Notations:

1. Options shown in green color and with ✔ icon are correct.
2. Options shown in red color and with ✗ icon are incorrect.

Question Paper Name: BSc Mathematics 20th May 2023 Shift1 SET1
Subject Name: BSc Mathematics
Creation Date: 2023-05-20 13:03:27
Duration: 180
Total Marks: 200
Display Marks: No
Share Answer Key With Delivery Engine: Yes
Actual Answer Key: Yes
Calculator: None
Magnifying Glass Required?: No
Ruler Required?: No
Eraser Required?: No
Scratch Pad Required?: No
Rough Sketch/Notepad Required?: No
Protractor Required?: No
Show Watermark on Console?: Yes
Highlighter: No
Auto Save on Console?: Yes
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Question Number : 1  Question Id : 1592074411  Question Type : MCQ  Option Shuffling : Yes
Display Question Number : Yes  Is Question Mandatory : No  Calculator : None  Response Time : N.A  Think Time : N.A  Minimum Instruction Time : 0  Correct Marks : 1  Wrong Marks : 0

Let $S_1 = 1$ and $S_{n+1} = \left(\frac{n}{n+1}\right)S_n^2$ for $n \geq 1$. Then the sequence $(S_n)$ converges to

Options :

1. ✗

2. ✓

3. ✗

4. ✗

Question Number : 2  Question Id : 1592074412  Question Type : MCQ  Option Shuffling : Yes
Display Question Number : Yes  Is Question Mandatory : No  Calculator : None  Response Time : N.A  Think Time : N.A  Minimum Instruction Time : 0  Correct Marks : 1  Wrong Marks : 0

Which of the following is not a subsequence of the sequence $\left\{\frac{1}{n}\right\}$?

Options :
The sequence \((2 + (-1)^n)\) is

Options:

1. convergent

2. divergent

3. oscillating finitely
4. \( \infty \)

**Question Number : 4**  
**Question Id : 1592074414**  
**Question Type : MCQ**  
**Option Shuffling : Yes**  
**Display Question Number : Yes**  
**Is Question Mandatory : No**  
**Calculator : None**  
**Response Time : N.A**  
**Think Time : N.A**  
**Minimum Instruction Time : 0**  
**Correct Marks : 1**  
**Wrong Marks : 0**

If \((S_n) = (2, 1, 1, 0, 2, 1, 1, 0, 2, 1, 0, \ldots)\), then \(\lim \inf S_n + \lim \sup S_n = \)

**Options :**

1. \(2\) ✅
2. \(3\)
3. \(0\) ✗
4. \(4\) ✗

**Question Number : 5**  
**Question Id : 1592074415**  
**Question Type : MCQ**  
**Option Shuffling : Yes**  
**Display Question Number : Yes**  
**Is Question Mandatory : No**  
**Calculator : None**  
**Response Time : N.A**  
**Think Time : N.A**  
**Minimum Instruction Time : 0**  
**Correct Marks : 1**  
**Wrong Marks : 0**

The series \(\sum_{n=1}^{\infty} \frac{1}{n(n+1)}\) converges to

**Options :**
Which of the following statements is false?

Options:

1. $\sum \left( \frac{1}{n^2} + 2^{-n} \right)$ is convergent.

2. $\sum \left( \frac{1}{n} + \frac{1}{\sqrt{n}} \right)$ is divergent.

3. $\sum \left( \frac{1}{n^3} + \frac{1}{4^n} \right)$ is convergent.
\[ \sum \left( \frac{n}{n^3 + 1} + \frac{2n + 1}{3n + 2} \right) \] is convergent.

4. ✅

Question Number : 7 Question Id : 1592074417 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

The sum of the series \[ \sum_{n=2}^{\infty} \left( -\frac{1}{3} \right)^n \] is equal to

Options :

1. ✗

2. ✗

3. ✓

4. ✗

Question Number : 8 Question Id : 1592074418 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

Which of the following alternating series is not a convergent series?

Options:

1. \[\sum \frac{(-1)^n}{\sqrt{n}}\]

2. \[\sum \frac{(-1)^n}{n}\]

3. \[\sum \frac{(-1)^n \frac{n}{n^2 + 1}}{n}\]

4. \[\sum \frac{(-1)^n \frac{n}{2n + 1}}{2n + 1}\]

Question Number : 9 Question Id : 1592074419 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

The values of \(a\) and \(b\) so that the function

\[f(x) = \begin{cases} 
2x + 1 & \text{if } x \leq 1 \\
ax^2 + b & \text{if } 1 < x < 3 \text{ is continuous, are} \\
5x + 2a & \text{if } x \geq 3
\end{cases}\]

Options:

1. ⬗
The function $f(x) = \tan x$ is discontinuous when $x$ is of the form

$$\left( n + \frac{1}{2} \right) \pi, \ n \in \mathbb{Z}$$

Options:

1. ✔

$$n \pi, \ n \in \mathbb{Z}$$

2. ✗

$$2n \pi, \ n \in \mathbb{Z}$$

3. ✗
\[(2n + 1)\pi, \quad n \in \mathbb{Z}\]

4. 

**Question Number :** 11  **Question Id :** 1592074421  **Question Type :** MCQ  **Option Shuffling :** Yes  
**Display Question Number :** Yes  **Is Question Mandatory :** No  **Calculator :** None  **Response Time :** N.A  **Think Time :** N.A  **Minimum Instruction Time :** 0  
**Correct Marks :** 1  **Wrong Marks :** 0

Let \(f(x) = x^3 - 6x^2 + 9x + 1\) be a function defined on \([0, 4]\). Then the maximum and minimum values of the function \(f(x)\) respectively are

**Options :**

1. 4, 2

2. 5, 0

3. ✔ 5, 1

4. ✗ 4, 1

**Question Number :** 12  **Question Id :** 1592074422  **Question Type :** MCQ  **Option Shuffling :** Yes  
**Display Question Number :** Yes  **Is Question Mandatory :** No  **Calculator :** None  **Response Time :** N.A  **Think Time :** N.A  **Minimum Instruction Time :** 0  
**Correct Marks :** 1  **Wrong Marks :** 0

An interval in which the equation \(xe^x = 2\) has a root is
The curvature of a circle of radius 5 at any point on the circle is

Options:

1. $5$

2. $25$

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

4. $0$
4. \[ \frac{1}{10} \]

Question Number : 14 Question Id : 1592074424 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

The radius of curvature at \((3,3)\) for \(x^3 + xy^2 - 6y^2 = 0\) is given by

Options :

1. ✔ \[ \sqrt{125} \]

2. ✗ \[ \sqrt{243} \]

3. ✗ \[ \sqrt{8} \]

4. ✗ \[ \sqrt{25} \]

Question Number : 15 Question Id : 1592074425 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0
One of the points on the parabola $y^2 = 8x$, at which the radius of curvature is $\frac{13}{16}$, is given by

Options:

1. $\left(3, \frac{9}{8}\right)$

2. $\left(\frac{9}{8}, 3\right)$

3. $\left(-3, \frac{9}{8}\right)$

4. $\left(3, -\frac{9}{8}\right)$

The curve passes through the origin and the x-axis is the tangent at the origin, then the radius of curvature at $(0,0)$ is

Options:

1. $\lim_{x \to 0} \left(\frac{y^2}{2x}\right)$
The center of curvature of \( y = x^3 - 6x^2 + 3x + 1 \) at \((1,-1)\) is given by

Options:

1. \( (36, \frac{-43}{6}) \)
2. \( (-36, \frac{43}{6}) \)
3. \( (36, \frac{43}{6}) \)
4. \( (-36, -\frac{43}{6}) \)
4. \( \left( -36, \frac{43}{6} \right) \)

\[ \left( 36, \frac{43}{6} \right) \]

**Question Number : 18 Question Id : 1592074428 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0**

The envelope of the family of straight lines \( y = mx + m^2 \), where ‘m’ is a parameter, is

**Options :**

1. \( y^2 - 4x = 0 \)

2. \( x^2 - 4y = 0 \)

3. \( y^2 + 4x = 0 \)

4. \( x^2 + 4y = 0 \)

**Question Number : 19 Question Id : 1592074429 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0**
The length of the curve \( r = a(1 + \cos \theta) \) is given by

Options:

1. \( a \)

2. \( 2a \)

3. \( 4a \)

4. \( 8a \)

---

The length of the curve whose parametric equations are \( x = e^{\pi t} \cos t, y = e^{\pi t} \sin t, 0 \leq t \leq \frac{\pi}{2} \), is given by

Options:

1. \( 1 - e^{-\pi/2} \)

2. \( \sqrt{2} \)
\[ \sqrt{2\left(1 - e^{-\pi/2}\right)} \]

\[ \sqrt{2\left(1 + e^{-\pi/2}\right)} \]

Question Number: 21  Question Id: 1592074431  Question Type: MCQ  Option Shuffling: Yes  
Display Question Number: Yes  Is Question Mandatory: No  Calculator: None  
Response Time: N.A  Think Time: N.A  Minimum Instruction Time: 0  
Correct Marks: 1  Wrong Marks: 0

The set \( S \) of positive irrational numbers together with 1 under multiplication is not a group because:

Options:

1. closure property fails
2. associative property fails
3. identify property fails
4. inverse property fails
Let $G$ be a group and $H$ be a non-empty subset of $G$. Then $H$ is a subgroup of $G$ if

Options:

1. $a + b$ is in $H$ whenever $a$ and $b$ are in $H$

2. $a - b$ is in $H$ whenever $a$ and $b$ are in $H$

3. $-a$ is in $H$ whenever $a$ is in $H$

4. $(a + b)^2$ is in $H$ whenever $a$ and $b$ are in $H$

Consider the group $\{5, 15, 25, 35\}$ under multiplication modulo 40. What is the identity element of this group?

Options:

1. 1

2. 5
Question Number : 24 Question Id : 1592074434 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

Let $G = \text{GL}(2, \mathbb{R})$ be the general linear group of $2 \times 2$ matrices over $\mathbb{R}$. Then $Z(G)$.

Options :

1. $\begin{bmatrix} a & 0 \\ 0 & a \end{bmatrix} / a \neq 0, a \in \mathbb{R}$

2. $\begin{bmatrix} a & 0 \\ 0 & -a \end{bmatrix} / a \neq 0, a \in \mathbb{R}$

3. $\begin{bmatrix} 0 & a \\ a & 0 \end{bmatrix} / a \neq 0, a \in \mathbb{R}$

4. $\begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix} / a \neq 0, a \in \mathbb{R}$
\[
\begin{bmatrix}
0 & -a \\
1 & 0
\end{bmatrix}
\text{ if } a \neq 0, a \in \mathbb{R}
\]

Question Number : 25 Question Id : 1592074435 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

Let \( G = \langle a \rangle \) and \( |a| = 20 \). Then the number of subgroups of \( G \) is

Options :

1. ✗
2. ✗
3. ✗
4. ✓

Question Number : 26 Question Id : 1592074436 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0
If \( G \) is a group with \( |G| = 50 \) and \( H \) is a subgroup of \( G \), then the possible value for \( |H| \) is

Options:

1. 12
2. 8
3. 10
4. 9

Which of the following is not a cyclic subgroup of the cyclic group \( \mathbb{Z}_{30} \) under addition modulo 30?

Options:

1. \( \{0, 6, 12, 18, 24\} \)
2. \( \{0, 5, 10, 15, 20, 25\} \)
Question Number : 28 Question Id : 1592074438 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

Let $S_n$ be the symmetric group on $n$ symbols. Then the order of $S_6$ is

Options :

1. ✗

2. ✓

3. ✗

4. ✗

Question Number : 29 Question Id : 1592074439 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0
If \( \alpha = \begin{bmatrix} 1 & 2 & 3 & 4 & 5 & 6 \\ 2 & 1 & 3 & 5 & 4 & 6 \end{bmatrix} \), then \( \alpha^{-1} = \)

Options:

1. \( \begin{bmatrix} 1 & 2 & 3 & 4 & 5 & 6 \\ 2 & 1 & 3 & 5 & 4 & 6 \end{bmatrix} \)

2. \( \begin{bmatrix} 1 & 2 & 3 & 4 & 5 & 6 \\ 1 & 3 & 2 & 5 & 6 & 4 \end{bmatrix} \)

3. \( \begin{bmatrix} 1 & 2 & 3 & 4 & 5 & 6 \\ 3 & 1 & 2 & 5 & 4 & 6 \end{bmatrix} \)

4. \( \begin{bmatrix} 1 & 2 & 3 & 4 & 5 & 6 \\ 2 & 1 & 3 & 6 & 4 & 5 \end{bmatrix} \)

Let \( \phi \) be an isomorphism from a group \( G \) onto a group \( \widetilde{G} \). Then which of the following statement is false?

Options:

1. \( \phi \) carries the identify of \( G \) to the identify of \( \widetilde{G} \).
2. ✗

\[ G \text{ is abelian if and only if } \overline{G} \text{ is abelian.} \]

3. ✗

\[ G \text{ is cyclic if and only if } \overline{G} \text{ is cyclic.} \]

4. ✓

\[ \phi^{-1} \text{ not an isomorphism from } \overline{G} \text{ onto } G. \]

---

**The homogeneous linear differential equation, whose auxiliary equation has the roots \( \pm 1 \) and \( \pm i \), is given by**

**Options:**

1. ✗

\[ \frac{d^4y}{dx^4} + y = 0 \]

2. ✓

\[ \frac{d^4y}{dx^4} - y = 0 \]

3. ✗

\[ \left( \frac{d^2y}{dx^2} - y \right) \left( \frac{d^2y}{dx^2} - y \right) = 0 \]

4. ✗
\[ \frac{d^4 y}{dx^4} - y^4 = 0 \]

The particular integral of \((D^3 - 5D^2 + 8D - 4)y = e^{2x}\), where \(D = \frac{d}{dx}\), is given by

Options:

1. \(-\frac{x^2 e^{2x}}{4}\)
2. \(\frac{x^2 e^x}{2}\)
3. \(\frac{x^2 e^{2x}}{6}\)
4. \(\frac{x^2 e^{2x}}{2}\)

Correct Marks: 1 Wrong Marks: 0
If the particular integral of \( \frac{d^2y}{dx^2} = P(x) \) is \( \frac{x^3}{6} \), then \( P(x) \) is given by

Options:

1. **6x**
2. **x^2**
3. **x**
4. **\( \frac{x^5}{120} \)**

If \( y_1(x) = e^{2x} \) and \( y_2(x) = e^{2x} \) are two independent solutions of \( f(D)y = 2\cos^2 x \), where \( D = \frac{d}{dx} \), then the particular integral is given by

Options:

1. **\( -\frac{1}{4} - \frac{1}{8} \cos 2x \)**
\[
\frac{1}{4} - \frac{1}{8}\cos 2x
\]

2. ✗

\[
-\frac{1}{4} + \frac{1}{8}\cos 2x
\]

3. ✗

\[
\frac{1}{4} + \frac{1}{8}\cos 2x
\]

4. ✗

Question Number: 35  Question Id: 1592074445  Question Type: MCQ  Option Shuffling: Yes  Display Question Number: Yes  Is Question Mandatory: No  Calculator: None  Response Time: N.A  Think Time: N.A  Minimum Instruction Time: 0  Correct Marks: 1  Wrong Marks: 0

\[
\frac{1}{(D+1)^2} e^{-x} = \text{________} , \text{where } D = \frac{d}{dx}
\]

Options:

1. ✗ \[
\frac{e^{-x}}{6}
\]

2. ✗ \[
x e^{-x}
\]

3. ✗ \[
\frac{x^2 e^{-x}}{3}
\]
\[
\frac{x^3 e^{-x}}{6}
\]

4. ✔

Question Number : 36 Question Id : 1592074446 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

The general solution of \( [x^2D^2 - xD + 1]y = \ln x \), where \( D = \frac{d}{dx} \), is given by

Options :

1. \((c_1 + c_2 x) \ln x + 2 + e^x\), where \( c_1 \) and \( c_2 \) are arbitrary constants.

2. \((c_1 + cx) x + 2 + \ln x\), where \( c_1 \) and \( c_2 \) are arbitrary constants.

3. \((c_1 + c_2 \ln x) + 2 + \ln x\), where \( c_1 \) and \( c_2 \) are arbitrary constants.

4. \((c_1 + c_2 x) e^x + 2 + \ln x\), where \( c_1 \) and \( c_2 \) are arbitrary constants.

Question Number : 37 Question Id : 1592074447 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0
For the differential equation \[ \frac{d^2 y}{dx^2} + 5 \frac{dy}{dx} + 6y = 15, \] the solution \( y(x) \) approaches the following value when \( x \to \infty \).

Options:

1. \( \frac{15}{6} \)
2. \( \frac{15}{12} \)
3. \( 90 \)
4. \( 15 \)

The solution of \( a^2 \frac{d^2 y}{dx^2} = y - y_2 \), subject to

(i) \( y = y_1 \) at \( x = 0 \)

(ii) \( y \to y_2 \) as \( x \to \infty \), where \( a, y_1 \) and \( y_2 \) are constants, is given by

Options:

\[ y = (y_1 + y_2) e^{-\frac{x}{a}} - y_2 \]
2. \( y = (y_1 - y_2)e^{y/a} + y_2 \)

3. \( y = (y_1 - y_2)e^{-y/a} + y_2 \)

4. \( y = (y_1 + y_2)e^{y/a} - y_2 \)

The partial differential equation by eliminating \( a, b \) from \( z = ax^2 + by^2 \) is

Options:

1. \( px^2 - qy^2 = 2z \)

2. \( px^2 + qy^2 = z \)

3. \( qx + py = 2z \)

4. \( px + qy = 2z \)
The solution of \( (z - y) \frac{\partial z}{\partial x} + (x - z) \frac{\partial z}{\partial y} = y - x \) is

Options:

1. \( \phi(xyz, x + y + z) = 0 \)

2. \( \phi(xyz, x^2 + y^2 + z^2) = 0 \)

3. \( \phi(x + y + z, x^2 + y^2 + z^2) = 0 \)

4. \( \phi\left(\frac{1}{x} + \frac{1}{y} + \frac{1}{z}, x + y + z\right) = 0 \)

Which of the following statement is false?

Options:
The set of all real valued functions defined on some interval forms a vector space.

1. ✗

\[ \mathbb{R}^n \] is a vector space \((n \geq 1)\).

2. ✗

Every vector space is itself a subspace.

3. ✗

\[ \mathbb{R}^2 \] is a subspace of \( \mathbb{R}^3 \).

4. ✓

If \( A = \begin{bmatrix} 1 & -3 & -2 \\ -5 & 9 & 1 \end{bmatrix} \), then which of the following vectors belongs to the null space of \( A \)?

Options:

\[
\begin{bmatrix} 5 \\ 3 \\ -2 \end{bmatrix}
\]

1. ✓

\[
\begin{bmatrix} 1 \\ 0 \\ -1 \end{bmatrix}
\]

2. ✗
Which of the following sets is a linearly dependent set?

Options:

1. \[
\begin{pmatrix}
1 & 0 \\
0 & 1
\end{pmatrix}
\]

2. \[
\begin{pmatrix}
1 & 2 \\
2 & 3
\end{pmatrix}
\]

3. \[
\begin{pmatrix}
-2 & 6 \\
3 & -9
\end{pmatrix}
\]

4. \[
\begin{pmatrix}
5 & 3 \\
2 & 2
\end{pmatrix}
\]
\[
\begin{bmatrix}
1 & 0 \\
0 & 2
\end{bmatrix}
\]

Question Number: 44 Question Id: 1592074454 Question Type: MCQ Option Shuffling: Yes Display Question Number: Yes Is Question Mandatory: No Calculator: None Response Time: N.A Think Time: N.A Minimum Instruction Time: 0 Correct Marks: 1 Wrong Marks: 0

If
\[
\begin{bmatrix}
6 \\
16 \\
-5
\end{bmatrix} = K_1 \begin{bmatrix}
0 \\
2 \\
-1
\end{bmatrix} + K_2 \begin{bmatrix}
2 \\
2 \\
0
\end{bmatrix}, \text{ then } K_1 + K_2 =
\]

Options:

1. 8

2. 2

3. 6

4. 0

Question Number: 45 Question Id: 1592074455 Question Type: MCQ Option Shuffling: Yes Display Question Number: Yes Is Question Mandatory: No Calculator: None Response Time: N.A Think Time: N.A Minimum Instruction Time: 0 Correct Marks: 1 Wrong Marks: 0
A basis for the set \( \left\{ \begin{bmatrix} x \\ y \\ z \end{bmatrix} \in \mathbb{R}^3 \mid x - 3y + 2z = 0 \right\} \) is

Options:

1. \( \left\{ \begin{bmatrix} 3 \\ 0 \\ -2 \\ 1 \\ 1 \end{bmatrix} \right\} \)

2. \( \left\{ \begin{bmatrix} 3 \\ -2 \\ 1 \\ 0 \\ 1 \end{bmatrix} \right\} \)

3. \( \left\{ \begin{bmatrix} 1 \\ 0 \\ 1 \\ 3 \\ -2 \end{bmatrix} \right\} \)

4. \( \left\{ \begin{bmatrix} 3 \\ 0 \\ 1 \\ 0 \\ -2 \end{bmatrix} \right\} \)

The coordinate vector \([x]_\beta\) of \( x = \begin{bmatrix} 4 \\ 5 \end{bmatrix} \) relative to a basis \( \beta = \left\{ \begin{bmatrix} 2 \\ 1 \\ -1 \end{bmatrix}, \begin{bmatrix} 1 \\ 1 \end{bmatrix} \right\} \) for \( \mathbb{R}^2 \) is

Options:

1. \( \begin{bmatrix} 3 \\ 0 \end{bmatrix} \)
The dimension of the subspace \( \{(a, b, c, d) : a - 3b + c = 0\} \) is

Options:

1. 3

2. 2
Question Number : 48 Question Id : 1592074458 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

If \( A = \begin{bmatrix} 1 & -4 & 9 & -7 \\ -1 & 2 & -4 & 1 \\ 5 & -6 & 10 & 7 \end{bmatrix} \), then rank \( A = \)

Options :

1.  

2.  

3.  

4.  

Question Number : 49 Question Id : 1592074459 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

2. ✔
If \( f: \mathbb{R} \to \mathbb{Z} \) is defined by \( f(x) = [x] \), where \([x]\) is the greatest integer less than or equal to \( x \), then

\[
\lim_{x \to 1^{-}} f(x) =
\]

Options:

1. \( \star \) 0

2. \( \star \) 1

3. \( \star \) \(-1\)

4. \( \checkmark \) doesn't exist

---

If \( f(x) = \begin{cases} 
  x^2 + kx + 1, & x < 1 \\
  2x^2 - kx + 1, & x \geq 1 
\end{cases} \) is continuous function, then the value of \( k \) is

Options:

1. \( \star \) 0
If the function is defined on $\mathbb{R}$ by

$$f(x) = \begin{cases} 2023, & \text{if } x \text{ is rational} \\ -2023, & \text{if } x \text{ is irrational} \end{cases}$$

then $f(x)$ is

Options:

1. continuous at every point.

2. continuous only at origin.

3. discontinuous at every point.

4. discontinuous only at origin.
Question Number : 52 Question Id : 1592074462 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

Which of the following is true?

Options :

1. $f(x) = \frac{1}{x}$ is continuous on $[0, 1]$ but not uniformly continuous on $[0, 1]$.

2. $f(x) = \frac{1}{x^2}$ is uniformly continuous on $[2023, \infty)$.

3. $f(x) = \tan^{-1} x$ is not uniformly continuous on $\mathbb{R}$.

4. $f(x) = \frac{\sin x}{x}$ is uniformly continuous on $(-\infty, \infty)$.

Question Number : 53 Question Id : 1592074463 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

If $f(x) = \begin{cases} x^2 \sin \left( \frac{1}{x} \right), & x \neq 0 \\ 0, & x = 0 \end{cases}$ is differentiable at $x = 0$, then
Options:

1. $n = 0$

2. $n = 1$

3. $n > 1$

4. $n < 1$

---

Question Number: 54  Question Id: 1592074464  Question Type: MCQ  Option Shuffling: Yes  Display Question Number: Yes  Is Question Mandatory: No  Calculator: None  Response Time: N.A  Think Time: N.A  Minimum Instruction Time: 0  Correct Marks: 1  Wrong Marks: 0

If $c$ is a point in $(0, 3)$ such that the tangent at $x = c$ to the function $f(x) = x^3$ is parallel to the line joining $(0, 0)$ and $(3, 27)$, then the value of $c$ is

Options:

1. $-3$

2. $\sqrt{27}$

3. $\sqrt[3]{27}$
4. $\sqrt{3}$

Rolle’s theorem is applicable to which of the following functions?

Options:

1. $f(x) = |x|$ in $[-1, 1]$

2. $f(x) = \tan x$ in $[0, \pi]$

3. $f(x) = x^3$ in $[1, 3]$

4. $f(x) = e^x \sin x$ in $[0, \pi]$
Which of the following is true?

Options:

1. **Maclaurin’s series expansion of \( f(x) = \ln x \) exists.**

2. **Taylor’s series expansion of \( f(x) = \cot x \) about \( x = 0 \) exists.**

3. **\( \ln (1+x) = x + \frac{x^2}{2} + \frac{x^3}{3} + \ldots, \forall x. \)**

4. **\( \tan^{-1} x = x - \frac{x^3}{3} + \frac{x^5}{5} - \ldots, \forall x. \)**

\[ \lim_{x \to 0} \frac{x - \sin x}{x^3} = \]

Options:

1. ✔️
If \( f : [0, 1] \to \mathbb{R} \) is defined by \( f(x) = \begin{cases} 1, & x \in \mathbb{Q} \\ 0, & x \in \mathbb{R} - \mathbb{Q} \end{cases} \), then

\[ \int_0^1 f(x) \, dx \text{ exists but } \int_0^1 f(x) \, dx \text{ does not exist.} \]

Options:

1. \( \int_0^1 f(x) \, dx \) exists but \( \int_0^1 f(x) \, dx \) does not exist.

2. \( \int_0^1 f(x) \, dx \) does not exist but \( \int_0^1 f(x) \, dx \) exists.
3. Both \( \int_0^1 f(x) \, dx \) and \( \int_0^1 f(x) \, dx \) exist and they are equal.

4. Both \( \int_0^1 f(x) \, dx \) and \( \int_0^1 f(x) \, dx \) exist but they are not equal.

Question Number : 59 Question Id : 1592074469 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

If \( f(x) = x \) on \([0, 1]\) and the partition set \( P = \left\{ 0, \frac{1}{3}, \frac{2}{3}, 1 \right\} \), then the lower Riemann sum is given by

Options :

1. \( \frac{2}{3} \)

2. \( \frac{1}{3} \)

3. 1

4. \( \frac{1}{2} \)
If \( \int_0^x f(t) dt = x^2 \cos 2\pi x \), then \( f'(27) \) is equal to

Options:

1. \( \frac{-2\pi}{3} \)

2. \( \frac{2}{9} \)

3. \( \frac{2}{3} \)

4. \( -2\pi \)
The general solution of the differential equation \((x + y)^2 \frac{dy}{dx} = 1\) is

Options:

1. \(y = \sin^{-1}(x + y) + c\)

2. \(y = (x + y)^2 + c\)

3. \(y = \tan^{-1}(x - y) + c\)

4. \(y = \tan^{-1}(x + y) + c\)

If \(y(x)\) is the solution of \(\frac{dy}{dx} - y = e^x, \ y(0) = 1\), then \(y(-1) = \)

Options:

1. \(2e\)

2. \(0\)
The value of \( k \) such that \((x^2 + y^2 + x) \, dx - kxy \, dy = 0\) is exact is

Options:

1. \(-2\)
2. \(2\)
3. \(-1\)
4. \(1\)
Question Number : 64 Question Id : 1592074474 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

An integrating factor of \( \left( xy^2 - e^{x^3} \right) dx - x^2 y dy = 0 \) is

Options :

1. \( -\frac{4}{x} \)

2. \( \frac{1}{x^4} \)

3. \( -\frac{1}{x} \)

4. \( \frac{1}{x^3} \)

Question Number : 65 Question Id : 1592074475 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

The solution of \( y p^2 + (x - y) p - x = 0 \), where \( p = \frac{dy}{dx} \) is

Options :
The solution of \( y^2 \log y = xy p + p^2 \), where \( p = \frac{dy}{dx} \) is

Options:

1. \( \log y = cx^2 \)
2. \( \log y = cx + c^2 \)
3. \( y = cx - c^2 \)
y = cx^2

4. ✗

The solution of \( y + px = x^4p^2 \), where \( p = \frac{dy}{dx} \) is

Options:

1. ✗
   \[ xy = c^2x - c \]

2. ✗
   \[ y = c^2x + c \]

3. ✗
   \[ xy = c^2x^2 - c \]

4. ✗
   \[ y = c^2x^2 + c \]
The singular solution of the Clairaut’s equation \( y = x \frac{dy}{dx} + \left( \frac{dy}{dx} \right)^2 \) is

Options:

1. \( x^2 + 4y = 0 \)

2. \( y^2 + 4x = 0 \)

3. \( x^2 - 4y = 0 \)

4. \( y^2 - 4x = 0 \)

Which of the following differential equations is linear?

Options:

1. \( \frac{dy}{dx} + y = xy^2 \)

2. \( \checkmark \)
\[
\frac{dy}{dx} - xy = x^3
\]

\[
\frac{dy}{dx} + y^2 = 1
\]

3. 

\[
\frac{dy}{dx} + x = x^3 y^3
\]

4. 

---

**Question Number : 70  Question Id : 1592074480  Question Type : MCQ  Option Shuffling : Yes**

**Display Question Number : Yes  Is Question Mandatory : No  Calculator : None  Response Time : N.A  Think Time : N.A  Minimum Instruction Time : 0**

**Correct Marks : 1  Wrong Marks : 0**

The general solution of \((y \cos x + 1)dx + \sin x \ dy = 0\) is

Options :

1.  
   \[y = \sin x + c\]

2.  
   \[y \cos x + x = c\]

3.  
   \[y = \cos x + c \sin x\]

4.  
   \[y \sin x + x = c\]
Question Number : 71 Question Id : 1592074481 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

The second order differential equation whose two linearly independent solutions are 1, e^{2x}, is

Options:

1. $\frac{d^2y}{dx^2} + 2y = 0$
   
2. $\frac{d^2y}{dx^2} - 2y = 0$
   
3. $\frac{d^2y}{dx^2} + 2 \frac{dy}{dx} = 0$
   
4. $\frac{d^2y}{dx^2} - 2 \frac{dy}{dx} = 0$

Question Number : 72 Question Id : 1592074482 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0
The solution of the differential equation \( \frac{d^4y}{dx^4} - 2 \frac{d^2y}{dx^2} + y = 0 \) is

Options:

\((C_1 + C_2x) e^{-x} + (C_3 + C_4x) e^x\)

1. ✓

\(C_1 + C_2e^{-x} + C_3x + C_4 e^x\)

2. ✗

\(C_1 + C_2x^2e^{-x} + C_3x + C_4x e^x\)

3. ✗

\(C_1 + C_2x + C_3x^2 + C_4x^4\)

4. ✗

The number of zero divisors of a ring \((\mathbb{Z}_6, +, \times_6)\), is given by

Options:

1. ✗

2. ✗
Question Number : 74 Question Id : 1592074484 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

Which of the following is not an integral domain?

Options :

1. $(\mathbb{Z}, +, \cdot)$

2. $(\mathbb{Z}_p, +_p, \cdot_p)$, where $p$ is prime

3. $(\mathbb{R}, +, \cdot)$

4. $\{0,2,4,6\}, +_{10}, \cdot_{10}$

Question Number : 75 Question Id : 1592074485 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A
In a ring of \((\mathbb{Z}_6, +, \times_6)\), which of the following is not an idempotent element?

Options:

1. 
2. 
3. 
4. 

Let \(M\) be the ring of \(2 \times 2\) matrices over integers. Then \(K = \left\{ \begin{bmatrix} a & b \\ 0 & 0 \end{bmatrix} \middle| a, b \in \mathbb{Z} \right\}\) is

Options:

1. 
2.
left ideal of $M$

ideal of $M$

3. ✗

neither a right ideal nor a left ideal of $M$

4. ✗

For the ring $(\mathbb{Z}, +, \cdot)$, which of the following is not a maximal ideal?

Options:

1. ✗

(2\mathbb{Z}, +, \cdot)

2. ✗

(3\mathbb{Z}, +, \cdot)

3. ✓

(4\mathbb{Z}, +, \cdot)

4. ✗

(5\mathbb{Z}, +, \cdot)
In the field of \( \mathbb{Q} \left[ \sqrt{2} \right] = \{a + b\sqrt{2} / a, b \in \mathbb{Q}\} \), the inverse of \( a + b\sqrt{2} \) is

Options:

1. \( a - b\sqrt{2} \)

2. \( b - a\sqrt{2} \)

3. \( \frac{a - b\sqrt{2}}{a^2 - 2b^2} \)

4. \( \frac{b + a\sqrt{2}}{a^2 - 2b^2} \)

Let \( R \) and \( R' \) be two rings. The onto homomorphism \( f : R \to R' \) is an isomorphism if

Options:
kernel of $f = \{0\}$
1. ✓

kernel of $f \neq \{0\}$
2. ✗

image of $f = \{0\}$
3. ✗

image of $f \neq \{0\}$
4. ✗

With respect to usual addition and multiplication,

$$R = \left\{ \begin{bmatrix} a + ib & c + id \\ -c + id & a - ib \end{bmatrix} \middle/ \begin{bmatrix} a, b, c, d \in \mathbb{R} \end{bmatrix} \right\} \text{forms}$$

Options:

- division ring but not field
  1. ✓

- field
  2. ✗
integral domain but not division ring

Euclidean ring

Question Number : 81 Question Id : 1592074491 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

If $\delta$ is a positive number, then a neighbourhood of the point $(a, b)$ is

Options :

1. $\{(x, y) : |x - a| < \delta, |y - b| < \delta\}$ ✓

2. $\{(x, y) : |x - a| < \delta, |y - b| > \delta\}$ ✗

3. $\{(x, y) : |x - a| > \delta, |y - b| < \delta\}$ ✗

4. $\{(x, y) : |x - a| \geq \delta, |y - b| \geq \delta\}$ ✗

Question Number : 82 Question Id : 1592074492 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
\[
\lim_{{(x,y) \to (0,0)}} \frac{x^2 - y^2}{x^2 + y^2} =
\]

Options:

1. ✔

2. ✗

3. ✗

4. ✗ does not exist

---

If \( u = e^x \cos y \), then \( \frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} = \)

Options:

1. ✔

2. ✗
If \( u = \log\left(\frac{x^4 + y^4}{x + y}\right) \), then \( x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} = \) \( \log u \)
If $z = f(x + y) + g(x - y)$, then $\frac{\partial^2 z}{\partial x \partial y} =$

Options:

1. $f'(x + y) - g'(x - y)$

2. $f''(x + y) + g''(x - y)$

3. $f''(x + y) - g''(x - y)$

4. $f''(x + y) g''(x - y)$

The Taylor’s series expansion of $f(x, y) = e^{x+y}$ in powers of $x$ and $y$ upto second degree terms is

Options:
\[1 + xy + \frac{(xy)^2}{2}\]

1. ✗

\[1 + (x + y) + \frac{(x + y)^2}{2}\]

2. ✓

\[1 - (x + y) + \frac{(x + y)^2}{2}\]

3. ✗

\[1 + xy - \frac{(xy)^2}{2}\]

4. ✗

Let \( f(x, y, z) = xy + yz + zx \). Then the total differential \( df = \) 

Options:

\[y \, dx + z \, dy + x \, dz\]

1. ✗

\[yz \, dx + xz \, dy + xy \, dz\]

2. ✗

3.
\[(y + z)dx + (x + z)\ dy + (x + y)\ dz\]

\[(x + y)\ dx + (y + z)\ dy + (x + z)\ dz\]

4. ✗

Question Number : 88 Question Id : 1592074498 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

If \(z = xy(x + y), x = t^2, y = 2t\), then \(\frac{dz}{dt}\) at \(t = 1\) is

Options :

1. ✓ 26

2. ✗ 16

3. ✗ 10

4. ✗ 36

Question Number : 89 Question Id : 1592074499 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
If \( x^3 + y^3 - 6xy = 0 \), then \( \frac{dy}{dx} \) at \((3, 3)\) =

Options:

1. \( \frac{1}{7} \)

2. \(-1\)

3. \(7\)

4. \(-\frac{1}{7}\)

If \( u = e^{x+y} f(x-y) \), then \( \frac{1}{u} \left( \frac{\partial u}{\partial x} + \frac{\partial u}{\partial y} \right) = \)

Options:

1. \(0\)
Question Number: 91  Question Id: 1592074501  Question Type: MCQ  Option Shuffling: Yes
Display Question Number: Yes  Is Question Mandatory: No  Calculator: None  Response Time: N.A  Think Time: N.A  Minimum Instruction Time: 0
Correct Marks: 1  Wrong Marks: 0

The rank of the matrix \( A = \begin{pmatrix} 5 & 6 & 7 & 8 \\ 9 & 10 & 11 & 12 \\ 1 & 2 & 3 & 4 \end{pmatrix} \) is

Options:

1. **

3

2. **

2

3. ✔️

4. **
Question Number : 92 Question Id : 1592074502 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

If \( A = \begin{bmatrix} 1 & 1 & 0 \\ 0 & 2 & 1 \\ 0 & 0 & 3 \end{bmatrix} \), then the eigenvalues of \( \text{adj} A \) are

Options :

1. \(1, 1, 1\)

2. \(2, 3, 6\)

3. \(1, 4, 9\)

4. \(1, 8, 10\)

Question Number : 93 Question Id : 1592074503 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

If the characteristic equation of \( A_{3\times3} \) matrix is \( \lambda^3 + (a^2 + b^2 + c^2) \lambda = 0 \), where \( a, b, c \) are constants, then the matrix \( A^3 \) is

Options :

1. \(\)
If the non-singular matrix $A_{\text{diag}}$ is diagonalizable over the set of real numbers, $B$ is a modal matrix and $D$ is a spectral matrix, then $BD^{2023}B^{-1}$ is equal to

Options:

1. 

2. ✔
If the linear transformation $T : \mathbb{R}^2 \rightarrow \mathbb{R}^2$ is defined by
$$T \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} y \\ -x \end{pmatrix},$$
then the eigenvalues of $T$ are

Options:

1. $1$ and $-1$ over the set of all real numbers $\mathbb{R}$

2. $i$ and $-i$ over the set of all real numbers $\mathbb{R}$

3. $1$ and $1$ over the set of all real numbers $\mathbb{R}$

4. does not exist in $\mathbb{R}$
The minimal polynomial of the identity matrix of order 3 is

Options:

1. $\lambda^3$

2. $(\lambda - 1)^3$

3. $\lambda - 1$

4. $\lambda^3 - 1$

If $\langle f(x), g(x) \rangle = \int_0^1 f(x) g(x) \, dx$, then $\left\| x - \frac{1}{2} \right\|^2$ is equal to

Options:

1. $0$
The unit vector orthogonal to \( \begin{pmatrix} 2 \\ -1 \\ 6 \end{pmatrix} \) in \( \mathbb{R}^3 \) is

Options:

1. \( \begin{pmatrix} -2 \\ 3 \\ 2 \end{pmatrix} \)
2. \( \begin{pmatrix} -2 \\ 2 \\ 1 \end{pmatrix} \)
3. \( \begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix} \)
3. \[
\begin{pmatrix}
\frac{1}{\sqrt{6}} \\
4 \\
\frac{\sqrt{6}}{6} \\
\frac{1}{\sqrt{6}}
\end{pmatrix}
\]

4. \[
\begin{pmatrix}
-1 \\
4 \\
1
\end{pmatrix}
\]

If \(\alpha, \beta\) are two orthonormal vectors in an inner product space \(V(F)\), then \(|\| \alpha - \beta \| | =

Options:

1. \(1\)

2. \(2\)

3. \(\frac{1}{\sqrt{2}}\)
Let $W$ be a subspace of an inner product space $V(F)$ such that $\dim W = 3$ and $\dim V = 10$. Then $\dim W^\perp =$

Options:

1. ✓

2. ✗

3. ✗

4. ✗

Analytical Ability

Section Id : 15920788
Section Number : 2
Section type : Online
Question Id: 1592074511 Question Type: COMPREHENSION Sub Question Shuffling Allowed: No Group Comprehension Questions: No Question Pattern Type: NonMatrix Calculator: None Response Time: N.A Think Time: N.A Minimum Instruction Time: 0

Question Numbers: (101 to 110)

In each of the following questions (101 to 110), two statements I and II are given. Answer the questions by selecting one of the options as follows.

1. Select option 1 if the data given statement I alone is sufficient to answer the question.

2. Select option 2 if the data given statement II alone is sufficient to answer the question.

3. Select option 3 if the data given in both statement I and statement II put together are sufficient but neither of the statements alone is sufficient to answer the question.

4. Select option 4 if the data given in both statement I and statement II put together are not sufficient and additional data is needed to answer the question.

Sub questions

Question Number: 101 Question Id: 1592074512 Question Type: MCQ Option Shuffling: No Display Question Number: Yes Is Question Mandatory: No Calculator: None Response Time: N.A Think Time: N.A Minimum Instruction Time: 0
What is the average of \( x - 2, \ y + 4, \ z - 6 \) and 10?

Statement I: \( x, \ y, \ z \) are integers
Statement II: \( x + y + z = 200 \)

Options:

1. ✗
2. ✓
3. ✗
4. ✗

What is the surface area of the sphere?

Statement I: The sphere is made of steel
Statement II: The radius of the sphere is 8 cm

Options:

1. ✗
2. ✓
Question Number : 103

Question Id : 1592074514

Question Type : MCQ

Option Shuffling : No

Display Question Number : Yes

Is Question Mandatory : No

Calculator : None

Response Time : N.A

Think Time : N.A

Minimum Instruction Time : 0

Correct Marks : 1

Wrong Marks : 0

Is the value of $K$ unique?

Statement I : $K < 0$

Statement II: $K^2 = 81$

Options :

1. ✗

2. ✗

3. ✅

4. ✗

Question Number : 104

Question Id : 1592074515

Question Type : MCQ

Option Shuffling : No

Display Question Number : Yes

Is Question Mandatory : No

Calculator : None

Response Time : N.A

Think Time : N.A

Minimum Instruction Time : 0
If \( n(A) \) denotes the number of elements of set \( A \), what is \( n(A \cup B) \)?

Statement I: \( n(A) = 54 \)

Statement II: \( n(B) = 60 \)

Options:

1. ✗

2. ✗

3. ✗

4. ✓

What is the present age of the mother?

Statement I: The sum of the present age of the mother and her daughter is 64

Statement II: 8 years ago the mother age was 3 times that of her daughter

Options:

1. ✗
What is the speed of the car?

Statement I: The car covers a distance of 100 km

Statement II: The time taken is 2 hours

Options:

1. ✗

2. ✗

3. ✓

4. ✗
Question Number : 107 Question Id : 1592074518 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

Is \( a > b \) ?

Statement I: \( a > c \)

Statement II: \( Kc > Ka, K < 0 \)

Options:

1. ✗

2. ✗

3. ✗

4. ✔

Question Number : 108 Question Id : 1592074519 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0
Is the matrix A singular?

Statement I: A is a 4 x 4 matrix

Statement II: The trace of A is zero

Options:

1. ✗

2. ✗

3. ✗

4. ✔

How many brothers does Ramu have?

Statement I: Ramu’s father has 3 children

Statement II: Ramu has two sisters

Options:

1. ✗

2. ✗
How many integers are there of the form \( \frac{3x}{7} \)?

Statement I: \( x \) is an integer and \( 0 < x < 40 \)

Statement II: \( x \) is an even integer

Options:

1. ✓

2. ✗

3. ✗

4. ✗
What is the next number in the following sequence?
210, 336, 504, 720

Options:

1. ✗

2. ✗

3. ✓

4. ✗
216 : 720 :: 125 : __.

Options:

1. ★

2. ✔

3. ★

4. ★

24 : 54 :: 54 : __.

Options:

1. ★

2. ★
Question Number : 114 Question Id : 1592074525 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

Find the odd thing out.
Sri Lanka, Japan, Iceland, Netherlands, Australia.

Options :

1. ✗ Australia

2. ✗ Japan

3. ✗ Sri Lanka

4. ✓ Netherlands

Question Number : 115 Question Id : 1592074526 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0
The missing term in the sequence 12, 32, 55, __, 121 is

Options:

1. 77

2. 101

3. 99

4. 110

Find the odd thing out.
EV, IR, KP, LO, JN, FU.

Options:

1. IR

2. EV

3. JN
Question Number : 117 Question Id : 1592074528 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

The next term in the sequence 1E2, 2M3, 3Y4, 4O5 is

Options :

1. ✅ 5I6

2. ✗ 5O4

3. ✗ 2C5

4. ✗ 5H6

Question Number : 118 Question Id : 1592074529 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0
The odd one out in the sequence 21:66, 22:69, 23:71, 25:78, 26:81 is

Options:

1. ✗

25:78
2. ✗

21:66
3. ✗

23:71
4. ✓

What is the next term in the following sequence?
1, 2, 5, 10, 17, __.

Options:

1. ✗

20
2. ✓

26
The missing term in the pattern $627 : \_ : : 498 : 7$

Options:

1. 3

2. 7

3. 8

4. 5

**Question Number : 120**  
**Question Id : 1592074531**  
**Question Type : MCQ**  
**Option Shuffling : Yes**  
**Display Question Number : Yes**  
**Is Question Mandatory : No**  
**Calculator : None**  
**Response Time : N.A**  
**Think Time : N.A**  
**Minimum Instruction Time : 0**  
**Correct Marks : 1**  
**Wrong Marks : 0**
Table: Percentage of marks scored by students of B.Sc.

<table>
<thead>
<tr>
<th>Marks Percentage</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 70 (Distinction)</td>
<td>12</td>
<td>20</td>
</tr>
<tr>
<td>60 – 70</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td>50 – 59</td>
<td>20</td>
<td>22</td>
</tr>
<tr>
<td>35 – 49</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>&lt; 35 (Fail)</td>
<td>8</td>
<td>2</td>
</tr>
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Sub questions

Question Number : 121 Question Id : 1592074533 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The total percentage of men who wrote B.Sc. examination is

Options :

1. ✅

2. ✗
The percentage of students who scored distinction is

Options:

1. 24.5

2. 25

3. 25.6

4. 23
The fail percentage of students in the B.Sc. examination is

Options:

1. ✗ 10

2. ✔ 8

3. ✗ 9

4. ✗ 5

The pass percentage of women in the B.Sc. examination is

Options:

1. ✔ 96.92

2. ✗ 97.27

3. ✗
The percentage of students who scored more than 50 percent in the B.Sc. examination is

Options:

1. 75.6

2. 82

3. 79

4. 77.6
An automobile company manufactures vehicles as given in the Pie diagram. Study this and answer the question below.

Sub questions

Question Number : 126

The ratio of 125 cc two wheelers to 100 cc two wheelers is

Options:

1. 2 : 3

2. 3 : 2
The ratio of the four wheelers and two wheelers produced by the company is

Options:

1. 18 : 16
2. 19 : 16
3. 18 : 17
4. 19 : 17
The percentage of 1000 cc cars in the total production of the company is

Options:

1. 7.23
2. 8.33
3. 9.10
4. 9.43

Question Number : 129 Question Id : 1592074542 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

If the number of 150 cc two wheelers manufactured in a month is 2000, then the total number of vehicles manufactured by the company in that month is

Options:

1. 8000
2. 4000
3.
Question Number : 130 Question Id : 1592074543 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

In a period, if the total number of vehicles manufactured by the company is 10800, then the number of 1500 cc cars among them is

Options :

1. 2100
2. 3000
3. 2300
4. 3100

Sub-Section Number : 5
Sub-Section Id : 159207106
Question Shuffling Allowed : Yes
Is Section Default? : null
In a certain code language “party” is written as “2#635” and “head” is written as “@9#4”. What will be “hearty” in that code language?

Options:

1. @2#694

2. @6#954

3. @63#95

4. @9#635

If BOAT is coded as 201152, then the code for SAILOR is 

Options:
In a certain coding language SIT = 33, REST = 46, then RUN is

Options:

28
1. ✓

40
2. ✗

53
3. ✗
If “PAINTING” is written as “APNIITGN” then “BRUSHING” is written as

Options:

1. NBSUIGHR
2. RBSUIHGN
3. USHIBRGN
4. NRBSUIHG
If “Gold” is “Copper”, “Metal” is “Water”, “Plastic” is “Metal” and “Water” is “Plastic”, then which of the following does not conduct electricity?

Options:
1. ☒
   - Gold
2. ☒
   - Copper
3. ☒
   - Plastic
4. ✔
   - Metal

Question Number : 136 Question Id : 1592074549 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

BED : 40 :: DEAF : ___

Options:
1. ☒
   - 60
2. ✔
   - 120
In some language “Dog can run” is “rups gim ju”, “Birds cannot run” is “gim pet ju kis” and “Ostrich cannot fly” is “chim bid to pet”. Then which word stand for “Cannot” in that language?

Options:

1. gim
2. kis
3. pet
4. ju
If BAT and BALL are coded as 23 and 27 respectively, then “WICKET” coded as

Options:

1. ✗
2. ✓
3. ✗
4. ✗

Some code is used to convert “CODING” to “DSYNOQ”. What is “DECODE” converted to using that code?

Options:

1. ✗
If Biscuit = 14, Chips = 10, Chocolate = 18, then what is Cooldrink?

Options:

1. 16

2. 18

3. 10

4. 19
If today is Sunday, what day had fallen 200 days ago?

Options:

1. ✗

2. ✗

3. ✗

4. ✓
If 9\textsuperscript{th} March of 1995 is Saturday, then the 9\textsuperscript{th} March of 1996 is

Options:

1. Monday
2. Wednesday
3. Thursday
4. Saturday

In a clock, the angle between the hour hand and minute hand at 5.10 is

Options:

1. 80°
2. 85°
3. $95^\circ$

4. $90^\circ$

Question Number : 144 Question Id : 1592074557 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

How many times in a day are the hands of a clock in straight line but opposite in direction?

Options :

1. $22$

2. $26$

3. $32$

4. $28$

Question Number : 145 Question Id : 1592074558 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
If A is the father of B, C and D is the husband of C, then A is related to D as

Options:

1. Mother
2. Mother in law
3. ✔ Father in law
4. ✗Father

Ramu reached the venue of his office board meeting at 9.15 AM. He found that he was 23 minutes earlier than the Chairman who came 8 minutes late. The meeting was scheduled at

Options:

1. ✗ 9.38 AM
2. ✔
5 Friends namely A, B, C, D, E are sitting in a row but not in the same order. D is not the neighbour of either A or E. E is not at the center. B sits at one end and third to the right of E. Then who sits exactly in the middle of the row?

Options:

1. D
2. B
3. A
4. C
Question Number : 148 Question Id : 1592074561 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

The number of 4’s that are preceded by 8 but not followed by 6 in the following sequence of digits is 215 84326 84723 486123846

Options :

1. ✗

2. ✓

3. ✗

4. ✗

Question Number : 149 Question Id : 1592074562 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

If 4 Δ 5 = 41 and 6 Δ 7 = 85, then 5 Δ 6 =

Options :

1. ✗
If \( a \ast b = a - b + ab \) for \( a, b \in \mathbb{Z} \), then the value of \( k \) satisfying \( (3 \ast 4) \ast k = 21 \) is

Options:

1. 1

3. -2
### Communicative English

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<th>15920789</th>
</tr>
</thead>
<tbody>
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**Question Number:** 151  
**Question Id:** 1592074564  
**Question Type:** MCQ  
**Option Shuffling:** Yes  
**Display Question Number:** Yes  
**Is Question Mandatory:** No  
**Calculator:** None  
**Response Time:** N.A  
**Think Time:** N.A  
**Minimum Instruction Time:** 0  
**Correct Marks:** 1  
**Wrong Marks:** 0

Choose the synonym of the underlined word in the sentence from the alternatives given below:

“Without proper sleep, susceptibility to our various health problems increases”
Choose the synonym of the underlined word in the sentence from the alternatives given below:

“Microsoft built a **capacious** hall in the office to hold its weekly meetings”

**Options:**

1. **Congested**
2. **Atrocious**
Choose the antonym of the underlined word in the sentence from the alternatives given below:

“Simplicity and modesty are very rare and royal human virtues”

Options:

1. Habits
2. Vices
3. Senses
4. Interests
Choose the option that is the most opposite in meaning to the underlined word in the following sentence from the alternatives given below:

“The suggestion of the advisor that it will be tough to win the election **settled** the politician”

Options:

1. **Provoked**

2. **Annoyed**

3. **Comforted**

4. **Vexed**
Choose the correct spelling of the word from the choices given below:

Options:

1. Vaccum

2. Vacuum

3. Vaccuum

4. Vaccume

Choose the correct spelling of the word from the choices given below:

Options:

1. Privileged

2. Previlege
Choose the correct option that can be substituted for the words given below:

“The one who walks in the sleep”

Options:

1. Somnambulist

2. Somniloquist

3. Insomniac

4. Somnolent
Choose the correct option that can be substituted for the words given below:

“One who is all powerful”

Options:

1. Omniscient

2. Omnipresent

3. Ubiquitous

4. Omnipotent

Question Number : 159 Question Id : 1592074572 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

Choose the correct option that can be substituted for the words given below:

“A person who eats flesh”
Options:

Carnivore
1. ✔

Herbivore
2. ✗

Omnivore
3. ✗

Vegan
4. ✗

Fill in the blank with an appropriate word from the options given below:
“Everyone trusts Radhika because her statements are________.”

Options:

Voracious
1. ✗

Veracious
2. ✔
Fill in the blank with an appropriate word from the options given below:
“Vinita could escape from the dangerous situation with ______ idea.”

Options:

1. Ingenious
2. Ingenuous
3. Indigent
4. Indiscrete
Fill in the blank with an appropriate word from the options given below:

“It was a truly ______ achievement for the team of RRR cinema to get an Oscar Award.”

Options:

1. credible
2. creditable
3. credulous
4. credulent

What is the meaning of the idiom “bird’s eye view”?

Options:

1. A general view
A view of a bird

2. ✗

The way of a bird

3. ✗

The flying of a bird

4. ✗

What is the meaning of the idiom “at sixes and sevens”?

Options:

1. ✔ In a disorderly condition

2. ✗ Keeping things in order

3. ✗ Remembering the numbers
4. Be in a stationary condition

---

Question Number : 165 Question Id : 1592074578 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

What is the meaning of the idiom “spill the beans”?

Options :

1. ✗ To throw the things

2. ✗ To be very careless

3. ✗ To be clumsy

4. ✓ To reveal a secret information

---

Question Number : 166 Question Id : 1592074579 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0
Fill in the blank with the appropriate phrasal verb from the options given below:
“The Chief Guest _______ the prizes yesterday/in the college day function”

Options:

1. gave up
2. gave way
3. gave away
4. gave over

Fill in the blank with the appropriate phrasal verb from the options given below:
“The management requested the employees to _______ their strike.”

Options:

1. call up
2. call off
What is the meaning of the phrasal verb “break into”?

Options:

1. Come to an end

2. Spread suddenly

3. Stop suddenly

4. Enter by force
Fill in the blanks with suitable articles from the options given below:
“______ Amazon is ______ longest river in the world.”

Options:

1. The, a

2. The, the

3. An, a

4. A, the

Fill in the blanks with suitable articles from the options given below:
“There was _____ ulcer on ____ face of the prisoner.”

Options:
Fill in the blank with the suitable article from the options given below:
“_____ one eyed beggar was crying for food.”

Options:

A

An

The
Question Number : 172 Question Id : 1592074585 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

Fill in the blank with the suitable preposition from the options given below:

“_____ being fined, the culprit was sentenced.”

Options :

1. Beside

2. Besides

3. Apart

4. Behind

Question Number : 173 Question Id : 1592074586 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0
Fill in the blank with the suitable preposition from the options given below:
“Distribute the sweets ______ the four children.”

Options:
1. between
2. around
3. among
4. up on

Fill in the blanks with suitable prepositions from the options given below:
“The student apologized _____ the teacher _____ his mistake.”

Options:
1. over, for
2. to, for
Question Number : 175 Question Id : 1592074588 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

Choose the appropriate question tag for the following: “I am a teacher, ______?”

Options :

1. isn’t it

2. am I

3. aren’t I

4. am I not

Question Number : 176 Question Id : 1592074589 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
Choose the appropriate question tag for the following:
“The students won the prize, _____?”

Options:

1. did they
2. didn’t they
3. don’t they
4. do they

Choose the right passive voice form of the given sentence:
“They have opened a shop”

Options:

1. A shop has been opened by them.
2.  

A shop they have opened.

A shop have been opened by them.

A shop was opened by them.

Question Number : 178 Question Id : 1592074591 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

Choose the right passive voice form of the given sentence: “Ramu must complete the work”

Options:

1. The work has to be completed by Ramu.

2. The work will be completed by Ramu.

3. The work must be completed by Ramu.

4. ✗
The work will have to be completed by Ramu.

Question Number : 179 Question Id : 1592074592 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

Which of the following options is the correct passive voice form of the sentence?

Attempt all the questions.

Options :

1. ❌

2. ❌

3. ❌

4. ✔

Question Number : 180 Question Id : 1592074593 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0
Which of the following options is the correct verb form to make the sentence grammatically correct?

Many students .............. answering the paper before the bell rang.

Options:

1. had finished
2. haven't finished
3. finished
4. will have finished
Question Number : 182 Question Id : 1592074595 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

Which of the following options is the correct verb form to make the sentence grammatically correct?

If you answer all the questions correctly, you ........ a seat in whatever course you want.

Options :

1. would have got
2. will get
3. got
will have got

4. ✗

Question Number : 183 Question Id : 1592074596 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

Choose the correct option indicating grammatically accurate subject-verb agreement:

Options :

Each of the girls are carrying a backpack.

1. ✗

Each of the girls is carrying a backpack.

2. ✓

Each of the girl is carrying a backpack.

3. ✗

Each of the girls is carried a backpack.

4. ✗

Question Number : 184 Question Id : 1592074597 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0
Choose the correct option indicating grammatically accurate subject-verb agreement:

Options :

Neither the teacher nor the students is happy with the results.
1. ✗

Neither the teacher nor the student are happy with the results.
2. ✗

Neither the teachers nor the student are happy with the results.
3. ✗

Neither the teacher nor the students are happy with the results.
4. ✓

Question Number : 185 Question Id : 1592074598 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0
Choose the correct option indicating grammatically accurate subject-verb agreement:

Options :

One of my favorite songs are “naatu, naatu”.
1. ✗
One of my favorite songs is “naatu, naatu”.

2. ✓

One of my favorite song is “naatu, naatu”.

3. ✗

One of my favorite song are “naatu, naatu”.

4. ✗

Identify the grammatically correct sentence from the options given:

Options:

1. ✗

2. ✓

3. ✗

The daughter does whatever her mother was done.

The daughter does whatever her mother does.

The daughter does whatever her mother has done.
The daughter does whatever her mother did.

4. ✗

Question Number : 187 Question Id : 1592074600 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Identify the part in the following sentence that has a grammatical error:

The company plans to (A) expand it's (B) business overseas (C) and to increase its profits (D).

Options :

1. ✗

2. ✓

3. ✗

4. ✗

Question Number : 188 Question Id : 1592074601 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Identify the grammatically **correct sentence** from the options given:

Options:

1. ✗ I enjoy reading books, watching movies, and to play video games.
2. ✗ I enjoy to read books, watch movies, and to play video games.
3. ✗ I am enjoying read books, watch movies, and play video games.
4. ✓ I enjoy reading books, watching movies, and playing video games.

Identify the grammatically **correct sentence** from the options given:

Options:

1. ✗ After eating dinner, the movie started.
2. ✓
After we ate dinner, the movie started.

3. ✗

After we were eating dinner, the movie started.

4. ✗

Question Number : 190 Question Id : 1592074603 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0

Identify the grammatically **correct sentence** from the options given:

Options :

1. ✔️ I cannot go to the party because I have an examination tomorrow.

2. ✗ I cannot go to the party because I had an examination yesterday.

3. ✗ I cannot go to the party owing to I have an examination tomorrow.

4. ✗
I could not go to the party because tomorrow I will be having an examination.

Sub-Section Number : 2
Sub-Section Id : 159207109
Question Shuffling Allowed : No
Is Section Default? : null

Question Id : 1592074604 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Question Numbers : (191 to 195)

Read the following passage carefully and answer the questions from 191-195 that follow:
India’s infrastructure is creaking, its health-care system even more so. Poverty and inequality remain omnipresent, and now the economy is struggling. But there are three issues that, if dealt with, could bring about big improvements. The environment is one. Twelve of the world’s 15 most polluted cities are in India, and the country ranks 120th of 122 on the global index of water quality. A second is education. As more people move to cities for the first time, it is crucial that they are trained to find jobs in India’s 21st century economy. A third issue is administration. With its basic structures unchanged since the British Raj, India’s government is undemanded, unevenly deployed and badly equipped to cope with.

Take the environment first. A visitor from the past would scarcely recognize the plains of Punjab and Haryana in northern India. Vast irrigation works, mechanized farming and hybrid seeds have greened the horizons, turning once-hungry India into a big exporter of grain. But now a visitor may not even be able to see the plains. Every year farmers setting fire to rice stubble create a dense seasonal smog. This mixes with diesel exhaust, smoke from coal-fired power stations and other noxious gases to form a toxic cocktail engulfing the whole north Indian plain from Lahore in Pakistan to Dhaka in Bangladesh, where some 800 million people live. The bad air may cause as many as 1.2 million premature deaths a year, and shave four years off the average lifespan.

Sub questions

Question Number : 191 Question Id : 1592074605 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
According to the passage, the grouse that India’s basic structure have remained unchanged since the British Raj can imply that

Options:

1. Adequate resources have not been channeled into updating or the resources have been directed elsewhere.

2. The population of the country has overwhelmed its structure.

3. The government has not authorized updating the structures.

4. The government has no time to update the country's basic structures.

As more and more people move to cities, what are the twin responsibilities of government?

Options:

1. They should be provided potable water.

2. They should be provided with access to public transport.

3. They should be provided housing and healthcare.
They should be provided job training and employment.

4. ✓

Question Number : 193 Question Id : 1592074607 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

The order in which the author suggests the three issues that the government “could bring about big
improvements” is

Options :

1. ✓ Environment, education and administration.

2. ✗ Administration, education and environment.

3. ✗ Education, environment and administration.

4. ✗ Education, administration and environment.

Question Number : 194 Question Id : 1592074608 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

The word closest in meaning to ‘omnipresent’ is
The antonym of the word “Noxious” in the passage is

Options:

1. Poisonous
2. Toxic
3. Deadly
4. 

Harmless

Sub-Section Number : 3
Sub-Section Id : 159207110
Question Shuffling Allowed : No
Is Section Default? : null

Question Id : 1592074610 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No
Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (196 to 200)
Read the following passage carefully and answer the questions from 196-200 that follow:
The U.S. economy is finally getting stronger, but there seems to be one unsettling weakness: the apparent wholesale flight of technology jobs like computer programming and technical support to lower-cost nations, led by India. The trend is typically described in ungainly terms – as “offshore outsourcing” or “offshoring”. But the theoretical hurdle has done nothing to lessen the recent public debate and expressions of angst over this kind of job migration. There are some early signs of political reaction. Last month, for example, the State of Indiana pulled out of a $15 million contract with an Indian company to provide technology services. And a proposed bill in New Jersey would restrict the use of offshore workers by companies doing work for the State.
Forrester Research, a technology consulting firm, published a report this month pointing out that the movement abroad is only gradual. It bemoaned “the rising tide of offshore-hype”. Yet Forrester itself played a significant role in framing the debate, as well as stirring fears, with a report last year. It predicted that 3.3 million services jobs in America would move offshore by 2015, and that the information technology industry would “lead the initial overseas exodus”.

Sub questions

Question Number : 196 Question Id : 1592074611 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0
The passage focusses on:

Options :

1. Information technology
The fear of outsourcing in the U.S.

The strengths of the U.S. economy

The weaknesses of the U.S. economy

Which of the following statements is untrue in relation to Forrester Research?

Options:

1. The research firm has observed that the movement of jobs to foreign shores is slowly picking up.

2. The firm has opined that jobs in the information technology industry would be the first to leave America.

3. Forrester Research has played a role in removing people’s fears over outsourcing of jobs.

4. The research institute has prophesied that 3.3 million jobs will move off-shore by 2015.
Question Number : 198 Question Id : 1592074613 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

In which connection is the word “trend” used in the passage?

Options :

1. The strong U.S. economy.
2. Technical support.
3. Computer programming.
4. Job migration from the U.S.

Question Number : 199 Question Id : 1592074614 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0

The verb form of “migration” is

Options :

1. Migratory
Migrate

Immigrate

Emigrate

The synonym of the word “apparent” in the passage is

Options:

1. ✗ Opaque

2. ✗ Vague

3. ✗ Evident

4. ✗ Indifferent