

# National Testing Agency

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## STATISTICAL SCIENCE

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<b>Group Maximum Duration :</b>	0
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<b>Is this Group for Examiner? :</b>	No

## STATISTICAL SCIENCE

<b>Section Id :</b>	21052913
<b>Section Number :</b>	1
<b>Section type :</b>	Online
<b>Mandatory or Optional :</b>	Mandatory
<b>Number of Questions :</b>	120

<b>Number of Questions to be attempted :</b>	120
<b>Section Marks :</b>	480
<b>Display Number Panel :</b>	Yes
<b>Group All Questions :</b>	Yes
<b>Mark As Answered Required? :</b>	Yes
<b>Sub-Section Number :</b>	1
<b>Sub-Section Id :</b>	21052913
<b>Question Shuffling Allowed :</b>	Yes

**Question Number : 1 Question Id : 2105291021 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

The least upper bound(lub) and greatest lower bound(glb) of the set

$\{1+((-1)^n/n) ; n \in \mathbb{N}\}$  are:

1. lub = 1, glb = -1
2. lub = 3/2, glb = 1
3. lub = 3/2, glb = 0
4. lub = 1, glb = 0

**Options :**

2105294081. 1
2105294082. 2
2105294083. 3
2105294084. 4

**Question Number : 2 Question Id : 2105291022 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

If the roots of equation  $x^3 + ax^2 + bx + c = 0$  are in geometric progression, then:

1.  $b^3c = a^3$
2.  $a^3c = b^3$
3.  $ac^3 = b^3$
4.  $c^3b = a^3$

**Options :**

2105294085. 1  
2105294086. 2  
2105294087. 3  
2105294088. 4

**Question Number : 3 Question Id : 2105291023 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

The value of  $z = \frac{(-1+i)^4}{(\sqrt{3}+i)^{10}}$  is:

1.  $2^{-9}(-1-i\sqrt{3})$
2.  $2^8(1-i\sqrt{3})$
3.  $2^{-8}(-1+i\sqrt{3})$
4.  $2^9(-1+i\sqrt{3})$

**Options :**

2105294089. 1  
2105294090. 2  
2105294091. 3  
2105294092. 4

**Question Number : 4 Question Id : 2105291024 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

For  $z_1 = 1+i$  and  $z_2 = \sqrt{3} - i$ , the product  $z_1 z_2$  is given by :

1.  $2\sqrt{2}\left(\cos\frac{\pi}{12} + i\sin\frac{\pi}{12}\right)$
2.  $\frac{1}{2\sqrt{2}}\left(\cos\frac{\pi}{12} - i\sin\frac{\pi}{12}\right)$
3.  $\frac{1}{2\sqrt{2}}\left(\cos\frac{\pi}{12} + i\sin\frac{\pi}{12}\right)$
4.  $2\sqrt{2}\left(\cos\frac{\pi}{12} - i\sin\frac{\pi}{12}\right)$

**Options :**

- 2105294093. 1
- 2105294094. 2
- 2105294095. 3
- 2105294096. 4

**Question Number : 5 Question Id : 2105291025 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

The center and radius of the circle  $r^2 = 4r \cos\theta$  are :

1. Center = (4, 0), Radius = 4
2. Center = (0, 2), Radius = 2
3. Center = (0, 2), Radius = 4
4. Center = (2, 0), Radius = 2

**Options :**

- 2105294097. 1
- 2105294098. 2
- 2105294099. 3
- 2105294100. 4

**Question Number : 6 Question Id : 2105291026 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

If  $f(x) = x^4 + ax^3 + bx^2 + cx + d$  be a polynomial with real coefficients and real roots and if  $f(i) = 1$  (where  $i = \sqrt{-1}$ ), then values of a, b, c and d are respectively:

1. 0, 0, 1, 0
2. 1, 0, 0, 1
3. 0, 0, 0, 0
4. 0, 1, 0, 0

**Options :**

2105294101. 1  
2105294102. 2  
2105294103. 3  
2105294104. 4

**Question Number : 7 Question Id : 2105291027 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

Which of the following statements is false for sets A, B and C?

1.  $A \cap (B - C) = (A \cup B) - (A \cap B)$
2.  $A - (B - C) = (A - B) \cup (A \cap C)$
3.  $A - B = A \cap B^c$
4.  $A \subseteq B$  iff  $A \cup B = B$

**Options :**

2105294105. 1  
2105294106. 2  
2105294107. 3  
2105294108. 4

**Question Number : 8 Question Id : 2105291028 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

The value of h for which the vectors  $v_1 = \begin{pmatrix} 1 \\ -3 \\ 2 \end{pmatrix}$ ,  $v_2 = \begin{pmatrix} -3 \\ 9 \\ -6 \end{pmatrix}$ ,  $v_3 = \begin{pmatrix} 5 \\ -7 \\ h \end{pmatrix}$  are linearly dependent

is :

1.  $\frac{1}{2}$
2. 2
3. All h
4. No h

**Options :**

2105294109. 1  
2105294110. 2  
2105294111. 3  
2105294112. 4

**Question Number : 9 Question Id : 2105291029 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

Which of the following is true?

1. The set of all vectors  $\begin{pmatrix} x \\ y \end{pmatrix}$  in  $\mathbb{R}^2$  such that  $x + y = 2$  is a subspace of  $\mathbb{R}^2$
2. The set of all vectors  $\begin{pmatrix} x \\ y \end{pmatrix}$  in  $\mathbb{R}^2$  such that  $x + y = 0$  is a subspace of  $\mathbb{R}^2$
3. The union of first and third quadrants  $\mathbb{R}^2$  is a subspace of  $\mathbb{R}^2$
4. The union of x-axis and y-axis in  $\mathbb{R}^2$  is a subspace of  $\mathbb{R}^2$

**Options :**

2105294113. 1  
2105294114. 2  
2105294115. 3  
2105294116. 4

**Question Number : 10 Question Id : 2105291030 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

$A = \begin{pmatrix} 4 & -6 \\ -8 & 12 \\ 6 & -9 \end{pmatrix}$ . Then a nontrivial solution of  $Ax = 0$  is

1.  $\begin{pmatrix} 3 \\ 2 \\ 1 \end{pmatrix}$

2.  $\begin{pmatrix} 1 \\ 1 \end{pmatrix}$

3.  $\begin{pmatrix} 1 \\ 2 \end{pmatrix}$

4.  $\begin{pmatrix} 1 \\ 3 \\ 2 \end{pmatrix}$

**Options :**

2105294117. 1

2105294118. 2

2105294119. 3

2105294120. 4

**Question Number : 11 Question Id : 2105291031 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

If  $A$  is an  $n \times n$  real matrix, then :

1. The eigenvalues of  $A$  are real or complex conjugates in pairs
2. The eigenvalues of  $A$  are all equal
3. The eigenvalues of  $A$  cannot be complex numbers
4. The eigenvalues of  $A$  are all positive real numbers

**Options :**

2105294121. 1

2105294122. 2

2105294123. 3

2105294124. 4

**Question Number : 12 Question Id : 2105291032 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

The second column of  $A^{-1}$ ,  $A = \begin{pmatrix} -2 & -7 \\ 1 & 5 \end{pmatrix}$  is:

1.  $\begin{pmatrix} 2/3 \\ -7/3 \end{pmatrix}$
2.  $\begin{pmatrix} -7/3 \\ 2/3 \end{pmatrix}$
3.  $\begin{pmatrix} -5/3 \\ 1/3 \end{pmatrix}$
4.  $\begin{pmatrix} -7/3 \\ 1/3 \end{pmatrix}$

**Options :**

2105294125. 1  
2105294126. 2  
2105294127. 3  
2105294128. 4

**Question Number : 13 Question Id : 2105291033 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

If a  $n \times n$  matrix  $A$  satisfies the equation  $A^2 - 2A + I = 0$ , then :

1.  $A^3 = 3A - 2I$ ,  $A^4 = 4A - 3I$
2.  $A^3 = 2A - I$ ,  $A^4 = 4A - 3I$
3.  $A^3 = 2A^2 - 3I$ ,  $A^4 = 3A^2 - 4I$
4.  $A^3 = 4A - 3I$ ,  $A^4 = 3A - 2I$

**Options :**

2105294129. 1  
2105294130. 2  
2105294131. 3  
2105294132. 4



**Question Number : 14 Question Id : 2105291034 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

Which of the following is false?

1. If the entries in a row of a determinant are zero, the value of determinant is zero
2. The value of a determinant changes if the rows and columns of determinant are interchanged
3. If any two rows of a determinant are interchanged, the values of the determinant is multiplied by -1
4. If corresponding entries in 2 rows of a determinant are proportional, the value of the determinant is zero

**Options :**

- 2105294133. 1
- 2105294134. 2
- 2105294135. 3
- 2105294136. 4

**Question Number : 15 Question Id : 2105291035 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

A particle moving on the x-axis has position  $x(t) = 2t^3 + 3t^2 - 36t + 40$  feet after an elapsed time of  $t$  seconds. Its velocity after 3 seconds is:

1. 18 ft/s
2. 36 ft/s
3. 9 ft/s
4. 54 ft/s

**Options :**

- 2105294137. 1
- 2105294138. 2
- 2105294139. 3

2105294140. 4

**Question Number : 16 Question Id : 2105291036 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

For  $f(x) = [x^2 + 1]^{[x+1]}$ , where  $[x]$  denotes the greatest integer less than or equal to  $x$ , which of the following is not true:

1.  $f$  is a discontinuous function
2.  $f(1)=4$
3.  $\lim_{x \rightarrow 1} f(x)$  exists
4.  $f$  is discontinuous at  $x = 2$

**Options :**

- 2105294141. 1
- 2105294142. 2
- 2105294143. 3
- 2105294144. 4

**Question Number : 17 Question Id : 2105291037 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

For the function  $f(x) = x^3 - 3x$  on  $[-1, 3]$ , the points of maxima and minima are respectively:

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

**Options :**

- 2105294145. 1
- 2105294146. 2
- 2105294147. 3
- 2105294148. 4

**Question Number : 18 Question Id : 2105291038 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

The number 'c' between 0 and 2 such that  $f(x) = \frac{1}{x+1}$ , satisfies mean value theorem is:

1.  $-\sqrt{3} + 1$
2.  $-\sqrt{3} - 1$
3.  $\sqrt{3} - 1$
4.  $\sqrt{3} + 1$

**Options :**

2105294149. 1  
2105294150. 2  
2105294151. 3  
2105294152. 4

**Question Number : 19 Question Id : 2105291039 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

The value of  $\lim_{x \rightarrow \infty} \sqrt{\frac{3x-5}{x-2}}$  is :

1.  $\sqrt{\frac{5}{2}}$
2.  $\sqrt{3}$
3. Does not exist
4. 0

**Options :**

2105294153. 1  
2105294154. 2  
2105294155. 3

2105294156. 4

**Question Number : 20 Question Id : 2105291040 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

The infinite series  $3 + \frac{1}{6}x - \frac{1}{216}x^2 - \frac{1}{3.888}x^3 \dots$  represents Maclaurin series for the function:

1.  $\sqrt{9-x}$
2.  $\sqrt{9+x}$
3.  $\sqrt{x + \frac{1}{9}}$
4.  $\sqrt{x-9}$

**Options :**

2105294157. 1  
2105294158. 2  
2105294159. 3  
2105294160. 4

**Question Number : 21 Question Id : 2105291041 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

First four terms of the Taylor series of the function  $f(x) = x^3 + 2x^2 + x - 1$  at  $c = 3$  are :

1.  $(x-3)^3 - 2(x-3)^2 + 40(x-3) + 1$
2.  $(x-3)^3 + 2(x-3)^2 + (x-3) - 1$
3.  $(x-3)^3 + 11(x-3)^2 + 40(x-3) - 1$
4.  $(x-3)^3 + 11(x-3)^2 - (x-3) + 1$

**Options :**

2105294161. 1  
2105294162. 2  
2105294163. 3

2105294164. 4

**Question Number : 22 Question Id : 2105291042 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

Vertical and horizontal asymptotes of the curve  $y = \frac{3x+5}{7-x}$  are respectively :

1.  $x = 5/3, y = 7$
2.  $x = 7, y = 3$
3.  $x = 7, y = -3$
4.  $x = 7, y = -5/3$

**Options :**

- 2105294165. 1
- 2105294166. 2
- 2105294167. 3
- 2105294168. 4

**Question Number : 23 Question Id : 2105291043 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

For function  $f(x) = x^{\frac{2}{3}}(2x + 5)$ , if

- a)  $x = 0$  is a horizontal tangent
- b) The curve has no asymptote
- c) The curve has a cusp at  $(0, 0)$
- d) The curve has no vertical tangent

Then:

- 1. (a), (b) and (c) hold true
- 2. Only (a) and (b) hold true
- 3. Only (c) is false
- 4. (b), (c) and (d) hold true

**Options :**

- 2105294169. 1
- 2105294170. 2
- 2105294171. 3
- 2105294172. 4

**Question Number : 24 Question Id : 2105291044 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

The value of  $\lim_{x \rightarrow 0^+} \left( \frac{1}{x} - \frac{1}{\sin x} \right)$  is:

- 1. 1
- 2. Infinite
- 3. -1
- 4. 0

**Options :**

- 2105294173. 1

2105294174. 2

2105294175. 3

2105294176. 4

**Question Number : 25 Question Id : 2105291045 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

For the sequence  $s_n = \frac{b^n}{n^2}$ , which of the following is true?

1.  $\lim_{n \rightarrow \infty} s_n = 1$
2.  $(s_n)$  diverges for  $0 < b < 1$
3.  $(s_n)$  diverges for  $b > 1$
4.  $(s_n)$  converges to 1 for  $0 < b < 1$

**Options :**

2105294177. 1

2105294178. 2

2105294179. 3

2105294180. 4

**Question Number : 26 Question Id : 2105291046 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

For the sequence  $(x_n)$ , if  $x_1 > 1$  and  $x_{n+1} = 2 - (1/x_n)$ ,  $n \geq 2$ , which of the following is true:

1.  $(x_n)$  is monotonically increasing
2.  $(x_n)$  is monotonically decreasing
3.  $(x_n)$  is oscillating
4.  $(x_n)$  is unbounded

**Options :**

2105294181. 1

2105294182. 2

2105294183. 3

2105294184. 4

**Question Number : 27 Question Id : 2105291047 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

For the series with  $n^{\text{th}}$  term  $x_n = \frac{n}{(n+1)(n+2)}$ , the following is true:

1. The series  $\sum x_n$  is divergent
2. The series  $\sum x_n$  is convergent
3. The sequence of partial sums is convergent
4.  $\lim_{n \rightarrow \infty} x_n = 0$

**Options :**

2105294185. 1

2105294186. 2

2105294187. 3

2105294188. 4

**Question Number : 28 Question Id : 2105291048 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

The value of  $\iint_R x^2 y^5 dx dy$ , where R is the rectangle with vertices (1, 0), (1, 1), (2, 1) and (2, 0) is :

1. 1
2. 2
3. 7/18
4. 5/18

**Options :**

2105294189. 1

2105294190. 2

2105294191. 3



2105294192. 4

**Question Number : 29 Question Id : 2105291049 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

The value of  $\int_0^4 \int_0^{4-x} xydydx$  is :

1. 544/3
2. 32/3
3. 17/3
4. 16/3

**Options :**

2105294193. 1  
2105294194. 2  
2105294195. 3  
2105294196. 4

**Question Number : 30 Question Id : 2105291050 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

For a continuous function  $f(r,\theta)$  defined on a region  $D$  in  $(r, \theta)$  plane, the area of the domain  $D$  is given by:

1.  $\iint_D f(r, \theta) drd\theta$
2.  $\iint_D rf(r, \theta) drd\theta$
3.  $\iint_D r drd\theta$
4.  $\iint_D drd\theta$

**Options :**

2105294197. 1  
2105294198. 2  
2105294199. 3

2105294200. 4

**Question Number : 31 Question Id : 2105291051 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

The value of the integral  $\int \frac{dx}{1+e^x}$  is equal to :

1.  $-\ln(1+e^x) + c$
2.  $\ln(1+e^{-x}) + c$
3.  $-\ln(1+e^{-x}) + c$
4.  $\ln(1+e^x) + c$

**Options :**

2105294201. 1  
2105294202. 2  
2105294203. 3  
2105294204. 4

**Question Number : 32 Question Id : 2105291052 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

The value of  $\int \frac{2x-9}{\sqrt{x^2-9x+1}}$  is :

1.  $2\sqrt{x^2-9x+1} + c$
2.  $\frac{1}{2}\sqrt{x^2-9x+1} + c$
3.  $\sqrt{x^2-9x+1} + c$
4.  $\frac{2}{9}\sqrt{x^2-9x+1} + c$

**Options :**

2105294205. 1  
2105294206. 2  
2105294207. 3

2105294208. 4

**Question Number : 33 Question Id : 2105291053 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

The value of  $\int_0^{\frac{\pi}{2}} \sin^5 x$  is :

1. 4/5
2. 8/15
3. 4/15
4. 2/5

**Options :**

2105294209. 1  
2105294210. 2  
2105294211. 3  
2105294212. 4

**Question Number : 34 Question Id : 2105291054 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

The value of  $\int_0^1 \frac{x^2}{\sqrt{1-x^2}} dx$  is :

1.  $\pi/6$
2.  $\pi/4$
3.  $\pi/2$
4.  $\pi/8$

**Options :**

2105294213. 1  
2105294214. 2  
2105294215. 3

2105294216. 4

**Question Number : 35 Question Id : 2105291055 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

Equations of the circle circumscribing the triangle formed by the lines  $x+y=6$ ,  $2x+y=4$ ,  $x+2y=5$  is:

1.  $x^2+y^2-17x+50y-19=0$
2.  $x^2+y^2+17x+19y-25=0$
3.  $x^2+y^2+17x-19y+50=0$
4.  $x^2+y^2-17x-19y+50=0$

**Options :**

2105294217. 1  
2105294218. 2  
2105294219. 3  
2105294220. 4

**Question Number : 36 Question Id : 2105291056 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

For the parabola  $4(y-1)^2 = -7(x-3)$ , the coordinates of vertex, focus and length of the latus rectum are respectively:

1. (1, 3); (41/16, 1); 7/2
2. (3, 1); (41/16, 1); 7/4
3. (3,1); (41/16, 0); 7/4
4. (3, 1); (0, 41/16); 7/2

**Options :**

2105294221. 1  
2105294222. 2  
2105294223. 3

2105294224. 4

**Question Number : 37 Question Id : 2105291057 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

If the angle between the lines joining the foci of an ellipse to an extremity of the minor axis is  $90^\circ$ , and the major axis is  $2\sqrt{2}$ , then the equation of ellipse and its eccentricity is :

1.  $2x^2 + y^2 = 2; \frac{1}{2}$
2.  $2x^2 + y^2 = 1; \frac{1}{\sqrt{2}}$
3.  $x^2 + 2y^2 = 2; \frac{1}{\sqrt{2}}$
4.  $x^2 + y^2 = 2; \frac{1}{\sqrt{2}}$

**Options :**

2105294225. 1  
2105294226. 2  
2105294227. 3  
2105294228. 4

**Question Number : 38 Question Id : 2105291058 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

The equations of asymptotes for the hyperbola  $xy-3x-2y=0$  are:

1.  $x=2, y=3$
2.  $x=2, y=1$
3.  $x=3, y=1$
4.  $x=1, y=3$

**Options :**

2105294229. 1

2105294230. 2

2105294231. 3

2105294232. 4

**Question Number : 39 Question Id : 2105291059 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

A solution to the difference equation  $u_{x+3} - 3u_{x+1} - 2u_x = 0$  is of the form :

1.  $u_x = c_1 2^x - (c_2 + c_3 x)(-1)^x$
2.  $u_x = (c_1 - c_2)2^x - (c_3 x)(-1)^x$
3.  $u_x = c_1(1 - (-1)^x)2^x + c_2(-1)^x$
4.  $u_x = c_1 2^x - (c_2 + c_3 x)(-1)^{x+1}$

**Options :**

2105294233. 1

2105294234. 2

2105294235. 3

2105294236. 4

**Question Number : 40 Question Id : 2105291060 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

A solution to the differential equation  $\left(y - x \frac{dy}{dx}\right) = a\left(y^2 + \frac{dy}{dx}\right)$  is :

1.  $y = c(a-x)(1+ay)$
2.  $y = c(a-x)(1-ay)$
3.  $y = c(a+x)(1-ay)$
4.  $y = c(a+x)(1+ay)$

**Options :**

2105294237. 1

2105294238. 2

2105294239. 3

2105294240. 4

**Question Number : 41 Question Id : 2105291061 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

Which of the following equations is exact?

1.  $x dy + y^2 dx = 0$
2.  $(1/4)e^{4y} dx + x e^{4y} dy = 0$
3.  $(\cos y + x^2)dx - x \operatorname{Cosec}^2 y dy = 0$
4.  $x dy - y dx - \cos(1/x) dx = 0$

**Options :**

2105294241. 1  
2105294242. 2  
2105294243. 3  
2105294244. 4

**Question Number : 42 Question Id : 2105291062 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

Solution of the differential equation  $x \sin \frac{y}{x} dy = \left( y \sin \frac{y}{x} - x \right) dx$  is

1.  $\log \frac{y}{x} - \cos x + c = 0$
2.  $\log x - \sin \frac{y}{x} + c = 0$
3.  $\log \frac{1}{x} - \cos y + c = 0$
4.  $\log x - \cos \frac{y}{x} + c = 0$

**Options :**

2105294245. 1  
2105294246. 2  
2105294247. 3

2105294248. 4

**Question Number : 43 Question Id : 2105291063 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

For the differential equation  $x^\alpha y^\beta (mydx + nxdy) = 0$ , the integrating factor, for any value of  $k$  is:

1.  $x^{m-k-\alpha} y^{n-k-\beta}$
2.  $x^{m-1-k\alpha} y^{n-1-k\beta}$
3.  $x^{km-1-\alpha} y^{kn-1-\beta}$
4.  $x^{km-\alpha} y^{kn-\beta}$

**Options :**

2105294249. 1  
2105294250. 2  
2105294251. 3  
2105294252. 4

**Question Number : 44 Question Id : 2105291064 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

Integrating factor for the differential equation  $(x^2 + y^2 + x)dx + xy dy = 0$  is

1.  $y$
2.  $x$
3.  $e^y$
4.  $e^x$

**Options :**

2105294253. 1  
2105294254. 2  
2105294255. 3  
2105294256. 4



**Question Number : 45 Question Id : 2105291065 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

Total differential of the function  $f(x, y, z)$  is

1.  $df = f_x(x, y, z)\Delta x + f_y(x, y, z)\Delta y + f_z(x, y, z)\Delta z$

2.  $df = f_x\Delta x + f_y\Delta y - f_z\Delta z$

3.  $df = f_x(x, y, z)\frac{\partial f}{\partial x} + f_y(x, y, z)\frac{\partial f}{\partial y} + f_z(x, y, z)\frac{\partial f}{\partial z}$

4.  $df = \frac{\Delta f}{\Delta x}dx + \frac{\Delta f}{\Delta y}dy + \frac{\Delta f}{\Delta z}dz$

**Options :**

2105294257. 1

2105294258. 2

2105294259. 3

2105294260. 4

**Question Number : 46 Question Id : 2105291066 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

Slope of the tangent line to the graph of

$$f(x, y) = x\sqrt{x+y}$$

At the point  $(1, 3, 2)$  parallel to  $xz$  plane is

1.  $\frac{1}{4}$
2.  $\frac{9}{4}$
3.  $\frac{5}{2}$
4.  $\frac{9}{16}$

**Options :**

- 2105294261. 1
- 2105294262. 2
- 2105294263. 3
- 2105294264. 4

**Question Number : 47 Question Id : 2105291067 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

For the function  $f(x,y) = x^3 + x^2y^2$ , the values of

$f_x(-1,-1)$  and  $f_y(-1,-1)$  are respectively:

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

**Options :**

- 2105294265. 1
- 2105294266. 2
- 2105294267. 3
- 2105294268. 4

**Question Number : 48 Question Id : 2105291068 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

Number of first order equations in a system equivalent to the equation

$$x''' + 3x'' + 2x' - 5x = \sin 2t \text{ is}$$

- 1. 1
- 2. 2
- 3. The given system is irreducible
- 4. 3

**Options :**

- 2105294269. 1
- 2105294270. 2
- 2105294271. 3
- 2105294272. 4

**Question Number : 49 Question Id : 2105291069 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

For the system  $x' = y; y' = -x$ , the solution curve has the form

- 1.  $\frac{x^2}{c^2} - \frac{y^2}{c^2} = 1$
- 2.  $x^2 + y^2 = \frac{1}{2} c^2$
- 3.  $x^2 + y^2 = c^2$
- 4.  $-x^2 + y^2 = c^2$

**Options :**

- 2105294273. 1
- 2105294274. 2
- 2105294275. 3
- 2105294276. 4

**Question Number : 50 Question Id : 2105291070 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

Which of the following is a central difference operator?

- 1.  $\Delta f(x_i) = f\left(\frac{x_i + h}{2}\right) - f\left(\frac{x_i - h}{2}\right)$
- 2.  $\nabla f(x_i) = f(x_i + h) - f(x_i)$
- 3.  $f\left(x_i + \frac{h}{2}\right) - f\left(x_i - \frac{h}{2}\right)$
- 4.  $E f(x_i) = f(x_i + h)$

**Options :**

2105294277. 1

2105294278. 2

2105294279. 3

2105294280. 4

**Question Number : 51 Question Id : 2105291071 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

Which of the following is the experimental condition in case of binomial distribution?

1. The trials are dependent on previous trial
2. The probability of success changes from trial to trial
3. The number of trials are finite
4. Each trial results in more than two outcomes

**Options :**

2105294281. 1

2105294282. 2

2105294283. 3

2105294284. 4

**Question Number : 52 Question Id : 2105291072 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

Let  $X$  follows a binomial  $(n, p)$  distribution, the skewness of the distribution will be zero if

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

**Options :**

2105294285. 1

2105294286. 2

2105294287. 3

2105294288. 4

**Question Number : 53 Question Id : 2105291073 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

The coefficient of variation of Poisson distribution with mean 9 is

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

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

3. 9

4. 3

**Options :**

2105294289. 1

2105294290. 2

2105294291. 3

2105294292. 4

**Question Number : 54 Question Id : 2105291074 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

In normal distribution with mean  $\mu$  and variance  $\sigma^2$ , the area under the normal curve between  $\mu \pm \sigma$  is

1. 0.9544

2. 0.6826

3. 0.5000

4. 0.9973

**Options :**

2105294293. 1

2105294294. 2

2105294295. 3

2105294296. 4

**Question Number : 55 Question Id : 2105291075 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

Let  $X$  be a normally distributed random variable with mean  $\mu = 50$  and variance  $\sigma^2 = 9$ . The probability that  $X$  is greater than  $\mu + \sigma$  is

1. 0.5000

2. 0.8413

3. 0.3413

4. 0.1587

**Options :**

2105294297. 1

2105294298. 2

2105294299. 3

2105294300. 4

**Question Number : 56 Question Id : 2105291076 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

Which of the following is a simple hypothesis?

1. The yield of paddy in India is distributed normally with mean yield 2.5 t/ha

2. The yield of paddy in India is distributed normally with mean yield 2.5 t/ha and variance  $15.6 (q/ha)^2$

3. The yield of paddy in India is distributed normally with variance in yield as  $1.56 (t/ha)^2$

4. The yield of paddy in India is distributed normally with mean yield 2.5 t/ha and variance greater than  $1.56 (q/ha)^2$

**Options :**

- 2105294301. 1
- 2105294302. 2
- 2105294303. 3
- 2105294304. 4

**Question Number : 57 Question Id : 2105291077 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

Which of the following statements is correct?

1. The value of Chi-square can be positive as well as negative
2. Chi-square test is used for testing equality of several proportions
3. In a 4x3 contingency table, the degrees of freedom for chi-square is 8
4. Chi-square test is used for testing equality of two population variances

**Options :**

- 2105294305. 1
- 2105294306. 2
- 2105294307. 3
- 2105294308. 4

**Question Number : 58 Question Id : 2105291078 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

For testing goodness of fit, suppose the observed frequencies for two classes are 28 and 12. It is expected that these occur in the ratio 3:1. The value of Chi-square statistic for testing this is

1. 0.26
2. 0.40
3. 0.53
4. 0.75

**Options :**

- 2105294309. 1

2105294310. 2

2105294311. 3

2105294312. 4

**Question Number : 59 Question Id : 2105291079 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

In a random sample of 100 voters in an area, 59 voters were in favour of a candidate A. The value of the test statistic for testing  $H_0: P = 0.5$  against  $H_0: P \neq 0.5$  is

1. 1.90

2. 1.80

3. 1.28

4. 1.75

**Options :**

2105294313. 1

2105294314. 2

2105294315. 3

2105294316. 4

**Question Number : 60 Question Id : 2105291080 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

If each value of variable X is multiplied by 8 and of Y is multiplied by 10, then correlation coefficient of new data is

1. Ten times as obtained from original data

2. Eight times as obtained from original data

3. Eighty times as obtained from original data

4. Same as obtained from original data

**Options :**

2105294317. 1



2105294318. 2

2105294319. 3

2105294320. 4

**Question Number : 61 Question Id : 2105291081 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

It is given that the standard deviation of a large population is 10. To test  $H_0: \mu = 10$  against  $H_1: \mu \neq 10$  at 1% level of significance, a sample of size 100 is taken.  $H_0$  will be rejected if

1.  $\bar{x} > 2.58$

2.  $\bar{x} > 12.58$

3.  $\bar{x} > 11.96$

4.  $\bar{x} > 7.42$

**Options :**

2105294321. 1

2105294322. 2

2105294323. 3

2105294324. 4

**Question Number : 62 Question Id : 2105291082 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

There are 15 students in a class. Out of these 6 students failed. The marks of the passed students are 51, 67, 48, 71, 46, 45, 81, 90 and 50. The median of all the observations is

1. 46

2. 50

3. 51

4. 67

**Options :**

2105294325. 1

2105294326. 2

2105294327. 3

2105294328. 4

**Question Number : 63 Question Id : 2105291083 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

Which of the following is NOT true?

1. Poisson distribution with mean and variance as 16
2. Binomial distribution with mean 16 and variance 6
3. The contingency table follows multinomial distribution
4. Binomial distribution with mean 16 and standard deviation 4

**Options :**

2105294329. 1

2105294330. 2

2105294331. 3

2105294332. 4

**Question Number : 64 Question Id : 2105291084 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

In a completely randomized design with 5 treatments, treatments 1 and 2 are replicated 4 times each and treatments 3, 4 and 5 are replicated 3 times each. The degrees of freedom for error will be

1. 6
2. 12
3. 13
4. 16

**Options :**

2105294333. 1

2105294334. 2

2105294335. 3

2105294336. 4

**Question Number : 65 Question Id : 2105291085 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

The principle of replication

1. Reduces the error variance
2. Ensures independence of the observations for drawing valid inferences
3. Provides an estimate of the error variance
4. increases the accuracy of the estimates of the treatment effects

**Options :**

2105294337. 1

2105294338. 2

2105294339. 3

2105294340. 4

**Question Number : 66 Question Id : 2105291086 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

The minimum number of blocks required for 6 treatments so that the error degrees of freedom is 10 in case of a randomized complete block design is

1. 2
2. 3
3. 5
4. 6

**Options :**

2105294341. 1

2105294342. 2

2105294343. 3

2105294344. 4

**Question Number : 67 Question Id : 2105291087 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

The Fairfield Smith's Variance law used in uniformity trials to obtain the relationship between plot size and plot variance is of the form ( $V_x$  is the variance of yield per unit area from plots of size  $x$ ,  $V_1$  is the variance among plots of size unity and  $b$  is the coefficient representing soil characteristic)

1.  $V_x = x^b V_1$

2.  $V_x = x^b + V_1$

3.  $V_x = \frac{V_1}{x^b}$

4.  $V_x = \frac{2V_1}{x^b}$

**Options :**

2105294345. 1

2105294346. 2

2105294347. 3

2105294348. 4

**Question Number : 68 Question Id : 2105291088 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

Let the Arithmetic Mean of  $n$  observations be  $AM$ . If 5 is added to all the observations, then the new  $AM$  will be

1.  $AM + 5$

2.  $AM - 5$

3.  $AM$

4.  $AM + 5/n$

**Options :**

- 2105294349. 1
- 2105294350. 2
- 2105294351. 3
- 2105294352. 4

**Question Number : 69 Question Id : 2105291089 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

The sum of the deviations of the observations 3, 4, 5, 6, 7 from their mean is

- 1. 0
- 2. 5
- 3. - 5
- 4. 6

**Options :**

- 2105294353. 1
- 2105294354. 2
- 2105294355. 3
- 2105294356. 4

**Question Number : 70 Question Id : 2105291090 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

Let  $x_1, x_2, \dots, x_n$  be observations which have a variance  $\sigma_x^2$ . Each  $x_i$  is changed to  $ax_i - h$ , where  $a$  and  $h$  are positive constants, then new series will have variance

- 1.  $\sigma_x^2$
- 2.  $a^2\sigma_x^2$
- 3.  $\sigma_x^2 - h^2$
- 4.  $a^2\sigma_x^2 - h^2$

**Options :**

2105294357. 1

2105294358. 2

2105294359. 3

2105294360. 4

**Question Number : 71 Question Id : 2105291091 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

Mean, mode and variance of a given dataset are 60, 76 and 16, respectively. The value of Coefficient of Skewness of the dataset is

1. 1

2. - 1

3. 4

4. - 4

**Options :**

2105294361. 1

2105294362. 2

2105294363. 3

2105294364. 4

**Question Number : 72 Question Id : 2105291092 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

If A and B are mutually exclusive events, then

1.  $P(A \cap B) = 0$

2.  $P(A \cap B) = P(A)P(B)$

3.  $P(A \cup B) = 0$

4.  $P(A \cup B) = P(A)P(B)$

**Options :**

2105294365. 1

2105294366. 2

2105294367. 3

2105294368. 4

**Question Number : 73 Question Id : 2105291093 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

If  $A$  and  $B$  are two events, then  $P(A|B)$  is

1.  $\frac{P(AB)}{P(B)}$  if  $P(B) > 0$

2.  $\frac{P(AB)}{P(B)}$

3.  $\frac{P(AB)}{P(A)}$  if  $P(A) > 0$

4.  $\frac{P(AB)}{P(A)}$

**Options :**

2105294369. 1

2105294370. 2

2105294371. 3

2105294372. 4

**Question Number : 74 Question Id : 2105291094 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

A bag contains 4 Red and 3 Blue balls. Two balls are drawn randomly. The probability that both the balls are blue is

1.  $\frac{2}{7}$
2.  $\frac{3}{7}$
3.  $\frac{1}{7}$
4.  $\frac{4}{7}$

**Options :**

- 2105294373. 1
- 2105294374. 2
- 2105294375. 3
- 2105294376. 4

**Question Number : 75 Question Id : 2105291095 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

In case of Simple Random Sampling with Replacement, the sample mean

1. Under-estimates the population mean
2. Is an unbiased estimator of the population mean
3. Is a consistent estimator
4. Over-estimates the population mean

**Options :**

- 2105294377. 1
- 2105294378. 2
- 2105294379. 3
- 2105294380. 4

**Question Number : 76 Question Id : 2105291096 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**



If A and B are two mutually exclusive and exhaustive events. Further,  $P(B) = 2P(A)$ . Then  $P(A)$  is

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

**Options :**

- 2105294381. 1
- 2105294382. 2
- 2105294383. 3
- 2105294384. 4

**Question Number : 77 Question Id : 2105291097 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

The sum of absolute deviations is minimum when taken from

1. Mean
2. Median
3. Mode
4. Geometric mean

**Options :**

- 2105294385. 1
- 2105294386. 2
- 2105294387. 3
- 2105294388. 4

**Question Number : 78 Question Id : 2105291098 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

The limits of Coefficient of Variation (CV) are

1.  $-1 \leq CV \leq 1$
2.  $CV \geq 0$
3.  $CV \leq 0$
4.  $-\infty \leq CV \leq \infty$

**Options :**

2105294389. 1  
2105294390. 2  
2105294391. 3  
2105294392. 4

**Question Number : 79 Question Id : 2105291099 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

$A$ ,  $B$ , and  $C$  are three mutually exclusive and exhaustive events associated with a random experiment. Also,  $P(B) = \frac{3}{2}P(A)$  and  $P(C) = \frac{1}{2}P(B)$ , then  $P(A)$  is

1.  $\frac{4}{13}$
2.  $\frac{7}{13}$
3.  $\frac{2}{13}$
4.  $\frac{5}{13}$

**Options :**

2105294393. 1  
2105294394. 2  
2105294395. 3  
2105294396. 4

**Question Number : 80 Question Id : 2105291100 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is**

**Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

If two events A and B are mutually exclusive, then

1. A and B are independent
2. A and B are dependent
3.  $P(AB) > 0$
4.  $P(AB) \neq 0$

**Options :**

- 2105294397. 1
- 2105294398. 2
- 2105294399. 3
- 2105294400. 4

**Question Number : 81 Question Id : 2105291101 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is**

**Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

X speaks truth 4 out of 5 times. A die is tossed and X reports it to be 6. The probability that there was actually 6 is

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

**Options :**

- 2105294401. 1
- 2105294402. 2
- 2105294403. 3
- 2105294404. 4

**Question Number : 82 Question Id : 2105291102 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

Let  $b_{xy}$  be the regression coefficient of X on Y. Further,  $U = \frac{X - a}{h}$  and  $V = \frac{Y - b}{k}$ , then the regression coefficient of U on V is

1.  $b_{xy}$
2.  $\frac{h}{k} b_{xy}$
3.  $\frac{h}{k} (b_{xy} - a - b)$
4.  $\frac{k}{h} b_{xy}$

**Options :**

- 2105294405. 1
- 2105294406. 2
- 2105294407. 3
- 2105294408. 4

**Question Number : 83 Question Id : 2105291103 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

If regression line of X on Y is linear, then the regression line of Y on X is

1. Linear
2. Curvilinear
3. Polynomial
4. Linear or curvilinear depending on nature of data

**Options :**

- 2105294409. 1
- 2105294410. 2
- 2105294411. 3
- 2105294412. 4

**Question Number : 84 Question Id : 2105291104 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

Let  $P(A) = 0.3$ ,  $P(A \cup B) = \frac{4}{5}$  and  $P(B) = a$ , the value of  $a$  for which  $A$  and  $B$  are independent is

1.  $\frac{5}{13}$
2.  $\frac{8}{13}$
3.  $\frac{5}{7}$
4.  $\frac{6}{7}$

**Options :**

2105294413. 1

2105294414. 2

2105294415. 3

2105294416. 4

**Question Number : 85 Question Id : 2105291105 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

A student discovers that his grade on a recent test was the 72<sup>nd</sup> percentile. If 90 students wrote the test, then approximate number of students who received a higher grade than he did are

1. 65
2. 25
3. 72
4. 71

**Options :**

2105294417. 1

2105294418. 2

2105294419. 3

2105294420. 4

**Question Number : 86 Question Id : 2105291106 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

The class intervals in a grouped frequency distribution should be

A. Exhaustive

B. Mutually exclusive

Select the correct answer from the following options:

1. A only

2. B only

3. Neither A nor B

4. Both A and B

**Options :**

2105294421. 1

2105294422. 2

2105294423. 3

2105294424. 4

**Question Number : 87 Question Id : 2105291107 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1**

The pair of values representing two correct regression coefficients is

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

**Options :**

2105294425. 1  
2105294426. 2  
2105294427. 3  
2105294428. 4

**Question Number : 88 Question Id : 2105291108 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

If the arithmetic mean and geometric mean of two numbers are 36 and 30 respectively, then their harmonic mean is

1. 100
2. 75
3. 50
4. 25

**Options :**

2105294429. 1  
2105294430. 2  
2105294431. 3  
2105294432. 4

**Question Number : 89 Question Id : 2105291109 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

A study based on complete enumeration is known as

1. Sample survey
2. Pilot survey
3. Census
4. Cross-sectional survey

**Options :**

- 2105294433. 1
- 2105294434. 2
- 2105294435. 3
- 2105294436. 4

**Question Number : 90 Question Id : 2105291110 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

A simple random sample of size 3 is drawn without replacement from a population of size 4.  
The possible number of samples is

1. 12
2. 4
3. 64
4. 81

**Options :**

- 2105294437. 1
- 2105294438. 2
- 2105294439. 3
- 2105294440. 4

**Question Number : 91 Question Id : 2105291111 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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



OMR input device of computer stands for

1. Optical Mark Reader
2. Optimum Mark Reader
3. Optical Marker Reader
4. Optimum Marker Reader

**Options :**

- 2105294441. 1
- 2105294442. 2
- 2105294443. 3
- 2105294444. 4

**Question Number : 92 Question Id : 2105291112 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

Which of the following is NOT an input device?

1. Keyboard
2. Mouse
3. Joystick
4. Monitor

**Options :**

- 2105294445. 1
- 2105294446. 2
- 2105294447. 3
- 2105294448. 4

**Question Number : 93 Question Id : 2105291113 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

Which one of the following is NOT an operating system?

1. MS-DOS
2. MS-Office
3. UNIX
4. MS-Window

**Options :**

- 2105294449. 1
- 2105294450. 2
- 2105294451. 3
- 2105294452. 4

**Question Number : 94 Question Id : 2105291114 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

Which one of the following is NOT true for Linux?

1. It is more prone to virus attack as compared to MS-Window
2. It is free
3. It is similar to UNIX
4. It is used for multiprocessing

**Options :**

- 2105294453. 1
- 2105294454. 2
- 2105294455. 3
- 2105294456. 4

**Question Number : 95 Question Id : 2105291115 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

URL stands for which one of the following?

1. Unified Resource Locator
2. Unified Record Locator
3. Uniform Record Locator
4. Uniform Resource Locator

**Options :**

- 2105294457. 1
- 2105294458. 2
- 2105294459. 3
- 2105294460. 4

**Question Number : 96 Question Id : 2105291116 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

FTP stands for

1. File Transfer Protocol
2. File Transfer Program
3. Fix Transfer Protocol
4. Fix Transfer Program

**Options :**

- 2105294461. 1
- 2105294462. 2
- 2105294463. 3
- 2105294464. 4

**Question Number : 97 Question Id : 2105291117 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

The lowest and highest data storage hierarchy used in data processing are which of the following respectively?

1. Bit and record
2. Bit and field
3. Bit and file
4. Bit and database

**Options :**

- 2105294465. 1
- 2105294466. 2
- 2105294467. 3
- 2105294468. 4

**Question Number : 98 Question Id : 2105291118 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

MS-Access follows which of the following databases?

1. Hierarchical
2. Network
3. Relational
4. Object oriented

**Options :**

- 2105294469. 1
- 2105294470. 2
- 2105294471. 3
- 2105294472. 4

**Question Number : 99 Question Id : 2105291119 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

A rectangle in a flow chart represents

1. Input/Output
2. Decision
3. Terminal
4. Processing

**Options :**

- 2105294473. 1
- 2105294474. 2
- 2105294475. 3
- 2105294476. 4

**Question Number : 100 Question Id : 2105291120 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

NCBI is located in

1. United States of America
2. United Kingdom
3. Brazil
4. China

**Options :**

- 2105294477. 1
- 2105294478. 2
- 2105294479. 3
- 2105294480. 4

**Question Number : 101 Question Id : 2105291121 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

The key combination for closing current Windows in MS-Office is

1. Ctrl+F4
2. Alt+F8
3. Alt+F4
4. Shift+F4

**Options :**

- 2105294481. 1
- 2105294482. 2
- 2105294483. 3
- 2105294484. 4

**Question Number : 102 Question Id : 2105291122 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

A program to convert a high level computer program into a set of instructions that will run on a machine is called

1. Compiler
2. Debugger
3. Editor
4. Linker

**Options :**

- 2105294485. 1
- 2105294486. 2
- 2105294487. 3
- 2105294488. 4

**Question Number : 103 Question Id : 2105291123 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

Two blank spaces in FORMAT statement in FORTRAN is represented by

1. X2
2. 2Y
3. Y2
4. 2X

**Options :**

2105294489. 1  
2105294490. 2  
2105294491. 3  
2105294492. 4

**Question Number : 104 Question Id : 2105291124 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

In MS-Excel, which of the following formulas is not entered correctly?

1. B10+14
2. 70+50
3. =B10\*B1
4. =10+50

**Options :**

2105294493. 1  
2105294494. 2  
2105294495. 3  
2105294496. 4

**Question Number : 105 Question Id : 2105291125 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

Identify correct LET statement in BASIC:

1. 80 LET N = 'DELHI'
2. 10 LET X + Y = A + B + C
3. LET A =15
4. 60 LET S = (A + B + C)/2

**Options :**

- 2105294497. 1
- 2105294498. 2
- 2105294499. 3
- 2105294500. 4

**Question Number : 106 Question Id : 2105291126 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

In Window OS, the deleted files are temporarily stored in the

1. My Computer
2. Brief Case
3. Recycle Bin
4. Control Panel

**Options :**

- 2105294501. 1
- 2105294502. 2
- 2105294503. 3
- 2105294504. 4

**Question Number : 107 Question Id : 2105291127 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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



The shortcut combination of keys used to open Window Explorer is

1. Window+E
2. Ctrl+E
3. Alt+E
4. Shift+E

**Options :**

2105294505. 1  
2105294506. 2  
2105294507. 3  
2105294508. 4

**Question Number : 108 Question Id : 2105291128 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

In MS-Excel 2010, the file extension is

1. EXLX
2. .XLSX
3. .XSX
4. .EXS

**Options :**

2105294509. 1  
2105294510. 2  
2105294511. 3  
2105294512. 4

**Question Number : 109 Question Id : 2105291129 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

In MS-Access, Primary key (field) of one table is which one of the following keys in another table?

1. Duplicate
2. Foreign
3. Secondary
4. Primary

**Options :**

- 2105294513. 1
- 2105294514. 2
- 2105294515. 3
- 2105294516. 4

**Question Number : 110 Question Id : 2105291130 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

In DOS, to create a directory we use

1. cd
2. md
3. copy con
4. copy

**Options :**

- 2105294517. 1
- 2105294518. 2
- 2105294519. 3
- 2105294520. 4

**Question Number : 111 Question Id : 2105291131 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

The bacteria present in the root nodules of leguminous plants that fix the atmospheric nitrogen is

1. Blue green algae
2. Paramecium
3. Rhizobium
4. Nitrifying bacteria

**Options :**

- 2105294521. 1
- 2105294522. 2
- 2105294523. 3
- 2105294524. 4

**Question Number : 112 Question Id : 2105291132 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

Income elasticity of demand for normal goods is

1. Zero
2. Negative
3. Positive
4. Infinity

**Options :**

- 2105294525. 1
- 2105294526. 2
- 2105294527. 3
- 2105294528. 4

**Question Number : 113 Question Id : 2105291133 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

Pradhan Mantri Fasal Bima Yojana (PMFBY) was launched in which year?

1. 2014
2. 2015
3. 2016
4. 2019

**Options :**

- 2105294529. 1
- 2105294530. 2
- 2105294531. 3
- 2105294532. 4

**Question Number : 114 Question Id : 2105291134 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

The first Indian Director of ICAR-IARI was

1. Dr. B. Vishvanath
2. Dr. M.S. Swaminathan
3. Dr. B.P. Pal
4. Dr. R.B. Singh

**Options :**

- 2105294533. 1
- 2105294534. 2
- 2105294535. 3
- 2105294536. 4

**Question Number : 115 Question Id : 2105291135 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

The mustard crop originated from

1. India
2. China
3. Brazil
4. Burma

**Options :**

- 2105294537. 1
- 2105294538. 2
- 2105294539. 3
- 2105294540. 4

**Question Number : 116 Question Id : 2105291136 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

A double-cross hybrid of maize involves

1. Two inbred parents
2. Three inbred parents
3. Four inbred parents
4. One inbred and one OPV parent

**Options :**

- 2105294541. 1
- 2105294542. 2
- 2105294543. 3
- 2105294544. 4

**Question Number : 117 Question Id : 2105291137 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

National Dairy Research Institute is located at

1. Bareilly
2. Izatnagar
3. Karnal
4. Ludhiana

**Options :**

- 2105294545. 1
- 2105294546. 2
- 2105294547. 3
- 2105294548. 4

**Question Number : 118 Question Id : 2105291138 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

Redness of apple is due to

1. Capcyanthin
2. Carotene
3. Lycopine
4. Anthocyanin

**Options :**

- 2105294549. 1
- 2105294550. 2
- 2105294551. 3
- 2105294552. 4

**Question Number : 119 Question Id : 2105291139 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

Bhagwa is a variety of

1. Mango
2. Orange
3. Pomegranate
4. Litchi

**Options :**

- 2105294553. 1
- 2105294554. 2
- 2105294555. 3
- 2105294556. 4

**Question Number : 120 Question Id : 2105291140 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

Which of the following pairs has modified stem?

1. Carrot - Radish
2. Onion - Radish
3. Sweet potato - Potato
4. Potato - Onion

**Options :**

- 2105294557. 1
- 2105294558. 2
- 2105294559. 3
- 2105294560. 4