{3}$
2.  $\frac{2\pi}{3}$
3.  $\frac{5\pi}{6}$
4.  $\frac{3\pi}{4}$

**Options :**

68019148489. 1

68019148490. 2

68019148491. 3

68019148492. 4

**Question Number : 24 Question Id : 68019112294 Question Type : MCQ Option Shuffling : No**

**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 series  $\frac{1.2}{3^2 \cdot 4^2} + \frac{3.4}{5^2 \cdot 6^2} + \frac{5.6}{7^2 \cdot 8^2} + \dots$  is

1. a convergent series
2. a divergent series
3. a convergent series and converges to -1
4. divergent series and diverges to  $\infty$

**Options :**

68019148493. 1

68019148494. 2

68019148495. 3

68019148496. 4

**Question Number : 24 Question Id : 68019112294 Question Type : MCQ Option Shuffling : No**

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

**Minimum Instruction Time : 0**

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

श्रृंखला  $\frac{1.2}{3^2 \cdot 4^2} + \frac{3.4}{5^2 \cdot 6^2} + \frac{5.6}{7^2 \cdot 8^2} + \dots$  है।

1. एक अभिसारी श्रृंखला
2. एक अपसारी श्रृंखला
3. एक अभिसारी श्रृंखला और -1 में अभिसरण करती है
4. विचलन श्रृंखला और  $-\infty$  पर विचलन करती है

**Options :**

68019148493. 1

68019148494. 2

68019148495. 3

68019148496. 4

**Question Number : 25 Question Id : 68019112295 Question Type : MCQ Option Shuffling : No 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 solution of the differential equation  $\log \left( 1 + \log \left( \frac{x}{y} \right) \right) dx + \left( 1 + \frac{x}{y} \right) dy = 0$  is

1.  $\log xy - xy = c$
2.  $x \log xy - y = c$
3.  $\log xy + xy = c$
4.  $x \log xy + y = c$

**Options :**

68019148497. 1

68019148498. 2

68019148499. 3

68019148500. 4

**Question Number : 25 Question Id : 68019112295 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

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

अवकल समीकरण  $\log \left( 1 + \log \left( \frac{x}{y} \right) \right) dx + \left( 1 + \frac{x}{y} \right) dy = 0$  का समाधान है।

1.  $\log xy - xy = c$
2.  $x \log xy - y = c$
3.  $\log xy + xy = c$
4.  $x \log xy + y = c$

**Options :**

68019148497. 1

68019148498. 2

68019148499. 3

68019148500. 4

**Question Number : 26 Question Id : 68019112296 Question Type : MCQ Option Shuffling : No**

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  $g(t) = \frac{1}{\sqrt{r}\beta\left(\frac{1}{2}, \frac{r}{2}\right)\left(1 + \frac{t^2}{r}\right)^{\left(\frac{r+1}{2}\right)}, -\infty < t < \infty$  then measure of kurtosis is

1.  $3(n-2)$
2.  $\frac{3(n-2)}{(n-4)}$
3.  $\frac{(n-2)}{(n-4)}$
4.  $\frac{3(n-4)}{(n-2)}$

Options :

68019148501. 1

68019148502. 2

68019148503. 3

68019148504. 4

Question Number : 26 Question Id : 68019112296 Question Type : MCQ Option Shuffling : No

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  $g(t) = \frac{1}{\sqrt{r}\beta\left(\frac{1}{2}, \frac{r}{2}\right)\left(1 + \frac{t^2}{r}\right)^{\left(\frac{r+1}{2}\right)}, -\infty < t < \infty$  तब कुटोसिस का माप है

1.  $3(n-2)$
2.  $\frac{3(n-2)}{(n-4)}$
3.  $\frac{(n-2)}{(n-4)}$
4.  $\frac{3(n-4)}{(n-2)}$

Options :

68019148501. 1

68019148502. 2

68019148503. 3

68019148504. 4

**Question Number : 27 Question Id : 68019112297 Question Type : MCQ Option Shuffling : No**

**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 random variable  $x$  be uniform on the interval  $(\frac{\pi}{6}, \frac{\pi}{2})$ . Then  $P(\cos x > \sin x)$  is

1.  $\frac{2}{3}$
2.  $\frac{1}{2}$
3.  $\frac{1}{4}$
4.  $\frac{1}{3}$

**Options :**

68019148505. 1

68019148506. 2

68019148507. 3

68019148508. 4

**Question Number : 27 Question Id : 68019112297 Question Type : MCQ Option Shuffling : No**

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

**Minimum Instruction Time : 0**

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

कल्पना करें कि यादृच्छिक चर  $x$  अंतराल  $(\frac{\pi}{6}, \frac{\pi}{2})$  पर एकरूप है, तब  $P(\cos x > \sin x)$  है

1.  $\frac{2}{3}$
2.  $\frac{1}{2}$
3.  $\frac{1}{4}$
4.  $\frac{1}{3}$

**Options :**

68019148505. 1

68019148506. 2

68019148507.3

68019148508.4

**Question Number : 28 Question Id : 68019112298 Question Type : MCQ Option Shuffling : No**

**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  $f(x) = 3(1-x)^2, 0 < x < 1$ , then the median of the distribution is

1.  $\left(\frac{1}{2}\right)^{1/3}$
2.  $\left(\frac{1}{2}\right)$
3.  $\left(\frac{1}{4}\right)^{1/3}$
4.  $1 - \left(\frac{1}{2}\right)^{1/3}$

**Options :**

68019148509.1

68019148510.2

68019148511.3

68019148512.4

**Question Number : 28 Question Id : 68019112298 Question Type : MCQ Option Shuffling : No**

**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  $f(x) = 3(1-x)^2, 0 < x < 1$ , तो वितरण की माधिका है

1.  $\left(\frac{1}{2}\right)^{1/3}$
2.  $\left(\frac{1}{2}\right)$
3.  $\left(\frac{1}{4}\right)^{1/3}$
4.  $1 - \left(\frac{1}{2}\right)^{1/3}$

**Options :**

68019148509.1

68019148510. 2

68019148511. 3

68019148512. 4

**Question Number : 29 Question Id : 68019112299 Question Type : MCQ Option Shuffling : No**

**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  $f(x) = \frac{1}{x^2}$ ,  $1 < x < \infty$ , then the first quartile is

1.  $\frac{4}{9}$
2.  $\frac{1}{7}$
3.  $\frac{4}{3}$
4.  $\frac{6}{15}$

**Options :**

68019148513. 1

68019148514. 2

68019148515. 3

68019148516. 4

**Question Number : 29 Question Id : 68019112299 Question Type : MCQ Option Shuffling : No**

**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  $f(x) = \frac{1}{x^2}$ ,  $1 < x < \infty$ , तो पहला क्वार्टाइल है

1.  $\frac{4}{9}$
2.  $\frac{1}{7}$
3.  $\frac{4}{3}$
4.  $\frac{6}{15}$

**Options :**



68019148513. 1

68019148514. 2

68019148515. 3

68019148516. 4

**Question Number : 30 Question Id : 68019112300 Question Type : MCQ Option Shuffling : No**

**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 distribution function of x is

$$f(x) = \begin{cases} 0 & : x < 1 \\ \frac{1}{6} & : x \leq x < 2 \\ \frac{1}{6} & : 2 \leq x < 3 \\ 1 & : 3 \leq x \end{cases}, \text{ then the } P(1 \leq X \leq 5) \text{ is}$$

1.  $\frac{1}{2}$
2.  $\frac{5}{6}$
3.  $\frac{3}{7}$
4.  $\frac{2}{9}$

**Options :**

68019148517. 1

68019148518. 2

68019148519. 3

68019148520. 4

**Question Number : 30 Question Id : 68019112300 Question Type : MCQ Option Shuffling : No**

**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 का वितरण फलन है

$$f(x) = \begin{cases} 0 & : x < 1 \\ \frac{1}{6} & : x \leq x < 2 \\ \frac{1}{6} & : 2 \leq x < 3 \\ 1 & : 3 \leq x \end{cases}, \text{ तब } P(1 \leq X \leq 5) \text{ है}$$

1.  $\frac{1}{2}$
2.  $\frac{5}{6}$
3.  $\frac{3}{7}$
4.  $\frac{2}{9}$

**Options :**

68019148517. 1

68019148518. 2

68019148519. 3

68019148520. 4

**Question Number : 31 Question Id : 68019112301 Question Type : MCQ Option Shuffling : No**

**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  $f(x) = xe^{-x}$ ;  $0 < x < \infty$ , then the median ( $M_d$ ) of the distribution is

1.  $M_d \log(1 + M_d) = \log\left(\frac{1}{2}\right)$
2.  $\log(1 + M_d) = \log\left(\frac{1}{4}\right)$
3.  $M_d \log(1 + M_d) = \log\left(\frac{5}{4}\right)$
4.  $M_d \log(M_d) = \log 2$

**Options :**

68019148521. 1

68019148522. 2

68019148523. 3

68019148524. 4

**Question Number : 31 Question Id : 68019112301 Question Type : MCQ Option Shuffling : No 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  $f(x) = xe^{-x}$ ;  $0 < x < \infty$ , तो वितरण की माधिका ( $M_d$ ) है

1.  $M_d \log(1 + M_d) = \log\left(\frac{1}{2}\right)$
2.  $\log(1 + M_d) = \log\left(\frac{1}{4}\right)$
3.  $M_d \log(1 + M_d) = \log\left(\frac{5}{4}\right)$
4.  $M_d \log(M_d) = \log 2$

**Options :**

68019148521. 1

68019148522. 2

68019148523. 3

68019148524. 4

**Question Number : 32 Question Id : 68019112302 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

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

From the data relating to the yield of dry bank ( $X_1$ ), height ( $X_2$ ) and girth ( $X_3$ ) for 20 plants, the following correlations coefficient is given by  $r_{12} = 0.60$ ,  $r_{13} = 0.75$ ,  $r_{23} = 0.68$  then the multiple correlation coefficient  $R_{1,23}^2$  is (upto two decimal places)

1. 0.13

2. 0.26

3. 0.35

4. 0.57

**Options :**

68019148525. 1

68019148526. 2

68019148527. 3

68019148528. 4

**Question Number : 32 Question Id : 68019112302 Question Type : MCQ Option Shuffling : No**

**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 पौधों के लिए शुष्क तट ( $x_1$ ), ऊंचाई ( $x_2$ ) और परिधि ( $x_3$ ) की यील्ड से संबंधित आंकड़ों से, निम्नलिखित सहसंबंध गुणांक  $r_{12} = 0.60$ ,  $r_{13} = 0.75$ ,  $r_{23} = 0.68$  द्वारा दिए गए हैं, तो एकाधिक सहसंबंध गुणांक

$R_{1, 23}^2$  है (दो दशमलव स्थानों तक)

1. 0.13

2. 0.26

3. 0.35

4. 0.57

**Options :**

68019148525. 1

68019148526. 2

68019148527. 3

68019148528. 4

**Question Number : 33 Question Id : 68019112303 Question Type : MCQ Option Shuffling : No**

**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  $R$  be the observed multiple correlation coefficient of a variable with  $k$  variables in a sample of size  $n$  from a  $(k+1)$  variate normal population. If  $\rho$  is the corresponding multiple correlation coefficient in population then to test  $H_0 : \rho = 0 \forall H_1 : \rho \neq 0$ . Then the test statistic is

1.  $F = \frac{R^2}{1 - R^2}$

2.  $F = \frac{R^2(n - k - 1)}{k(1 - R^2)}$

3.  $F = \frac{R^2(n - k)}{(k - 1)(1 - R^2)}$

4.  $F = \frac{R^2(n - k - 1)}{(k - 2)(1 - R^2)}$

**Options :**

68019148529. 1

68019148530. 2

68019148531. 3

68019148532. 4

**Question Number : 33 Question Id : 68019112303 Question Type : MCQ Option Shuffling : No****Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A****Minimum Instruction Time : 0****Correct Marks : 4 Wrong Marks : 1**

कल्पना करें कि  $R$  एक  $(k + 1)$  चर सामान्य जनसंख्या से आकार  $n$  के प्रतिदर्श में अन्य  $k$  चर के साथ एक चर का प्रेक्षित एकाधिक सहसंबंध गुणांक है। यदि  $\rho$  में तत्संबंधी जनसंख्या में  $H_0: \rho = 0 \forall H_1: \rho \neq 0$  के परीक्षण का एकाधिक सहसंबंध गुणांक है। तब परीक्षण सांख्यिकी है

1.  $F = \frac{R^2}{1 - R^2}$

2.  $F = \frac{R^2(n - k - 1)}{k(1 - R^2)}$

3.  $F = \frac{R^2(n - k)}{(k - 1)(1 - R^2)}$

4.  $F = \frac{R^2(n - k - 1)}{(k - 2)(1 - R^2)}$

**Options :**

68019148529. 1

68019148530. 2

68019148531. 3

68019148532. 4

**Question Number : 34 Question Id : 68019112304 Question Type : MCQ Option Shuffling : No****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 regression coefficient of y on x is  $b_{yx}$  and if  $u = \frac{x-a}{h}$ ,  $v = \frac{y-b}{k}$ , then the regression coefficient  $b_{vu}$  is

1.  $b_{yx}$
2.  $\frac{h}{k} b_{yx}$
3.  $\frac{k}{n} b_{yx}$
4.  $\frac{h}{x \cdot b_{yx}}$

**Options :**

68019148533. 1

68019148534. 2

68019148535. 3

68019148536. 4

**Question Number : 34 Question Id : 68019112304 Question Type : MCQ Option Shuffling : No**

**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 x पर y का प्रतिगमन गुणांक  $b_{yx}$  है और यदि  $u = \frac{x-a}{h}$ ,  $v = \frac{y-b}{k}$ , है, तो प्रतिगमन गुणांक  $b_{vu}$  है

1.  $b_{yx}$
2.  $\frac{h}{k} b_{yx}$
3.  $\frac{k}{n} b_{yx}$
4.  $\frac{h}{x \cdot b_{yx}}$

**Options :**

68019148533. 1

68019148534. 2

68019148535. 3

68019148536. 4

**Question Number : 35 Question Id : 68019112305 Question Type : MCQ Option Shuffling : No**

**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  $X \sim N(0,1)$  and  $Y=X+|X|$ . Then  $E(Y^3)$  is

1.  $\frac{16}{2\sqrt{(\pi)}}$

2.  $\frac{8}{\sqrt{(2\pi)}}$

3.  $\frac{16}{\sqrt{(2\pi)}}$

4.  $\frac{8}{2\sqrt{(\pi)}}$

**Options :**

68019148537. 1

68019148538. 2

68019148539. 3

68019148540. 4

**Question Number : 35 Question Id : 68019112305 Question Type : MCQ Option Shuffling : No**

**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  $X \sim N(0,1)$  और  $Y=X+|X|$ . तब  $E(Y^3)$  है

1.  $\frac{16}{2\sqrt{(\pi)}}$

2.  $\frac{8}{\sqrt{(2\pi)}}$

3.  $\frac{16}{\sqrt{(2\pi)}}$

4.  $\frac{8}{2\sqrt{(\pi)}}$

**Options :**

68019148537. 1

68019148538. 2

68019148539. 3

68019148540. 4

**Question Number : 36 Question Id : 68019112306 Question Type : MCQ Option Shuffling : No**

**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  $x_1$  and  $x_2$  have the joint p.d.f

$$f(x_1, x_2) = \begin{cases} 6x_2, & 0 < x_2 < x_1 < 1 \\ 0, & \text{otherwise} \end{cases}$$

Define  $Y = \frac{2x_1}{3}$ . Then  $E(Y)$  is

1. 1
2.  $\frac{1}{2}$
3.  $\frac{1}{4}$
4.  $\frac{3}{4}$

**Options :**

68019148541. 1

68019148542. 2

68019148543. 3

68019148544. 4

**Question Number : 36 Question Id : 68019112306 Question Type : MCQ Option Shuffling : No**

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

**Minimum Instruction Time : 0**

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



मान लीजिए कि  $x_1$  और  $x_2$  का संयुक्त pdf

$$f(x_1, x_2) = \begin{cases} 6x_2, & 0 < x_2 < x_1 < 1 \\ 0, & \text{अन्यथा} \end{cases}$$

$Y = \frac{2x_1}{3}$  को परिभाषित करता है। तब  $E(Y)$  है

1. 1
2.  $\frac{1}{2}$
3.  $\frac{1}{4}$
4.  $\frac{3}{4}$

**Options :**

68019148541. 1

68019148542. 2

68019148543. 3

68019148544. 4

**Question Number : 37 Question Id : 68019112307 Question Type : MCQ Option Shuffling : No**

**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  $Y_1 < Y_2 < Y_3 < Y_4$  denote the order statistics of a random sample of size 4 from a distribution with p.d.f

$$f(x) = \begin{cases} 2x : 0 < x < 1 \\ 0 : \end{cases} \quad \text{Then } P\left(\frac{1}{2} < y_3\right) \text{ is}$$

1.  $\frac{143}{256}$
2.  $\frac{243}{256}$
3.  $\frac{247}{256}$
4.  $\frac{187}{256}$

**Options :**

68019148545. 1

68019148546. 2

68019148547. 3

68019148548. 4

**Question Number : 37 Question Id : 68019112307 Question Type : MCQ Option Shuffling : No**

**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 कि  $Y_1 < Y_2 < Y_3 < Y_4$  p.d.f  $f(x) = \begin{cases} 2x; & 0 < x < 1, \\ 0 & ; \text{ अन्यथा} \end{cases}$  के साथ वितरण से आकार 4 के यादृच्छिक प्रतिदर्श के क्रम सांख्यिकी को निरूपित करते हैं।

तब  $P\left(\frac{1}{2} < y_3\right)$  है

1.  $143/256$
2.  $243/256$
3.  $247/256$
4.  $187/256$

**Options :**

68019148545. 1

68019148546. 2

68019148547. 3

68019148548. 4

**Question Number : 38 Question Id : 68019112308 Question Type : MCQ Option Shuffling : No**

**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  $x$  be a random variable with p.d.f  $f(x)$

$$f(x) = \begin{cases} 0, & x \leq a \\ 1, & x \geq b \end{cases}$$

the first quartile ' $q$ ' is the point such that  $F(q_1) = \frac{1}{4}$ . Let  $Y_1 < Y_2 < Y_3$  be an ordered sample of size 3 from the distribution of  $x$  then

$P(y_2 > q_1)$  is:

1.  $\frac{15}{32}$
2.  $\frac{21}{32}$
3.  $\frac{29}{32}$
4.  $\frac{1}{2}$

**Options :**

68019148549. 1

68019148550. 2

68019148551. 3

68019148552. 4

**Question Number : 38 Question Id : 68019112308 Question Type : MCQ Option Shuffling : No**

**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 कि p. d. f  $f(x)$  के साथ  $x$  एक यादृच्छिक चर है, जो

$$f(x) = \begin{cases} 0, & x \leq a \\ 1, & x \geq b \end{cases} \text{ द्वारा दिया गया है।}$$

पहला गुण ' $q$ ' बिंदु इस प्रकार है कि  $F(q_1) = \frac{1}{4}$ . कल्पना करें कि  $Y_1 < Y_2 < Y_3$   $x$  के वितरण से आकार 3 का

एक क्रमबद्ध प्रतिदर्श है, तब

$P(y_2 > q_1)$  है:

1.  $\frac{15}{32}$
2.  $\frac{21}{32}$
3.  $\frac{29}{32}$
4.  $\frac{1}{2}$

**Options :**

68019148549. 1

68019148550. 2

68019148551. 3

68019148552. 4

**Question Number : 39 Question Id : 68019112309 Question Type : MCQ Option Shuffling : No**

**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  $x_1$  and  $x_2$  are the i.i.d random sample of size 2 from a standard normal distribution. Then

the distribution of  $Y = \frac{(x_1 - x_2)^2}{2}$  is

1.  $\chi^2_{(2)}$
2.  $\chi^2_{(1)}$
3. Gamma (1, 1)
4. Gamma (2, 1)

**Options :**

68019148553. 1

68019148554. 2

68019148555. 3

68019148556. 4

**Question Number : 39 Question Id : 68019112309 Question Type : MCQ Option Shuffling : No**

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

**Minimum Instruction Time : 0**

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

कल्पना करें कि  $Y = \frac{(x_1 - x_2)^2}{2}$   $x_1$  और  $x_2$  एक मानक सामान्य वितरण से आकार 2 के यादृच्छिक प्रतिदर्श हैं। तब का वितरण है

1.  $\chi^2_{(2)}$
2.  $\chi^2_{(1)}$
3. गामा (1, 1)
4. गामा (2, 1)

**Options :**

68019148553. 1

68019148554. 2

68019148555. 3

**Question Number : 40 Question Id : 68019112310 Question Type : MCQ Option Shuffling : No**

**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  $X$  be a random variable such that  $E(X) < \infty$  and  $P\left(X \geq \frac{1}{2} + x\right) = P\left(X \leq \frac{1}{2} - x\right)$ , for all  $x \in R$ , then

1.  $E(X) < \frac{1}{2}$  and median  $(X) < \frac{1}{2}$
2.  $E(X) = \frac{1}{2}$  and median  $(X) = \frac{1}{2}$
3.  $E(X) < \frac{1}{2}$  and median  $(X) = \frac{1}{2}$
4.  $E(X) = \frac{1}{2}$  and median  $(X) > \frac{1}{2}$

**Options :**

68019148557. 1

68019148558. 2

68019148559. 3

68019148560. 4

**Question Number : 40 Question Id : 68019112310 Question Type : MCQ Option Shuffling : No**

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

**Minimum Instruction Time : 0**

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

कल्पना करें कि सभी  $x \in R$  के लिए,  $X$  एक यादृच्छिक चर इस प्रकार है कि  $E(X) < \infty$  और  $P\left(X \geq \frac{1}{2} + x\right) = P\left(X \leq \frac{1}{2} - x\right)$ , तब

1.  $E(X) < \frac{1}{2}$  और माधिका  $(X) < \frac{1}{2}$
2.  $E(X) = \frac{1}{2}$  और माधिका  $(X) = \frac{1}{2}$
3.  $E(X) < \frac{1}{2}$  और माधिका  $(X) = \frac{1}{2}$
4.  $E(X) = \frac{1}{2}$  और माधिका  $(X) > \frac{1}{2}$

**Options :**

68019148557. 1

68019148558. 2

68019148559. 3

68019148560. 4

**Question Number : 41 Question Id : 68019112311 Question Type : MCQ Option Shuffling : No**

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

**Minimum Instruction Time : 0**

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

If m.g.f of a random variable  $x$  is given by

$M_x(t) = \exp(2t + 32 t^2)$  then distribution of  $x$  is

1.  $N(2, 32)$

2.  $N(2, 64)$

3.  $N(4, 64)$

4.  $N(4, 32)$

**Options :**

68019148561. 1

68019148562. 2

68019148563. 3

68019148564. 4

**Question Number : 41 Question Id : 68019112311 Question Type : MCQ Option Shuffling : No**

**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 किसी यादृच्छिक चर  $x$  का m. g. f.,  $M_x(t) = \exp(2t + 32 t^2)$  द्वारा दिया जाता है तब  $x$  का वितरण है

1.  $N(2, 32)$

2.  $N(2, 64)$

3.  $N(4, 64)$

4.  $N(4, 32)$

**Options :**

68019148561. 1

68019148562. 2

68019148563. 3

68019148564. 4

**Question Number : 42 Question Id : 68019112312 Question Type : MCQ Option Shuffling : No**

**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 joint p.d.f of three random variable  $x, y$  and  $z$  is given by

$f(x, y, z) = e^{-(x+y+z)}$ ;  $0 < x, y, z < \infty$  then the cumulative distribution function of  $x, y,$  and  $z$  is given by

1.  $F(x, y, z) = e^{-y} e^{-z}$
2.  $F(x, y, z) = e^{-x}(1 - e^{-y}) e^{-z}$
3.  $F(x, y, z) = e^{-x}(1 - e^{-y})(1 - e^{-z})$
4.  $F(x, y, z) = (1 - e^{-x})(1 - e^{-y})(1 - e^{-z})$

**Options :**

68019148565. 1

68019148566. 2

68019148567. 3

68019148568. 4

**Question Number : 42 Question Id : 68019112312 Question Type : MCQ Option Shuffling : No**

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

**Minimum Instruction Time : 0**

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

तीन यादृच्छिक चर  $x, y$  और  $z$  का संयुक्त p. d. f.  $f(x, y, z) = e^{-(x+y+z)}$ ;  $0 < x, y, z < \infty$  है तब  $x, y,$  और  $z$  का संचयी वितरण फलन दिया जाता है

1.  $F(x, y, z) = e^{-y} e^{-z}$
2.  $F(x, y, z) = e^{-x}(1 - e^{-y}) e^{-z}$
3.  $F(x, y, z) = e^{-x}(1 - e^{-y})(1 - e^{-z})$
4.  $F(x, y, z) = (1 - e^{-x})(1 - e^{-y})(1 - e^{-z})$

**Options :**

68019148565. 1

68019148566. 2

68019148567. 3

68019148568. 4

Question Number : 43 Question Id : 68019112313 Question Type : MCQ Option Shuffling : No  
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 joint distribution of random variable  $x_1$  and  $x_2$  is given by

$$f(x_1, x_2) = \begin{cases} x_1 + x_2 & ; \quad 0 < x_1, x_2 < 1 \\ 0 & ; \quad \text{otherwise} \end{cases} \text{ Then } \Pr\left(0 < x_1 < \frac{1}{4}, 0 < x_2 < \frac{3}{4}\right) \text{ is :}$$

1.  $\frac{1}{16}$
2.  $\frac{1}{4}$
3.  $\frac{3}{32}$
4.  $\frac{1}{32}$

Options :

68019148569. 1

68019148570. 2

68019148571. 3

68019148572. 4

Question Number : 43 Question Id : 68019112313 Question Type : MCQ Option Shuffling : No  
Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A  
Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

यादृच्छिक चर  $x_1$  और  $x_2$  का संयुक्त वितरण

$$f(x_1, x_2) = \begin{cases} x_1 + x_2 & : \quad 0 < x_1, x_2 < 1 \\ 0 & : \quad \text{अन्यथा} \end{cases} \text{ द्वारा दिया जाता है तब } \Pr\left(0 < x_1 < \frac{1}{4}, 0 < x_2 < \frac{3}{4}\right) \text{ है:}$$

1.  $\frac{1}{16}$
2.  $\frac{1}{4}$
3.  $\frac{3}{32}$
4.  $\frac{1}{32}$



**Options :**

68019148569. 1

68019148570. 2

68019148571. 3

68019148572. 4

**Question Number : 44 Question Id : 68019112314 Question Type : MCQ Option Shuffling : No****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 joint m.g.f of jointly distributed random variable x and y having joint p.d.f  $f(x,y)$  as

$$f(x,y) = \begin{cases} e^{-y} & ; 0 < x < y < \infty \\ 0 & ; \text{otherwise} \end{cases} \text{ is}$$

1.  $(1 - t_1 - t_2)^{-1} (1 - t_2)^{-1}$

2.  $(1 - t_1 - t_2) (1 - t_2)^{-1}$

3.  $(1 - t_1 - t_2)^{-1} (1 - t_2)$

4.  $(1 - t_1 - t_2) (1 - t_2)$

**Options :**

68019148573. 1

68019148574. 2

68019148575. 3

68019148576. 4

**Question Number : 44 Question Id : 68019112314 Question Type : MCQ Option Shuffling : No****Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A****Minimum Instruction Time : 0****Correct Marks : 4 Wrong Marks : 1**

$$f(x,y) = \begin{cases} e^{-y} & : 0 < x < y < \infty \\ 0 & : \text{अन्यथा} \end{cases}$$
के रूप में संयुक्त p.d.f  $f(x,y)$  वाले संयुक्त वितरित यादृच्छिक चर x और y का संयुक्त m.g.f है

1.  $(1 - t_1 - t_2)^{-1} (1 - t_2)^{-1}$

2.  $(1 - t_1 - t_2) (1 - t_2)^{-1}$

3.  $(1 - t_1 - t_2)^{-1} (1 - t_2)$

4.  $(1 - t_1 - t_2) (1 - t_2)$

**Options :**

68019148573. 1

68019148574. 2

68019148575. 3

68019148576. 4

**Question Number : 45 Question Id : 68019112315 Question Type : MCQ Option Shuffling : No**

**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 joint p.d.f of x and y is  $f(x, y) = \begin{cases} \frac{1}{4}, & -1+x < y < x+1, -1 < x < 1 \\ 0, & \text{otherwise} \end{cases}$ . Then  $E(Y|X)$  and  $\text{Var}(Y|X)$

are:

1.  $\left(x, \frac{1}{3}\right)$

2.  $(1, y)$

3.  $(1, 1)$

4.  $(x, y)$

**Options :**

68019148577. 1

68019148578. 2

68019148579. 3

68019148580. 4

**Question Number : 45 Question Id : 68019112315 Question Type : MCQ Option Shuffling : No**

**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 और y का संयुक्त pdf है  $f(x, y) = \begin{cases} \frac{1}{4}, & -1+x < y < x+1, -1 < x < 1 \\ 0, & \text{अन्यथा} \end{cases}$  . तब E (Y|X) और Var

(Y|X) हैं:

1.  $(x, \frac{1}{3})$
2. (1, y)
3. (1, 1)
4. (x, y)

**Options :**

68019148577. 1

68019148578. 2

68019148579. 3

68019148580. 4

**Question Number : 46 Question Id : 68019112316 Question Type : MCQ Option Shuffling : No**

**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 random variable x and y have the joint p.d.f

$$f(x, y) = \begin{cases} x + y & ; 0 < x, y < 1 \\ 0 & ; \text{otherwise} \end{cases}$$

then Cov (X, Y) is

1.  $\frac{-1}{12}$
2.  $\frac{1}{12}$
3.  $\frac{1}{144}$
4.  $\frac{-1}{144}$

**Options :**

68019148581. 1

68019148582. 2

68019148583. 3

68019148584. 4

Question Number : 46 Question Id : 68019112316 Question Type : MCQ Option Shuffling : No

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

मान लीजिए यादृच्छिक चर  $x$  और  $y$  के लिए

$$f(x, y) = \begin{cases} x + y & : 0 < x, y < 1 \\ 0 & : \text{अन्यथा} \end{cases} \text{ संयुक्त pdf है}$$

तो  $\text{Cov}(X, Y)$  है

1.  $\frac{-1}{12}$
2.  $\frac{1}{12}$
3.  $\frac{1}{144}$
4.  $\frac{-1}{144}$

Options :

68019148581. 1

68019148582. 2

68019148583. 3

68019148584. 4

Question Number : 47 Question Id : 68019112317 Question Type : MCQ Option Shuffling : No

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Joint p.d.f of two random variable  $x$  and  $y$  is

$$f(x_1, x_2) = \begin{cases} 8x_1 + x_2 & ; 0 < x_1 < x_2 < 1 \\ 0 & ; \text{otherwise} \end{cases}$$

then  $E(X_1, X_2^2)$  is:

1.  $\frac{3}{21}$
2.  $\frac{5}{21}$
3.  $\frac{8}{21}$
4.  $\frac{11}{21}$

**Options :**

68019148585. 1

68019148586. 2

68019148587. 3

68019148588. 4

**Question Number : 47 Question Id : 68019112317 Question Type : MCQ Option Shuffling : No**

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

**Minimum Instruction Time : 0**

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

दो यादृच्छिक चर  $x$  और  $y$  का संयुक्त pdf है

$$f(x_1, x_2) = \begin{cases} 8x_1 + x_2 & : 0 < x_1, x_2 < 1 \\ 0 & : \text{अन्यथा} \end{cases}$$

then  $E(X_1, X_2^2)$  is:

1.  $\frac{3}{21}$

2.  $\frac{5}{21}$

3.  $\frac{8}{21}$

4.  $\frac{11}{21}$

**Options :**

68019148585. 1

68019148586. 2

68019148587. 3

68019148588. 4

**Question Number : 48 Question Id : 68019112318 Question Type : MCQ Option Shuffling : No**

**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 joint p.d.f of random variable  $x$  and  $y$  is:

$$f(x_1, x_2) = \begin{cases} 2 & ; 0 < x_1 < x_2 < 1 \\ 0 & ; \text{otherwise} \end{cases}$$

then  $P\left(X_1 > \frac{1}{2}\right)$  is:

1.  $\frac{1}{4}$
2.  $\frac{3}{4}$
3.  $\frac{1}{2}$
4.  $\frac{1}{8}$

**Options :**

68019148589. 1

68019148590. 2

68019148591. 3

68019148592. 4

**Question Number : 48 Question Id : 68019112318 Question Type : MCQ Option Shuffling : No**

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

**Minimum Instruction Time : 0**

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

यादृच्छिक चर  $x$  और  $y$  का संयुक्त pdf है:

$$f(x_1, x_2) = \begin{cases} 2 & ; 0 < x_1, x_2 < 1 \text{ तो } P\left(X_1 > \frac{1}{2}\right) \text{ है:} \\ 0 & ; \text{अन्यथा} \end{cases}$$

1.  $\frac{1}{4}$
2.  $\frac{3}{4}$
3.  $\frac{1}{2}$
4.  $\frac{1}{8}$

**Options :**

68019148589. 1

68019148590. 2

68019148591. 3

68019148592. 4

Question Number : 49 Question Id : 68019112319 Question Type : MCQ Option Shuffling : No

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  $x_1$  and  $x_2$  have the p.d.f

$$f(x_1, x_2) = \begin{cases} 8x_1x_2, & 0 < x_1 < x_2 < 1 \\ 0, & \text{otherwise} \end{cases}$$

Then  $V(X_2)$  is:

1.  $\frac{1}{75}$
2.  $\frac{2}{75}$
3.  $\frac{4}{75}$
4.  $\frac{1}{25}$

Options :

68019148593. 1

68019148594. 2

68019148595. 3

68019148596. 4

Question Number : 49 Question Id : 68019112319 Question Type : MCQ Option Shuffling : No

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 कि  $x_1$  और  $x_2$  का p. d. f.  $f(x_1, x_2) = \begin{cases} 8x_1x_2, & ; 0 < x_1 < x_2 < 1 \\ 0 & ; \text{अन्यथा} \end{cases}$  है तब  $V(X_2)$  है:

1.  $\frac{1}{75}$
2.  $\frac{2}{75}$
3.  $\frac{4}{75}$
4.  $\frac{1}{25}$

Options :

68019148593. 1

68019148594. 2

68019148595. 3

68019148596. 4

**Question Number : 50 Question Id : 68019112320 Question Type : MCQ Option Shuffling : No**

**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  $x \sim b(1, \theta)$ . Then fisher information in a random sample is

1.  $\frac{1}{\theta^2(1-\theta)}$

2.  $\frac{1}{\theta(1-\theta)}$

3.  $\frac{1}{\theta(1-\theta)^2}$

4.  $\frac{1}{1-\theta}$

**Options :**

68019148597. 1

68019148598. 2

68019148599. 3

68019148600. 4

**Question Number : 50 Question Id : 68019112320 Question Type : MCQ Option Shuffling : No**

**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 कि  $x \sim b(1, \theta)$ . तब एक यादृच्छिक नमूने में फिशर जानकारी है

1.  $\frac{1}{\theta^2(1-\theta)}$

2.  $\frac{1}{\theta(1-\theta)}$

3.  $\frac{1}{\theta(1-\theta)^2}$

4.  $\frac{1}{1-\theta}$

**Options :**



68019148597. 1

68019148598. 2

68019148599. 3

68019148600. 4

**Question Number : 51 Question Id : 68019112321 Question Type : MCQ Option Shuffling : No**

**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  $Y_1 = \min(x_i)$  and  $Y_n = \max(x_i)$  are joint sufficient statistics. Also,  $\theta - 1 < Y_1 < Y_n < \theta + 1$  then maximum likelihood estimate of  $\theta$  is:

1.  $Y_n$
2.  $Y_1$
3.  $\frac{Y_1 + Y_n}{2}$
4.  $\frac{Y_n - Y_1}{2}$

**Options :**

68019148601. 1

68019148602. 2

68019148603. 3

68019148604. 4

**Question Number : 51 Question Id : 68019112321 Question Type : MCQ Option Shuffling : No**

**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  $Y_1 = \min(x_i)$  और  $Y_n = \max(x_i)$  संयुक्त रूप से पर्याप्त आंकड़े हैं। साथ  $\theta - 1 < Y_1 < Y_n < \theta + 1$  तो m.l.e (maximum likelihood estimate. Likelihood) of  $\theta$  है:

1.  $Y_n$
2.  $Y_1$
3.  $\frac{Y_1 + Y_n}{2}$
4.  $\frac{Y_n - Y_1}{2}$

**Options :**

68019148601. 1

68019148602. 2

68019148603. 3

68019148604. 4

**Question Number : 52 Question Id : 68019112322 Question Type : MCQ Option Shuffling : No**

**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  $X$  be a Geom(0.4) random variabe. Then  $P(X = 5|X \geq 2)$  is

1. 0.0864

2. 0.0364

3. 0.0532

4. 0.0112

**Options :**

68019148605. 1

68019148606. 2

68019148607. 3

68019148608. 4

**Question Number : 52 Question Id : 68019112322 Question Type : MCQ Option Shuffling : No**

**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  $X$  एक Geom (0.4) यादचिछिक चर है. तब  $P(X = 5|X \geq 2)$  है

1. 0.0864

2. 0.0364

3. 0.0532

4. 0.0112

**Options :**

68019148605. 1

68019148606. 2

68019148607. 3

68019148608. 4

**Question Number : 53 Question Id : 68019112323 Question Type : MCQ Option Shuffling : No**

**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  $x_1 = 3.0, x_2 = 4.0, x_3 = 3.5, x_4 = 2.5$  be the observed value of a random sample from the probability density function,  $f(x|\theta) = \frac{1}{3} \left( \frac{1}{\theta} e^{-x/\theta} + \frac{1}{\theta^2} e^{-x/\theta^2} + e^{-x} \right)$ ,  $x > 0, \theta > 0$ . Then the method of moments estimate of  $\theta$  is

1. 3.5

2. 2.5

3. 4.0

4. 1.0

**Options :**

68019148609. 1

68019148610. 2

68019148611. 3

68019148612. 4

**Question Number : 53 Question Id : 68019112323 Question Type : MCQ Option Shuffling : No**

**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  $x_1 = 3.0, x_2 = 4.0, x_3 = 3.5, x_4 = 2.5$  प्रोबेबिलिटी डेंसिटी फंक्शन,

$f(x|\theta) = \frac{1}{3} \left( \frac{1}{\theta} e^{-x/\theta} + \frac{1}{\theta^2} e^{-x/\theta^2} + e^{-x} \right)$ ,  $x > 0, \theta > 0$  से रैंडम सैंपल का प्रेक्षित मान है। तब  $\theta$  के क्षण

अनुमान की विधि है

1. 3.5

2. 2.5

3. 4.0

4. 1.0

**Options :**

68019148609. 1

68019148610. 2

68019148611. 3

68019148612. 4

**Question Number : 54 Question Id : 68019112324 Question Type : MCQ Option Shuffling : No**

**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  $x_1, x_2, x_3, \dots, x_n$  be a random sample of size 'n' from the Cauchy distribution with Probability density function  $f(x) = \frac{1}{\pi(1+x^2)}, -\infty < x < \infty$ . Then the density function of  $\bar{x}$  is :

1.  $\frac{1}{\pi(1+\bar{x}^2)}$

2.  $\frac{1}{n\pi(1+n^2\bar{x}^2)}$

3.  $\frac{1}{\pi(1+n^2\bar{x}^2)}$

4.  $\frac{1}{n\pi(1+\bar{x}^2)}$

**Options :**

68019148613. 1

68019148614. 2

68019148615. 3

68019148616. 4

**Question Number : 54 Question Id : 68019112324 Question Type : MCQ Option Shuffling : No**

**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  $x_1, x_2, x_3, \dots, x_n$  प्रोबैबिलिटी डेंसिटी फंक्शन  $f(x) = \frac{1}{\pi(1+x^2)}, -\infty < x < \infty$  के साथ कौची डिस्ट्रीब्यूशन से आकार 'n' का एक यादृच्छिक नमूना है। तब  $\bar{x}$  का डेंसिटी फंक्शन है

1.  $\frac{1}{\pi(1+\bar{x}^2)}$

2.  $\frac{1}{n\pi(1+n^2\bar{x}^2)}$

3.  $\frac{1}{\pi(1+n^2\bar{x}^2)}$

4.  $\frac{1}{n\pi(1+\bar{x}^2)}$

**Options :**

68019148613. 1

68019148614. 2

68019148615. 3

68019148616. 4

**Question Number : 55 Question Id : 68019112325 Question Type : MCQ Option Shuffling : No****Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A****Minimum Instruction Time : 0****Correct Marks : 4 Wrong Marks : 1**

Following is the frequency distribution of a random variables X:

$$f(x, \lambda) = \begin{cases} \frac{1}{\lambda} & , 0 \leq x, \leq \lambda \\ 0 & , otherwise \end{cases}$$

In order to test  $H_0: \lambda = 1$  against  $H_0: \lambda = 2$ , a single observation is taken on X. Then the size of type-II error for the critical region  $\{x : 0.5 \leq x\}$  is

1. 0.25

2. 0.50

3. 0.30

4. 0.40

**Options :**

68019148617. 1

68019148618. 2

68019148619. 3

68019148620. 4

**Question Number : 55 Question Id : 68019112325 Question Type : MCQ Option Shuffling : No****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 यादृच्छिक चर  $X$  का आवृत्ति वितरण निम्नलिखित है:

$$f(x, \lambda) = \begin{cases} \frac{1}{\lambda} & , 0 \leq x, \leq \lambda \\ 0 & , \text{अन्यथा} \end{cases}$$

$H_0: \lambda = 2$  के विरुद्ध  $H_1: \lambda = 1$  का परीक्षण करने के लिए,  $X$  पर एकल अवलोकन लिया जाता है. फिर महत्वपूर्ण क्षेत्र  $\{x: 0.5 \leq x\}$  के लिए प्रकार-II त्रुटि का आकार है

1. 0.25
2. 0.50
3. 0.30
4. 0.40

**Options :**

68019148617. 1

68019148618. 2

68019148619. 3

68019148620. 4

**Question Number : 56 Question Id : 68019112326 Question Type : MCQ Option Shuffling : No**

**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 probability that a coin will fall head in a single toss. In order to test

$H_0: p = \frac{1}{2} \forall H_1: p = \frac{3}{4}$ , the coin is tossed five tiems.  $H_0$  is rejected if more than 3 heads appear.

then the power of the test is:

1.  $\frac{23}{216}$
2.  $\frac{51}{216}$
3.  $\frac{81}{216}$
4.  $\frac{162}{216}$

**Options :**

68019148621. 1

68019148622. 2

68019148623. 3

68019148624. 4

**Question Number : 56 Question Id : 68019112326 Question Type : MCQ Option Shuffling : No**

**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  $p$  संभावना है कि एक सिक्का एक ही टॉस में शीर्ष की तरफ गिर जाएगा।  $H_0: p = \frac{1}{2}$  व  $H_1: p = \frac{3}{4}$  का परीक्षण करने के लिए, सिक्के को पांच प्रकार से उछाला जाता है। यदि 3 से अधिक शीर्ष दिखाई देते हैं तो  $H_0$  को अस्वीकार कर दिया जाता है। तो परीक्षण की शक्ति है:

1.  $\frac{23}{216}$
2.  $\frac{51}{216}$
3.  $\frac{81}{216}$
4.  $\frac{162}{216}$

**Options :**

68019148621. 1

68019148622. 2

68019148623. 3

68019148624. 4

**Question Number : 57 Question Id : 68019112327 Question Type : MCQ Option Shuffling : No**

**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 p.d.f of a r. v.  $X$  is given by

$$f(x, \theta) = \begin{cases} \frac{1}{\theta} e^{-x/\theta} & ; 0 < x < \infty, \theta > 0 \\ 0 & ; \text{otherwise} \end{cases}$$

In order to test  $H_0: \theta = 2$  against  $H_1: \theta = 1$ , a random sample  $X_1, X_2$  of size 2 is drawn. The critical region of the test is  $W = \{(x_1, x_2): 9.5 \leq x_1 + x_2\}$ . Then the significance level of the test is:

1.  $p(x^2_{(4)} < 9.5)$
2.  $p(x^2_{(4)} \geq 9.5)$
3.  $p(x^2_{(2)} < 9.5)$
4.  $p(x^2_{(2)} \geq 9.5)$

**Options :**

68019148625. 1

68019148626. 2

68019148627. 3

68019148628. 4

**Question Number : 57 Question Id : 68019112327 Question Type : MCQ Option Shuffling : No**

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

**Minimum Instruction Time : 0**

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

किसी  $r.v.X$  की पी. डी. एफ.  $f(x, \theta) = \begin{cases} \frac{1}{\theta} e^{-x/\theta} & ; 0 \leq x, \leq \infty, \theta > 0 \\ 0 & ; \text{अन्यथा} \end{cases}$  द्वारा दिया जाती है  $H_1: \theta = 1$  के

समक्ष  $H_0: \theta = 2$  का परीक्षण करने के लिए, आकार 2 का एक यादृच्छिक नमूना  $X_1, X_2$  ड्राउम है. परीक्षण का महत्वपूर्ण क्षेत्र  $W = \{(x_1, x_2): 9.5 \leq x_1 + x_2\}$  है तो परीक्षण का महत्व स्तर है:

1.  $p(x^2_{(4)} < 9.5)$
2.  $p(x^2_{(4)} \geq 9.5)$
3.  $p(x^2_{(2)} < 9.5)$
4.  $p(x^2_{(2)} \geq 9.5)$

**Options :**

68019148625. 1

68019148626. 2

68019148627. 3



**Question Number : 58 Question Id : 68019112328 Question Type : MCQ Option Shuffling : No**

**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  $X$  have a  $Bin(n, p)$  distribution. The maximum likelihood estimate (MLE) of the variable of  $\frac{X}{n}$  is  $\frac{1}{n} \left[ \frac{X}{n} \left( 1 - \frac{X}{n} \right) \right]$  which is consistent but not unbiased. An unbiased estimate is obtained by multiplying MLE by

1.  $\frac{n-1}{n}$
2.  $\frac{n}{n-1}$
3.  $(n-1)^2$
4.  $\frac{n^2}{(n-1)}$

**Options :**

68019148629. 1

68019148630. 2

68019148631. 3

68019148632. 4

**Question Number : 58 Question Id : 68019112328 Question Type : MCQ Option Shuffling : No**

**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  $X$  का वितरण  $Bin(n, p)$  है।  $\frac{X}{n}$  चर का अधिकतम संभावना अनुमान (MLE)  $\frac{1}{n} \left[ \frac{X}{n} \left( 1 - \frac{X}{n} \right) \right]$  है जो सुसंगत है लेकिन निष्पक्ष नहीं है। MLE को किससे गुणा करके एक अनिर्धारित अनुमान प्राप्त किया जाता है

1.  $\frac{n-1}{n}$
2.  $\frac{n}{n-1}$
3.  $(n-1)^2$
4.  $\frac{n^2}{(n-1)}$

**Options :**

68019148629. 1

68019148630. 2

68019148631. 3

68019148632. 4

**Question Number : 59 Question Id : 68019112329 Question Type : MCQ Option Shuffling : No**

**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  $T$  be an unbiased estimated of  $\theta$ . However  $T^2$  is not an unbiased estimate of  $\theta^2$  The extent of bias in estimating  $\theta^2$  by  $T^2$  is:

1. S.D. (T)
2.  $E(T^2) - S.D.(T)$
3.  $E(T^2) - \text{Var}(T)$
4.  $E^2(T) - \text{Var}(T)$

**Options :**

68019148633. 1

68019148634. 2

68019148635. 3

68019148636. 4

**Question Number : 59 Question Id : 68019112329 Question Type : MCQ Option Shuffling : No**

**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  $T$  किसी  $\theta$  का अनिष्पक्ष अनुमान है.. हालांकि  $T^2$  किसी  $\theta^2$  का निष्पक्ष अनुमान नहीं है.  $\theta^2$  द्वारा  $T^2$  अनुमान लगाने में पूर्वाग्रह की सीमा है:

1. S.D. (T)
2.  $E(T^2) - S.D.(T)$
3.  $E(T^2) - \text{Var}(T)$
4.  $E^2(T) - \text{Var}(T)$

**Options :**

68019148633. 1

68019148634. 2

68019148635. 3

68019148636. 4

**Question Number : 60 Question Id : 68019112330 Question Type : MCQ Option Shuffling : No**

**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  $x_1, x_2, \dots, x_n$  be a random sample from a  $N(\mu, 2)$  population. Then  $\frac{1}{n} \sum_{i=1}^n x_i^2$  is an unbiased estimate of

1.  $1 + \mu^2$
2.  $\mu^2$
3.  $2 + \mu^2$
4.  $\mu^2 - 1$

**Options :**

68019148637. 1

68019148638. 2

68019148639. 3

68019148640. 4

**Question Number : 60 Question Id : 68019112330 Question Type : MCQ Option Shuffling : No**

**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  $x_1, x_2, \dots, x_n$  किसी  $N(\mu, 2)$  जनसंख्या से एक यादृच्छिक नमूना है। तब  $\frac{1}{n} \sum_{i=1}^n x_i^2$  किसका अनिष्पक्ष अनुमान है

1.  $1 + \mu^2$
2.  $\mu^2$
3.  $2 + \mu^2$
4.  $\mu^2 - 1$

**Options :**

68019148637. 1

68019148638. 2

68019148639. 3

68019148640. 4

**Question Number : 61 Question Id : 68019112331 Question Type : MCQ Option Shuffling : No**

**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 regression lines of  $X_2$  on  $X_1$  and  $X_1$  on  $X_2$  are  $X_2 = \alpha X_1 + \beta$ ,  $X_1 = rX_2 + \delta$  then  $\frac{\sigma_{X_1}}{\sigma_{X_2}}$  is

1.  $\sqrt{\alpha r}$
2.  $\sqrt{\frac{r}{\alpha}}$
3.  $\frac{r}{\alpha}$
4.  $\frac{r}{\sqrt{\alpha}}$

**Options :**

68019148641. 1

68019148642. 2

68019148643. 3

68019148644. 4

**Question Number : 61 Question Id : 68019112331 Question Type : MCQ Option Shuffling : No**

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

**Minimum Instruction Time : 0**

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

$X_2$  on  $X_1$  और  $X_1$  on  $X_2$  की प्रतिगमन रेखाएँ  $X_2 = \alpha X_1 + \beta$ ,  $X_1 = rX_2 + \delta$  हैं तो  $\frac{\sigma_{X_1}}{\sigma_{X_2}}$  है

1.  $\sqrt{\alpha r}$
2.  $\sqrt{\frac{r}{\alpha}}$
3.  $\frac{r}{\alpha}$
4.  $\frac{r}{\sqrt{\alpha}}$

**Options :**

68019148641. 1

68019148642. 2

68019148643. 3

68019148644. 4

**Question Number : 62 Question Id : 68019112332 Question Type : MCQ Option Shuffling : No**

**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 relation between correlation ratio ( $\eta$ ) and correction coefficient ( $\zeta$ ) is

1.  $\eta^2 = \zeta^2 + 1$

2.  $\eta^2 = \zeta^2$

3.  $\eta^2 \geq \zeta^2$

4.  $\frac{\eta^2}{\zeta^2} \leq 1$

**Options :**

68019148645. 1

68019148646. 2

68019148647. 3

68019148648. 4

**Question Number : 62 Question Id : 68019112332 Question Type : MCQ Option Shuffling : No**

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

**Minimum Instruction Time : 0**

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

सहसंबंध अनुपात ( $\eta$ ) और सुधार गुणांक ( $\zeta$ ) के बीच संबंध है

1.  $\eta^2 = \zeta^2 + 1$

2.  $\eta^2 = \zeta^2$

3.  $\eta^2 \geq \zeta^2$

4.  $\frac{\eta^2}{\zeta^2} \leq 1$

**Options :**

68019148645. 1

68019148646. 2

68019148647. 3

68019148648. 4

**Question Number : 63 Question Id : 68019112333 Question Type : MCQ Option Shuffling : No**

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

**Minimum Instruction Time : 0**

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

Each of 200 workers of a factory takes his lunch in one of four competing restaurants. How many seats should each restaurants have so that on average, at most on in 20 customers will remain unseated

1.  $Seats \geq 25$
2.  $Seats \geq 40$
3.  $Seats \geq 10$
4.  $Seats \geq 60$

**Options :**

68019148649. 1

68019148650. 2

68019148651. 3

68019148652. 4

**Question Number : 63 Question Id : 68019112333 Question Type : MCQ Option Shuffling : No**

**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 कारखाने के 200 श्रमिकों में से प्रत्येक चार पूर्ण रेस्तरां में से एक में अपना दोपहर का भोजन करता है। प्रत्येक रेस्तरां में कितनी सीटें होनी चाहिए ताकि औसतन, अधिक से अधिक 20 ग्राहक बिना स्थान ग्रहण कर रहे होंगे

1. सीटें  $\geq 25$
2. सीटें  $\geq 40$
3. सीटें  $\geq 10$
4. सीटें  $\geq 60$

**Options :**

68019148649. 1

68019148650. 2

68019148651. 3

68019148652. 4

**Question Number : 64 Question Id : 68019112334 Question Type : MCQ Option Shuffling : No**

**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 round off error to the two decimal places has uniform distribution on the interval  $(-0.05, 0.05)$ , then the probability that the absolute error in the sum 1000 number is less than 2

1.  $2\Phi(1.96)$
2.  $2\Phi(2.19)$
3.  $2\Phi(2.19)-1$
4.  $2\Phi(1.96)-1$

**Options :**

68019148653. 1

68019148654. 2

68019148655. 3

68019148656. 4

**Question Number : 64 Question Id : 68019112334 Question Type : MCQ Option Shuffling : No**

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

**Minimum Instruction Time : 0**

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

दो दशमलव स्थानों के लिए राउंड ऑफ त्रुटि का एकसमान वितरण है  $(-0.05, 0.05)$ , तो योग 1000 संख्या में पूर्ण त्रुटि 2 से कम होने की सम्भावना है

1.  $2\Phi(1.96)$
2.  $2\Phi(2.19)$
3.  $2\Phi(2.19)-1$
4.  $2\Phi(1.96)-1$

**Options :**

68019148653. 1

68019148654. 2

68019148655. 3

68019148656. 4

Question Number : 65 Question Id : 68019112335 Question Type : MCQ Option Shuffling : No

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  $Y_i = \beta_1 + \beta_2 X_i + u_i$ ,  $\hat{\beta}_1$  and  $\hat{\beta}_2$  are the estimate of  $\beta_1$  and  $\beta_2$  then  $\text{Cov}(\hat{\beta}_1, \hat{\beta}_2)$

1.  $\bar{X} \text{Var}(\hat{\beta}_2)$
2.  $-\bar{X} \text{Var}(\hat{\beta}_2)$
3.  $\frac{1}{X} \text{Var}(\hat{\beta}_1)$
4.  $-\frac{1}{X} \text{Var}(\hat{\beta}_1)$

Options :

68019148657. 1

68019148658. 2

68019148659. 3

68019148660. 4

Question Number : 65 Question Id : 68019112335 Question Type : MCQ Option Shuffling : No

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

कल्पना करें कि  $\beta_1$  और  $\beta_2$  का अनुमान  $Y_i = \beta_1 + \beta_2 X_i + u_i$ ,  $\hat{\beta}_1$  और  $\hat{\beta}_2$  है. तब  $\text{Cov}(\hat{\beta}_1, \hat{\beta}_2)$

1.  $\bar{X} \text{Var}(\hat{\beta}_2)$
2.  $-\bar{X} \text{Var}(\hat{\beta}_2)$
3.  $\frac{1}{X} \text{Var}(\hat{\beta}_1)$
4.  $-\frac{1}{X} \text{Var}(\hat{\beta}_1)$

Options :

68019148657. 1

68019148658. 2

68019148659. 3

68019148660. 4



**Question Number : 66 Question Id : 68019112336 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

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

There are 200 employees in a hospital. The table shows the number of each type of employee in a hospital.

| Doctor | Nursing | Admin | Other |
|--------|---------|-------|-------|
| 100    | 20      | 52    | 28    |

A stratified sample of size 50 is required. Using proportional allocation technique the numbers of Admin Staff should be chosen.

1. 15
2. 12
3. 10
4. 13

**Options :**

68019148661. 1
68019148662. 2
68019148663. 3
68019148664. 4

**Question Number : 66 Question Id : 68019112336 Question Type : MCQ Option Shuffling : No 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 अस्पताल में 200 कर्मचारी हैं। तालिका अस्पताल में प्रत्येक प्रकार के कर्मचारी की संख्या दिखाती है।

| डॉक्टर | नर्सिंग | प्रशासक | अन्य |
|--------|---------|---------|------|
| 100    | 20      | 52      | 28   |

आकार 50 का एक स्तरीकृत नमूना आवश्यक है। अनुपातिक आवंटन तकनीक का उपयोग करके प्रशासनिक कर्मचारियों की संख्या का चयन किया जाना चाहिए।

1. 15
2. 12
3. 10
4. 13

**Options :**

68019148661. 1

68019148662. 2

68019148663. 3

68019148664. 4

**Question Number : 67 Question Id : 68019112337 Question Type : MCQ Option Shuffling : No**

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

**Minimum Instruction Time : 0**

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

Let  $f(x, y)$  and  $g(x, y)$  be two functions of random variables  $X$  and  $Y$  then.

$\text{Cov}(f(x, y), g(x, y))$  is:

1.  $E(\text{cov}(f(x, y), g(x, y))) - E(f(x, y)) E(g(x, y))$
2.  $E(\text{cov}(f(x, y), g(x, y) | y) + \text{cov}(E(f(x, y) | x), E(g(x, y) | y)))$
3.  $E(\text{cov}(f(x, y), g(x, y) | y) - \text{cov}(E(f(x, y) | x), E(g(x, y) | y)))$
4.  $E(f(x, y | x) - E(g(x, y) | y))$

**Options :**

68019148665. 1

68019148666. 2

68019148667. 3

68019148668. 4

**Question Number : 67 Question Id : 68019112337 Question Type : MCQ Option Shuffling : No**

**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 कि  $f(x, y)$  and  $g(x, y)$  किसी यादृच्छिक चर  $X$  और  $Y$  के दो फलन हैं. तब  $\text{Cov}(f(x, y), g(x, y))$  है

1.  $E(\text{cov}(f(x, y), g(x, y))) - E(f(x, y)) E(g(x, y))$
2.  $E(\text{cov}(f(x, y), g(x, y) | y) + \text{cov}(E(f(x, y) | x), E(g(x, y) | y)))$
3.  $E(\text{cov}(f(x, y), g(x, y) | y) - \text{cov}(E(f(x, y) | x), E(g(x, y) | y)))$
4.  $E(f(x, y | x) - E(g(x, y) | y))$

**Options :**

68019148665. 1

68019148666. 2

68019148667. 3

68019148668. 4

**Question Number : 68 Question Id : 68019112338 Question Type : MCQ Option Shuffling : No**

**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 sample proportion  $p_i$  is an unbiased estimator of the population proportion  $P_i$ , and its variance is

1.  $\frac{N-n}{(N-1)n} P_i (1 - P_i)$

2.  $\frac{N-n}{(N-1)} P_i (1 - P_i)$

3.  $\frac{N-1}{n(N)} P_i (1 - P_i)$

4.  $\frac{N-n}{(N-1)n} P_i^2 (1 - P_i^2)$

**Options :**

68019148669. 1

68019148670. 2

68019148671. 3

68019148672. 4

**Question Number : 68 Question Id : 68019112338 Question Type : MCQ Option Shuffling : No**

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

**Minimum Instruction Time : 0**

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

नमूना अनुपात  $P_i$  जनसंख्या अनुपात  $P_i$  का एक निष्पक्ष अनुमानक है, और इसका विचलन है

1.  $\frac{N-n}{(N-1)n} P_i (1 - P_i)$

2.  $\frac{N-n}{(N-1)} P_i (1 - P_i)$

3.  $\frac{N-1}{n(N)} P_i (1 - P_i)$

4.  $\frac{N-n}{(N-1)n} P_i^2 (1 - P_i^2)$

**Options :**

68019148669. 1

68019148670. 2

68019148671. 3

68019148672. 4

**Question Number : 69 Question Id : 68019112339 Question Type : MCQ Option Shuffling : No**

**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 dwelling units occupied by owners in the city A and B spread over 105 blocks. A sample of 15 blocks was selected by SRSWOR. For given  $\sum Y_i = 360$ ,  $\sum Y_i^2 = 9800$ , then EST (Var( $\bar{Y}_n$ )) up to two decimal places is:

1. 1.87

2. 5.80

3. 11.25

4. 0.37

**Options :**

68019148673. 1

68019148674. 2

68019148675. 3

68019148676. 4

**Question Number : 69 Question Id : 68019112339 Question Type : MCQ Option Shuffling : No**

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

**Minimum Instruction Time : 0**

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

शहर A और B में मालिकों द्वारा रहवासी आवासीय इकाईयों ने 105 ब्लॉकों में विस्तार किया। SRSWOR द्वारा 15 ब्लॉकों का एक नमूना चुना गया था। दिए गए  $\sum Y_i = 360$ ,  $\sum Y_i^2 = 9800$ , के लिए दो दशमलव स्थानों तक EST (Var( $\bar{Y}_n$ )) है:

1. 1.87

2. 5.80

3. 11.25

4. 0.37

**Options :**

68019148673. 1

68019148674. 2

68019148675. 3

68019148676. 4

**Question Number : 70 Question Id : 68019112340 Question Type : MCQ Option Shuffling : No****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  $X_1, \dots, X_n$  are random observation on a Bernoulli variable  $X$  taking values 1 and 0 withprobabilities  $p$  and  $(1-p)$  respectively, then  $\frac{\sum x_i}{n} \left( 1 - \frac{\sum x_i}{n} \right)$  is a consistent estimates of:

1.  $p^2$
2.  $\frac{p}{1-p}$
3.  $p(1-p)$
4.  $p(1-p)^2$

**Options :**

68019148677. 1

68019148678. 2

68019148679. 3

68019148680. 4

**Question Number : 70 Question Id : 68019112340 Question Type : MCQ Option Shuffling : No****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  $X_1, \dots, X_n$  एक बर्नौली चर पर  $X$  टेकिंग मान 1 और 0 क्रमशः संभावनाओं  $p$  और  $(1-p)$  साथ, यादृच्छिक अवलोकन हैं, तो  $\frac{\sum x_i}{n} \left(1 - \frac{\sum x_i}{n}\right)$  क सुसंगत अनुमान है:

1.  $p^2$
2.  $\frac{p}{1-p}$
3.  $p(1-p)$
4.  $p(1-p)^2$

**Options :**

68019148677. 1

68019148678. 2

68019148679. 3

68019148680. 4

**Question Number : 71 Question Id : 68019112341 Question Type : MCQ Option Shuffling : No**

**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  $Y_1, Y_2, Y_3$  and  $Y_4$  can be written as the following three mutually orthogonal contrasts:

- (i)  $Y_1 + Y_2 - Y_3 - Y_4$
- (ii)  $Y_1 - Y_2 - Y_3 + Y_4$
- (iii)  $Y_1 - Y_2 + Y_3 - Y_4$

Then the sum of squares due to a set of mutually orthogonal contrast has the distribution:

1.  $\sigma^2\chi^2$  with 3 d.f.
2.  $\sigma^2t$  with 4 d.f.
3.  $\chi^2$  with 4 d.f.
4.  $t$  with 3 d.f.

**Options :**

68019148681. 1

68019148682. 2

68019148683. 3

68019148684. 4

**Question Number : 71 Question Id : 68019112341 Question Type : MCQ Option Shuffling : No**

**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  $Y_1, Y_2, Y_3$  और  $Y_4$  को निम्नलिखित पारस्परिक ऑर्थोगोनल विरोधाभासों के रूप में लिखा जा सकता है:

- (i)  $Y_1 + Y_2 - Y_3 - Y_4$
- (ii)  $Y_1 - Y_2 - Y_3 + Y_4$
- (iii)  $Y_1 - Y_2 + Y_3 - Y_4$

तब पारस्परिक रूप से ऑर्थोगोनल कंट्रास्ट के एक सेट के कारण वर्गों के योग का वितरण है:

1.  $\sigma^2 \chi^2$  . 3 डीएफ के साथ
2.  $\sigma^2 t$  . 4 डीएफ के साथ
3.  $\chi^2$  . 4 डीएफ के साथ
4.  $t$  के साथ 3 डीएफ

**Options :**

68019148681. 1

68019148682. 2

68019148683. 3

68019148684. 4

**Question Number : 72 Question Id : 68019112342 Question Type : MCQ Option Shuffling : No**

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

**Minimum Instruction Time : 0**

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

Consider a randomized block design (RBD) with 'r' blocks and k treatment. Let  $S_b^2$  and  $S_e^2$  denote the block mean square and error mean square respectively. Then the efficiency of the RBD as compared to completely randomized design is

1.  $E = \frac{(r-1)s_b^2 + r(k-1)s_e^2}{(rk-1)s_e^2}$
2.  $E = \frac{rs_b^2 + ks_e^2}{(r-1)(k-1)s_e^2}$
3.  $E = \frac{(r-1)s_b^2 + (k-1)s_e^2}{(rk-1)s_e^2}$
4.  $E = \frac{(r-1)s_b^2 + r(k-1)s_e^2}{(r-1)(k-1)s_e^2}$

**Options :**

68019148685. 1

68019148686. 2

68019148687. 3

68019148688. 4

**Question Number : 72 Question Id : 68019112342 Question Type : MCQ Option Shuffling : No**

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

**Minimum Instruction Time : 0**

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

$r$  ब्लॉक और  $k$  उपचार के साथ एक यादृच्छिक ब्लॉक डिजाइन (आरबीडी) पर विचार करें। माना  $s_b^2$  और  $s_e^2$  क्रमशः ब्लॉक मीन स्क्वायर और एरर मीन स्क्वायर को दर्शाते हैं। तब पूरी तरह से यादृच्छिक डिजाइन की तुलना में आरबीडी की दक्षता है

$$1. E = \frac{(r-1)s_b^2 + r(k-1)s_e^2}{(rk-1)s_e^2}$$

$$2. E = \frac{rs_b^2 + ks_e^2}{(r-1)(k-1)s_e^2}$$

$$3. E = \frac{(r-1)s_b^2 + (k-1)s_e^2}{(rk-1)s_e^2}$$

$$4. E = \frac{(r-1)s_b^2 + r(k-1)s_e^2}{(r-1)(k-1)s_e^2}$$

**Options :**

68019148685. 1

68019148686. 2

68019148687. 3

68019148688. 4

**Question Number : 73 Question Id : 68019112343 Question Type : MCQ Option Shuffling : No**

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

**Minimum Instruction Time : 0**

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



Consider a Latin Square Design (LSD) with their factor, each at  $k$  levels. Let  $S_R^2$  and  $S_E^2$  denote the row mean square and error mean square respectively. If columns are treated as blocks, then the row efficiencies of the LSD is given by

1.  $\frac{S_R^2 + (k-1)S_E^2}{kS_E^2}$
2.  $\frac{(k-1)S_R^2 + S_E^2}{kS_E^2}$
3.  $\frac{S_R^2 + kS_E^2}{(k-1)S_E^2}$
4.  $\frac{kS_R^2 + S_E^2}{(k-1)S_E^2}$

**Options :**

68019148689. 1

68019148690. 2

68019148691. 3

68019148692. 4

**Question Number : 73 Question Id : 68019112343 Question Type : MCQ Option Shuffling : No**

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

**Minimum Instruction Time : 0**

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

K स्तर पर प्रत्येक के साथ, अपने कारक वाले एक लैटिन स्क्वायर डिज़ाइन (एलएसडी) पर विचार करें। माना कि  $S_R^2$  और  $S_E^2$  क्रमशः पंक्ति माध्य वर्ग और त्रुटि माध्य वर्ग को निरूपित करते हैं। यदि कॉलम को ब्लॉक के रूप में माना जाता है, तो एलएसडी की पंक्ति दक्षता इस प्रकार दी जाती है

1.  $\frac{S_R^2 + (k-1)S_E^2}{kS_E^2}$
2.  $\frac{(k-1)S_R^2 + S_E^2}{kS_E^2}$
3.  $\frac{S_R^2 + kS_E^2}{(k-1)S_E^2}$
4.  $\frac{kS_R^2 + S_E^2}{(k-1)S_E^2}$

**Options :**

68019148689. 1

68019148690. 2

68019148691. 3

68019148692. 4

Question Number : 74 Question Id : 68019112344 Question Type : MCQ Option Shuffling : No

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

In a randomized block design with ' $k$ ' treatments and ' $r$ ' replications ( $r > k$ ), replication of the  $i^{\text{th}}$  treatment is missing in the  $i^{\text{th}}$  block. Then the estimate of the missing value is

1.  $\hat{x} = \frac{kTi + rBj - G}{(r-1)(k-1)}$
2.  $\hat{x} = \frac{(k-1)Ti + rBj - G}{(rk)}$
3.  $\hat{x} = \frac{kTi + (r-1)Bj}{(r-1)(k-1)} - G$
4.  $\hat{x} = \frac{kTi + rBj}{(r-1)(k-1)} - G$

Options :

68019148693. 1

68019148694. 2

68019148695. 3

68019148696. 4

Question Number : 74 Question Id : 68019112344 Question Type : MCQ Option Shuffling : No

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

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

' $k$ ' उपचार और ' $r$ ' प्रतिकृतियों ( $r > k$ ) के साथ एक यादृच्छिक ब्लॉक डिजाइन में,  $i^{\text{th}}$  उपचार की प्रतिकृति लुप्त है जो  $i^{\text{th}}$  ब्लॉक है। लुप्त मान का अनुमान है

1.  $\hat{x} = \frac{kTi + rBj - G}{(r-1)(k-1)}$
2.  $\hat{x} = \frac{(k-1)Ti + rBj - G}{(rk)}$
3.  $\hat{x} = \frac{kTi + (r-1)Bj}{(r-1)(k-1)} - G$
4.  $\hat{x} = \frac{kTi + rBj}{(r-1)(k-1)} - G$

Options :

68019148693. 1

68019148694. 2

68019148695. 3

68019148696.4

**Question Number : 75 Question Id : 68019112345 Question Type : MCQ Option Shuffling : No**

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

**Minimum Instruction Time : 0**

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

Consider a randomized block design for  $2^2$  factorial in 'r' replication. The degree of freedom for the error term is:

1.  $(r - 1)$
2.  $(r - 3)$
3.  $3(r - 1)$

4.  $(3r - 1)$

**Options :**

68019148697.1

68019148698.2

68019148699.3

68019148700.4

**Question Number : 75 Question Id : 68019112345 Question Type : MCQ Option Shuffling : No**

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

**Minimum Instruction Time : 0**

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

$r$  प्रतिकृति में  $2^2$  फैक्टोरियल के लिए एक यादृच्छिक ब्लॉक डिजाइन पर विचार करें। त्रुटि पद के लिए स्वतंत्रता की डिग्री है:

1.  $(r - 1)$
2.  $(r - 3)$
3.  $3(r - 1)$

4.  $(3r - 1)$

**Options :**

68019148697.1

68019148698.2

68019148699.3

68019148700.4