# Andhra Pradesh State Council of Higher Education

**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 06th May 2025 Shift 1 |
| **Subject Name :** | BSc Mathematics |
| **Creation Date :** | 2025-05-06 14:10:32 |
| **Duration :** | 180 |
| **Total Marks :** | 200 |
| **Display Marks:** | No |
| **Share Answer Key With Delivery Engine :** | Yes |
| **Change Font Color :** | No |
| **Change Background Color :** | No |
| **Change Theme :** | No |
| **Help Button :** | No |
| **Show Reports :** | No |
| **Show Progress Bar :** | No |

## BSc Mathematics

| | |
|---|---|
| **Group Number :** | 1 |
| **Group Id :** | 89040182 |
| **Group Maximum Duration :** | 0 |
| **Group Minimum Duration :** | 180 |
| **Show Attended Group? :** | No |
| **Edit Attended Group? :** | No |
| **Break time :** | 0 |
| **Group Marks :** | 200 |

## Mathematics

| | |
|---|---|
| **Section Id :** | 890401319 |
| **Section Number :** | 1 |
| **Section type :** | Online |
| **Mandatory or Optional :** | Mandatory |

| | |
|---|---|
| **Number of Questions :** | 100 |
| **Number of Questions to be attempted :** | 100 |
| **Section Marks :** | 100 |
| **Maximum Instruction Time :** | 0 |
| **Sub-Section Number :** | 1 |
| **Sub-Section Id :** | 890401343 |
| **Question Shuffling Allowed :** | Yes |

**Question Number : 1 Question Id : 89040116213 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Which of the following is a solution of the differential equation $\frac{d^2y}{dx^2}+4\frac{dy}{dx}+4y=0$ ?

**Options :**

1. ✖ $e^{-3x}$

2. ✖ $xe^{-x}$

3. ✔ $xe^{-2x}$

4. ✖ $x^2e^{-x}$

**Question Number : 2 Question Id : 89040116214 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

The solution for the differential equation $\frac{d^2y}{dx^2}=3x-2$ with boundary conditions $y(0)=2$ and $y'(1)=-3$ is _____

**Options :**

1. ✖ $y=\frac{x^3}{3}-\frac{x^2}{2}-3x-2$

2. ✖

$y=3x^3-\frac{x^2}{2}+5x+\frac{3}{2}$

3. ✖ $y=3x^3-\frac{x^2}{2}-5x+2$

4. ✔ $y=\frac{x^3}{2}-x^2-\frac{5x}{2}+2$

**Question Number : 3 Question Id : 89040116215 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Which of the following is NOT a solution of the differential equation $\frac{d^2y}{dx^2}+y=1$?

**Options :**

1. ✖ $y=1$

2. ✖ $y=1+\cos x$

3. ✖ $y=1+\sin x$

4. ✔ $y=2+\sin x+\cos x$

**Question Number : 4 Question Id : 89040116216 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

The solution of the differential equation $3y\frac{dy}{dx}+2x=0$ represents a family of

**Options :**

1. ✔ ellipse

2. ✖ circles

3. ✖ parabolas

4. ✖ hyperbolas

**Question Number : 5 Question Id : 89040116217 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

The solution of $x\frac{dy}{dx}+y=x^4$ with $y(1)=\frac{6}{5}$ is_____

**Options :**

1. ✖ $y=\frac{x^4}{5}+1$

2. ✔ $y=\frac{x^4}{5}+\frac{1}{x}$

3. ✖ $y=\frac{4x^4}{5}+\frac{4}{5x}$

4. ✖ $y=\frac{x}{5}+1$

**Question Number : 6 Question Id : 89040116218 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Which of the following is the solution of $p^2+p\left(\frac{y}{x}-\frac{x}{y}\right)-1=0,\ p=\frac{dy}{dx}$ ?

**Options :**

1. ✖ $(xy-c)(x^2+y^2-c)=0$

2. ✖ $(\frac{x}{y}-c)(x^2-y^2+c)=0$

3. ✔ $(xy-c)(x^2-y^2-c)=0$

4. ✖ $(xy-cx)(x^2+y^2-c)=0$

**Question Number : 7 Question Id : 89040116219 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

General solution of $y=x(p+\sqrt{1+p^2})$ is _____. $p=\frac{dy}{dx}$

**Options :**

1. ✖ $x+y=c^2x$

2. ✖ $y=c^2x+c$

3. ✖ $xy=c^2y+c$

4. ✔ $xy=c^2x+c$

**Question Number : 8 Question Id : 89040116220 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Solution of $p^3y+2px-y=0$ is _____. $p=\frac{dy}{dx}$.

**Options :**

1. ✔ $y^2=2cx+c^3$

2. ✖ $y = cx + c^2$

3. ✖ $x = cy^2 + c^3$

4. ✖ $x = 2cy + c^3$

**Question Number : 9 Question Id : 89040116221 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**
**Correct Marks : 1 Wrong Marks : 0**

Which of the following is the singular solution of $p = \log(px - y), p = \frac{dy}{dx}$

**Options :**

1. ✖ $c = log(cx - y)$

2. ✖ $c = e^{(cx-y)}$

3. ✔ $y = x(log\, x - 1)$

4. ✖ $x = y(log\, y - 1)$

**Question Number : 10 Question Id : 89040116222 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**
**Correct Marks : 1 Wrong Marks : 0**

General solution of $xp^2 - yp + a = 0$ is _____. $p = \frac{dy}{dx}$

**Options :**

1. ✔ $y = cx + \frac{a}{c}$

2. ✖ $y = cx - \frac{a}{c^2}$

3. ✖ $y = cx + \frac{c^2}{a}$

4. ✖ $y = x^2 + \frac{a}{c^2}$

**Question Number : 11 Question Id : 89040116223 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**
**Correct Marks : 1 Wrong Marks : 0**

The particular integral of $(D^2 - 4D + 4)y = Cos2x$ is _____

**Options :**

1. ✖ $\frac{3}{8}\text{Cos } 2x$

2. ✖ $\frac{1}{4}\text{Cos } 2x$

3. ✖ $\frac{1}{8}\text{Cos } 2x$

4. ✔ $-\frac{1}{8}\text{Sin } 2x$

**Question Number : 12 Question Id : 89040116224 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**
**Correct Marks : 1 Wrong Marks : 0**

Which of the following is the differential equation whose auxiliary roots are 0, -1, -1?

**Options :**

1. ✖ $\frac{d^3y}{dx^3} + \frac{d^2y}{dx^2} - 2\frac{dy}{dx} + y = e^x$

2. ✖ $\frac{d^3y}{dx^3} + 2\frac{d^2y}{dx^2} + \frac{dy}{dx} + y = e^{-x}$

3. ✔ $\frac{d^3y}{dx^3} + 2\frac{d^2y}{dx^2} + \frac{dy}{dx} = e^{-x}$

4. ✖ $\frac{d^3y}{dx^3} - 2\frac{d^2y}{dx^2} + \frac{dy}{dx} = e^{-x}$

**Question Number : 13 Question Id : 89040116225 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

The particular integral of $\frac{d^2y}{dx^2} - 2\frac{dy}{dx} + y = e^x \sin x$ is _____

**Options :**

1. ✖ $e^x \cos x$

2. ✔ $-e^x \sin x$

3. ✖ $-e^x \cos x$

4. ✖ $e^x \sin x$

**Question Number : 14 Question Id : 89040116226 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

The complementary function of $(D-2)^2 y = 8\,e^{-x}$ is _____

**Options :**

1. ✖ $(c_1 + c_2 x)e^x$

2. ✖ $(c_1 + c_2x)e^{-x}$

3. ✖ $(c_1 + c_2x)e^{-2x}$

4. ✔ $(c_1 + c_2x)e^{2x}$

**Question Number : 15 Question Id : 89040116227 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

The differential equation whose C.F is $y = c_1 \cos 2x + c_2 \sin 2x + c_3e^{-x}$ is

**Options :**

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

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

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

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

**Question Number : 16 Question Id : 89040116228 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

$\frac{1}{(D-2)^2}x^2 =$ _____

**Options :**

1. ✔ $\frac{1}{4}(x^2 + 2x + \frac{3}{2})$

2. ✖ $\frac{1}{4}(x^2+\frac{3}{4})$

3. ✖ $\frac{1}{4}(x^2+\frac{3}{2})$

4. ✖ $\frac{1}{4}(x^2+x+\frac{3}{4})$

**Question Number : 17 Question Id : 89040116229 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Particular integral of $\frac{d^3y}{dx^3}+4\frac{dy}{dx}=\sin 2x$ is _____

**Options :**

1. ✖ $\frac{-x}{8}\cos 2x$

2. ✔ $\frac{-x}{8}\sin 2x$

3. ✖ $\frac{x}{12}\cos 2x$

4. ✖ $\frac{-x}{12}\sin 2x$

**Question Number : 18 Question Id : 89040116230 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

$e^{-x}(c_1\cos\sqrt{3x}+c_2\sin\sqrt{3x})+c_3e^{2x}$ is the general solution of _____

**Options :**

1. ✖

$\frac{d^3y}{dx^3}+4y=0$

2. ✔ $\frac{d^3y}{dx^3}-8y=0$

3. ✖ $\frac{d^3y}{dx^3}+8y=0$

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

**Question Number : 19 Question Id : 89040116231 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Complementary function of the differential equation $\frac{d^2x}{dt^2}+4x=a\sin t\cos t$ is___

**Options :**

1. ✖ $x=e^t(c_1\cos t+c_2\sin t)$

2. ✔ $x = c_1 \cos 2t + c_2 \sin 2t$

3. ✖ $t = e^x(c_1 \cos 2x + c_2 \sin 2x)$

4. ✖ $x = c_1e^{2t} + c_2e^{-2t}$

**Question Number : 20 Question Id : 89040116232 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

The particular integral of $(D^2-1)y=4\cosh x$ is ___

**Options :**

1. ✖ $xe^x - e^{-x}$

2. ✖ $x(e^{-x} - e^x)$

3. ✖ $e^x - xe^x$

4. ✔ $x(e^x - e^{-x})$

**Question Number : 21 Question Id : 89040116233 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

The congruence $10x \equiv 15 (\text{mod}\, 35)$ has ____

**Options :**

1. ✖ only one solution

2. ✖ no solution

3. ✔ 5 solutions

4. ✖ 10 solutions

**Question Number : 22 Question Id : 89040116234 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

If $N$ be the set of natural numbers and $*$ is a binary operation defined by $a*b = a+b$ then $(N,*)$ is ____

**Options :**

1. ✖

quasi-group

2. ✔ semi-group

3. ✖ monoid

4. ✖ group

**Question Number : 23 Question Id : 89040116235 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**
**Correct Marks : 1 Wrong Marks : 0**

Which of the following is true for all non-abelian group?

**Options :**

1. ✖ $O(G) > 7$

2. ✖ $O(G) \geq 9$

3. ✖ $O(G) > 6$

4. ✔ $O(G) \geq 6$

**Question Number : 24 Question Id : 89040116236 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**
**Correct Marks : 1 Wrong Marks : 0**

The number of subgroups of $Z_{48}$is _____

**Options :**

1. ✔ 10

2. ✖ 48

3. ✖ 2

4. ✖ 8

**Question Number : 25 Question Id : 89040116237 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

The order of the permutation $\begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 \\ 2 & 4 & 6 & 5 & 1 & 3 \end{pmatrix}$ is _____

**Options :**

1. ✖ 1

2. ✖ 2

3. ✔ 4

4. ✖ 8

**Question Number : 26 Question Id : 89040116238 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Let G be a finite group. Then G is necessarily a cyclic group if the order of G is _____

**Options :**

1. ✖ 4

2. ✔ 7

3. ✖ 6

4. ✖ 10

**Question Number : 27 Question Id : 89040116239 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

If $f:(Z,+)\to(5Z,+)$ defined by $f(x)=5x, \forall x\in G$ then which of the following is NOT CORRECT ?

**Options :**

1. ✖ $f$ is one-to-one

2. ✔ $f$ is not onto

3. ✖ $f$ is homomorphism

4. ✖ $f$ is an isomorphism

**Question Number : 28 Question Id : 89040116240 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

If $H,K$ are subgroups of $G$, order of $H$ is 24 and order of $K$ is 55 then $O(H\cap K)=$ ____

**Options :**

1. ✖ 15

2. ✔ 1

3. ✖ 24

4. ✖ 31

**Question Number : 29 Question Id : 89040116241 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

If $f: G \to G'$ is an onto homomorphism with kernel $K$, then ___

**Options :**

1. ✔ $\frac{G}{K} \cong G'$

2. ✖ $\frac{K}{G} \cong G$

3. ✖ $\frac{K}{G} \cong K$

4. ✖ $\frac{G}{K} \cong K$

**Question Number : 30 Question Id : 89040116242 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Let $H = \{1,15\}$ is a subgroup of a group of order 8 then the number of all left cosets of $H$ in $G$ is _____

**Options :**

1. ✖ 2

2. ✖ 3

3. ✔ 4

4. ✖ 8

**Question Number : 31 Question Id : 89040116243 Question Type : MCQ Option Shuffling : No**

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $\bar{r}=x\bar{i}+y\bar{j}+z\bar{k}$ and $r=|\bar{r}|$ than the value of $div\left(\frac{\bar{r}}{r^3}\right)=$_____

Options :

1. ✖ 1

2. ✖ -1

3. ✔ 0

4. ✖ 2

Question Number : 32 Question Id : 89040116244 Question Type : MCQ Option Shuffling : No

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The maximum value of the directional derivative of $f=2x^2+3y^2+z^2$ at $(2,1,3)$ in the direction of $\bar{i}+2\bar{j}-2\bar{k}$ is _____

Options :

1. ✔ $2\sqrt{34}$

2. ✖ $\sqrt{34}$

3. ✖ $\sqrt{2}$

4. ✖ $3\sqrt{5}$

Question Number : 33 Question Id : 89040116245 Question Type : MCQ Option Shuffling : No

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $f(x,y,z)=x^2y+y^2z+z^2x$ then, the value of $\nabla\cdot(\nabla\times\nabla f)+\nabla\cdot(\nabla f)$ at $(1,1,1)$ is ___

**Options :**

1. ✖ 0

2. ✖ 3

3. ✔ 6

4. ✖ 9

**Question Number : 34 Question Id : 89040116246 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

If $\bar{V}=(x+3y)\bar{i}+(y-2x)\bar{j}+(x+az)\bar{k}$ is a solenoidal than $a=$_____

**Options :**

1. ✖ 0

2. ✖ 1

3. ✔ - 2

4. ✖ $\frac{1}{2}$

**Question Number : 35 Question Id : 89040116247 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Let $T(x,y,z)=xy^2+2z-x^2z^2$ be the temperature at the point $(x,y,z)$. The unit vector in the direction in which the temperature decreases most rapidly at $(1,0,-1)$ is _____

Options :

1. ✖ $\frac{\bar{i}-4\bar{k}}{\sqrt{17}}$

2. ✔ $\frac{\bar{i}-2\bar{k}}{\sqrt{5}}$

3. ✖ $\frac{-\bar{i}+2\bar{k}}{\sqrt{5}}$

4. ✖ $\frac{2\bar{i}+3\bar{j}+\bar{k}}{\sqrt{14}}$

**Question Number : 36 Question Id : 89040116248 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Which of the following is NOT TRUE?

Options :

1. ✔ $\nabla \cdot \nabla f = 0$

2. ✖ $\nabla \times \nabla f = 0$

3. ✖ $\nabla \cdot \nabla \bar{f} = 0$

4. ✖ $\nabla \times (\nabla \times \bar{f}) = 0$

**Question Number : 37 Question Id : 89040116249 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

If $F(t)$ has constant direction then _____

**Options :**

1. ✖ $F \cdot \frac{dF}{dt} = 0$

2. ✔ $F \times \frac{dF}{dt} = 0$

3. ✖ $F . \frac{dF}{dt} = c$

4. ✖ $F \times \frac{dF}{dt} = c$

**Question Number : 38 Question Id : 89040116250 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

If $V_1$ and $V_2$ be the vectors joining the fixed points $(x_1, y_1, z_1)$ and $(x_2, y_2, z_2)$ respectively to a variable point $(x, y, z)$ then $curl(V_1 \times V_2) =$_____

**Options :**

1. ✖ $0$

2. ✖ $V_1 + V_2$

3. ✖ $V_1 - V_2$

4. ✔ $2(V_1 - V_2)$

**Question Number : 39 Question Id : 89040116251 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Which of the following holds for any non-zero vector $\bar{a}$ ?

**Options :**

1. ✖ $\nabla \cdot \bar{a} = 0$

2. ✖ $\nabla \times \bar{a} = 0$

3. ✔ $\nabla.\left(\nabla \times \bar{a}\right) = 0$

4. ✖ $\nabla\left(\nabla \times \bar{a}\right) = 0$

**Question Number : 40 Question Id : 89040116252 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

The angle (in degrees) between two vectors $\bar{a} = \frac{\sqrt{3}}{2}i + \frac{1}{2}j$ and $\bar{b} = \frac{-\sqrt{3}}{2}i + \frac{1}{2}j$ is__

**Options :**

1. ✖ 30

2. ✖ 60

3. ✖ 90

4. ✔ 120

**Question Number : 41 Question Id : 89040116253 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

The value of the line integral of $\bar{F} = yz\bar{i}$ in the counter clock wise direction, along the circle $x^2 + y^2 = 1$ at $z = 1$ is _____

**Options :**

1. ✖ $-2\pi$

2. ✔ $-\pi$

3. ✖ $\pi$

4. ✖ $2\pi$

**Question Number : 42 Question Id : 89040116254 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

If $\overline{F} = 3xy\bar{i} - y^2\bar{j}$ then the value of $\int_c \overline{F} \cdot \overline{dr} =$____ where C is the curve $y = 2x^2$ in the $xy$ – plane from $(0,0)$ to $(1,2)$.

**Options :**

1. ✔ $\frac{-7}{6}$

2. ✖ $\frac{7}{6}$

3. ✖ $0$

4. ✖ $\frac{6}{7}$

**Question Number : 43 Question Id : 89040116255 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

If $S$ is any closed surface enclosing a value $V$ and $\overline{F} = x\bar{i} + 2y\bar{j} + 3z\bar{k}$ than $\iint_s \left(\nabla \times \overline{F}\right) \cdot \bar{n} ds =$____

**Options :**

1. ✖ $V$

2. ✖ $2V$

3. ✖ $5V$

4. ✔ $6V$

**Question Number : 44 Question Id : 89040116256 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

If $f(2)=2\bar{i}-\bar{j}+2\bar{k}$ and $f(3)=4\bar{i}-2\bar{j}+3\bar{k}$ then the value of $\int_2^3\left(f\cdot\frac{df}{dt}\right)dt=$_____

**Options :**

1. ✔ $10$

2. ✖ $11$

3. ✖ $-10$

4. ✖ $-11$

**Question Number : 45 Question Id : 89040116257 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

The value of $\iint_s\left(x^2+2y^2+3z^2\right)ds$ over the sphere $x^2+y^2+z^2=9$ is _____

**Options :**

1. ✖

$12\pi$

2. ✖ $6\pi$

3. ✖ $4\pi$

4. ✔ $72\pi$

**Question Number : 46 Question Id : 89040116258 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

The value of $\int_{x=0}^{1}\int_{y=0}^{x^2}\int_{z=0}^{y}(y+2z)dzdydx$ is_____

**Options :**

1. ✖ $\frac{1}{53}$

2. ✔ $\frac{2}{21}$

3. ✖ $\frac{1}{6}$

4. ✖ $\frac{5}{3}$

**Question Number : 47 Question Id : 89040116259 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

If $\bar{r}$ is the position vector of any point on a closed surface $S$ that encloses the volume $V$

then $\iint_S \bar{r} \cdot \overline{ds}$ is equal to _____

**Options :**

1. ✖ $V$

2. ✖ $2V$

3. ✔ $3V$

4. ✖ $\frac{V}{2}$

**Question Number : 48 Question Id : 89040116260 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Stokes theorem connects_____

**Options :**

1. ✔ a line integral and a surface integral

2. ✖ a line integral and a volume integral

3. ✖ a surface integral and a volume integral

4. ✖ gradient of a function and its surface integral

**Question Number : 49 Question Id : 89040116261 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

For a vector field $\overline{F}$, the divergence theorem states that ____

**Options :**

1. ✔ $\int_s \overline{F}.\overline{ds} = \int_V \nabla \cdot \overline{F} dV$

2. ✖ $\int_s \overline{F}.\overline{ds} = \int_V \nabla \times \overline{F} dV$

3. ✖ $\int_s \overline{F} \times \overline{ds} = \int_V \nabla \cdot \overline{F} dV$

4. ✖ $\int_s \overline{F \times ds} = \int_V \nabla \times \overline{F}\, dV$

**Question Number : 50 Question Id : 89040116262 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

The circulation of $\overline{F} = y\overline{i} + z\overline{j} + x\overline{k}$ around the circle $x^2 + y^2 = 1, z = 0$ is ___

**Options :**

1. ✖ $\pi$

2. ✖ $\frac{\pi}{2}$

3. ✖ $\frac{\pi}{4}$

4. ✔ $-\pi$

**Question Number : 51 Question Id : 89040116263 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

The distance between the planes $2x+y+2z=8$ and $4x+2y+4z+5=0$ is _____

**Options :**

1. ✖ $\frac{3}{2}$

2. ✖ $\frac{5}{2}$

3. ✔ $\frac{7}{2}$

4. ✖ $\frac{9}{2}$

**Question Number : 52 Question Id : 89040116264 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

The equation of the plane which is parallel to $x+3y+5z+1=0$ and 5 units from the origin is ____

**Options :**

1. ✖ $x+3y+5z+5=0$

2. ✔ $x+3y+5z+5\sqrt{35}=0$

3. ✖ $x+3y+5z-5\sqrt{35}=0$

4. ✖ $x+3y+5z-3\sqrt{35}=0$

**Question Number : 53 Question Id : 89040116265 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

A plane which bisects the angle between the two given planes $x+2y+2z-2=0$ and $2x-y+2z-4=0$, passes through the point _____

**Options :**

1. ✖ $(1,-4,1)$

2. ✔ $(2,-4,1)$

3. ✖ $(2,4,1)$

4. ✖ $(1,4,-1)$

**Question Number : 54 Question Id : 89040116266 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

The radical plane of the spheres $x^2+y^2+z^2+4x-2y+2z+6=0$ and $x^2+y^2+z^2+2x-4y-2z+6=0$ is ____

**Options :**

1. ✖ $x-y+2z=0$

2. ✔ $x+y+2z=0$

3. ✖ $x+y-2z=0$

4. ✖ $x-y-2z=0$

**Question Number : 55 Question Id : 89040116267 Question Type : MCQ Option Shuffling : No**

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The equation of a plane containing the line of intersection of the planes $2x-y-4=0$ and $y+2z-4=0$ and passes through the point $(1,1,0)$ is _____

Options :

1. ✖ $x-3y-2z=-2$

2. ✖ $2x-z=2$

3. ✔ $x-y-z=0$

4. ✖ $x+3y+z=4$

Question Number : 56 Question Id : 89040116268 Question Type : MCQ Option Shuffling : No

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If the plane $x-2y-2z=k$ touches the sphere $x^2+y^2+z^2-2x+4y-6z+5=0$ then the value of $k=$____

Options :

1. ✖ 4

2. ✔ -10

3. ✖ 8

4. ✖ 10

Question Number : 57 Question Id : 89040116269 Question Type : MCQ Option Shuffling : No

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The radius of the sphere whose center is $(4,4,-2)$ and which passes through origin is

**Options :**

1. ✖ $\sqrt{2}$

2. ✖ $3$

3. ✖ $2\sqrt{2}$

4. ✔ $6$

**Question Number : 58 Question Id : 89040116270 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

If a plane passes through a fixed point $(a,b,c)$ and cuts the axes in $A,B,C,$ then the locus of the centre of the sphere $OABC$ is _____

**Options :**

1. ✖ $\frac{a}{x}+\frac{b}{y}+\frac{c}{z}=1$

2. ✔ $\frac{a}{x}+\frac{b}{y}+\frac{c}{z}=2$

3. ✖ $\frac{x}{a}+\frac{y}{b}+\frac{z}{c}=1$

4. ✖ $\frac{x}{a}+\frac{y}{b}+\frac{z}{c}=2$

**Question Number : 59 Question Id : 89040116271 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

The equation of the sphere passes through $(1,0,0)$, $(0,1,0)$, $(0,0,1)$ and has its centre on the plane $x+y+z=6$ is _____

**Options :**

1. ✖ $x^2+y^2+z^2+4x-4y-4z-3=0$

2. ✖ $x^2+y^2+z^2-4x-4y+4z+3=0$

3. ✖ $x^2+y^2+z^2-4x-4y-4z-3=0$

4. ✔ $x^2+y^2+z^2-4x-4y-4z+3=0$

**Question Number : 60 Question Id : 89040116272 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

The angle of interaction of the two spheres $x^2+y^2+z^2+6y+2z+8=0$ and $x^2+y^2+z^2+6x+8y+4z+20=0$ is _____

**Options :**

1. ✔ $\frac{\pi}{2}$

2. ✖ $\frac{\pi}{3}$

3. ✖ $\frac{\pi}{6}$

4. ✖ $\frac{\pi}{4}$

**Question Number : 61 Question Id : 89040116273 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

The values of infimum and supremum of the set $S = \{x \in R^+ \ni x^2 < x\}$ are

**Options :**

1. ✖ 0 and1

2. ✔ -1 and 1

3. ✖ 0 and 3

4. ✖ 1 and 3

**Question Number : 62 Question Id : 89040116274 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Let $S_n = \sum_{k=1}^{n} \frac{n}{n^2 + k}$, for $n \in N$. Then the sequence $\{S_n\}$ is _____

**Options :**

1. ✖ Convergent

2. ✖ divergent to $\infty$

3. ✔ bounded but not convergent

4. ✖ Neither bounded nor diverges to $\infty$

**Question Number : 63 Question Id : 89040116275 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

The series $\sum_{n=0}^{\infty}(2x)^n$ converges if _____

**Options :**

1. ✖ $-1 \le x \le 1$

2. ✖ $\frac{-1}{2} < x < \frac{1}{2}$

3. ✖ $-2 < x < 2$

4. ✔ $\frac{-1}{2} \le x \le \frac{1}{2}$

**Question Number : 64 Question Id : 89040116276 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

$\underset{n\to\infty}{Lt}\ \frac{2^{n+1}+3^{n+1}}{2^n+3^n} =$ _____

**Options :**

1. ✔ 3

2. ✖ 2

3. ✖ 1

4. ✖ 0

**Question Number : 65 Question Id : 89040116277 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

The function $f(x)=x|x|$ is _____

**Options :**

1. ✖ not monotonic

2. ✖ strictly decreasing function

3. ✔ differentiable for all $x \in R$

4. ✖ differentiable for all $x \in R$ except at $x=0$

**Question Number : 66 Question Id : 89040116278 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

The function $f(x)=|x+2|$ is not differentiable at a point _____

**Options :**

1. ✖ $x=2$

2. ✔ $x=-2$

3. ✖ $x=-1$

4. ✖ $x=1$

**Question Number : 67 Question Id : 89040116279 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

If $f(x)=\text{Sin}\left(\frac{1}{x}\right)$ then $f(x)$ is _____ in $(0, 2\pi]$

**Options :**

1. ✖ bounded but not continuous

2. ✖ continuous but not bounded

3. ✖ not continuous and not bounded

4. ✔ bounded and continuous

**Question Number : 68 Question Id : 89040116280 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Which of the following function is continuous but not uniformly continuous on the real line ?

**Options :**

1. ✖ $Sin\, x$

2. ✔ $x^2$

3. ✖ constant function

4. ✖ Identity function

**Question Number : 69 Question Id : 89040116281 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

If $f(x+y)=f(x).f(y), \forall x,y.$ Suppose $f(3)=3$ and $f'(0)=11$ then $f'(3)=$ ____

**Options :**

1. ✖ 22

2. ✔ 33

3. ✖ 28

4. ✖ 9

**Question Number : 70 Question Id : 89040116282 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

The value of $C$ of Rolle's theorem for the function $f(x)=\text{Sin}x$ in $[0,\pi]$ is _____

**Options :**

1. ✖ $\frac{\pi}{3}$

2. ✖ $\frac{\pi}{6}$

3. ✔ $\frac{\pi}{2}$

4. ✖ $\frac{\pi}{4}$

**Question Number : 71 Question Id : 89040116283 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

If $f(x)=1$ when $x\in Q$ and $f(x)=-1$ when $x\in R-Q$ then

**Options :**

1. ✖ $f$ is not bounded on [a, b]

2. ✖ Lower and upper Riemann integrals does not exist

3. ✔ Lower and upper Riemann integrals exist but not equal

4. ✖ $f$ is Riemann integrable on [a, b]

**Question Number : 72 Question Id : 89040116284 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

If $f:[a,b]\to R$ is Riemann integrable then_____

**Options :**

1. ✔ $\left|\int_a^b f(x)dx\right| \le \int_a^b |f(x)|dx$

2. ✖ $\int_a^b |f(x)|dx \le \left|\int_a^b f(x)dx\right|$

3. ✖ $\int_a^b |f(x)|dx = \left|\int_a^b f(x)dx\right|$

4. ✖ $\left|\int_a^b f(x)dx\right| = \int_a^b f(x)dx$

**Question Number : 73 Question Id : 89040116285 Question Type : MCQ Option Shuffling : No**
**Display Question Number : Yes**
**Correct Marks : 1 Wrong Marks : 0**

If $f,g$ are bounded functions defined on $[a,b]$ and let $P$ be any partition of $[a,b]$ then which of the following is NOT TRUE ?

**Options :**

1. ✖ $L(P,-f)=-U(P,f)$

2. ✖ $U(P,-f)=-L(P,f)$

3. ✔ $L(P,f+g)\leq L(P,f)+L(P,g)$

4. ✖ $U(P,f+g)\leq U(P,f)+U(P,g)$

**Question Number : 74 Question Id : 89040116286 Question Type : MCQ Option Shuffling : No**
**Display Question Number : Yes**
**Correct Marks : 1 Wrong Marks : 0**

Which of the following statement is NOT CORRECT?

**Options :**

1. ✖ Every continuous function is integrable

2. ✖ If $f$ is monotonic on $[a,b]$ then $f$ is integrable in $[a,b]$

3. ✔ If $|f|$ is integrable on $[a,b]$ then $f$ is integrable on $[a,b]$

4. ✖ If $f$ is integrable on $[a,b]$ then $f^2$ is also integrable on $[a,b]$

**Question Number : 75 Question Id : 89040116287 Question Type : MCQ Option Shuffling : No**
**Display Question Number : Yes**
**Correct Marks : 1 Wrong Marks : 0**

Let $R=\{0,1,2,3\}$, under additive and multiplication modulo 4 is _____

**Options :**

1. ✖ A field

2. ✖ an integral domain

3. ✔ a ring

4. ✖ a skew field

**Question Number : 76 Question Id : 89040116288 Question Type : MCQ Option Shuffling : No**
**Display Question Number : Yes**
**Correct Marks : 1 Wrong Marks : 0**

The number of ideals in the ring $Z_{37}$ is _____

**Options :**

1. ✖ 4

2. ✖ 3

3. ✔ 2

4. ✖ 1

**Question Number : 77 Question Id : 89040116289 Question Type : MCQ Option Shuffling : No**
**Display Question Number : Yes**
**Correct Marks : 1 Wrong Marks : 0**

The polynomial $x^2+9$ is reducible over _____

**Options :**

1. ✖ N

2. ✖ W

3. ✖ R

4. ✔ Z

**Question Number : 78 Question Id : 89040116290 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

The characteristic of the ring $(Z_6, +_6, \times_6)$ is _____

**Options :**

1. ✖ 3

2. ✖ 4

3. ✖ 5

4. ✔ 6

**Question Number : 79 Question Id : 89040116291 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Which of the following is not an integral domain?

**Options :**

Ring of Gaussian integers

1. ✖

Ring of Integers

2. ✖

Ring of real numbers

3. ✖

Ring of all $n \times n$ matrices whose elements are integers

4. ✔

**Question Number : 80 Question Id : 89040116292 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

If $\phi: Z_7 \to Z_{12}$ is defined such that $\phi(a) = 4a$ than $\phi$ is _____

**Options :**

a ring homomorphism

1. ✖

not a ring homomorphism

2. ✔

a ring homomorphism but not isomorphism

3. ✖

Isomorphism

4. ✖

**Question Number : 81 Question Id : 89040116293 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

If $W$ is a subspace of a finite dimensional vector space $V$ then $\dim\left(\frac{V}{W}\right) =$ _____

**Options :**

1. ✖

$dim\,V + dim\,W$

2. ✔ $dim\,V - dim\,W$

3. ✖ $\frac{\dim V}{\dim W}$

4. ✖ $\frac{\dim W}{\dim V}$

**Question Number : 82 Question Id : 89040116294 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

If $W$ is a subspace of $V^3$, where $W = \{(a,b,c)/a+b+c=0\}$ then $\dim W =$ ____

**Options :**

1. ✔ 2

2. ✖ 3

3. ✖ 1

4. ✖ 0

**Question Number : 83 Question Id : 89040116295 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Which of the following set linearly dependent set is $R^3(R)$ ?

**Options :**

1. ✖ $\{(-1,0,1),(0,1,1),(2,-2,-1)\}$

2. ✔ $\{(0,0,1),(0,1,1),(0,0,0)\}$

3. ✖ $\{(1,0,1),(0,1,1),(1,1,0)\}$

4. ✖ $\{(0,1,2),(0,0,1)\}$

**Question Number : 84 Question Id : 89040116296 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

If $W_1$, $W_2$ are two subspaces of a vector space V(f), then $L(W_1 \cup W_2)$=

**Options :**

1. ✖ $W_1 \cap W_2$

2. ✖ $W_1 \cup W_2$

3. ✔ $W_1 + W_2$

4. ✖ $W_1 - W_2$

**Question Number : 85 Question Id : 89040116297 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

If $T_1 : R^3 \to R^2$ and $T_2 : R^2 \to R^2$ are two linear transformations defined by

$T_1(x,y,z) = (3x, 4y - z)$ and $T_2(x,y,z) = (-x, y)$ then $T_2T_1$ is____

**Options :**

1. ✖

$(-3\frac{V}{W}x, 4y+z)$

2. ✔ $(-3x, 4y-z)$

3. ✖ $(3x, 4y+z)$

4. ✖ not defined

**Question Number : 86 Question Id : 89040116298 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Let $T:R^2 \to R^2$ be a linear transform. If $T(1,2)=(2,3)$ and $T(0,1)=(1,4)$ then $T(5,6)=$ __

**Options :**

1. ✔ $(6,-1)$

2. ✖ $(-1,6)$

3. ✖ $(-6,1)$

4. ✖ $(1,-6)$

**Question Number : 87 Question Id : 89040116299 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Let $T:R^3 \to R^3$ be defined by $T(a,b,c)=(a-b,a-b,0)$ then _____

**Options :**

1. ✖ $dim\, N\,(T) = 2$

2. ✔ $dim\, R\,(T) = 2$

3. ✖ $R(T) = N(T)$

4. ✖ $dim\, R\,(T) = 3$

**Question Number : 88 Question Id : 89040116300 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

If $T : R^2 \to R^2$ be a linear transform defined by $T(x,y) = (x,0)$ then the matrix of $T$ relative to the basis $B = \{(0,1),(1,0)\}$ is _____

**Options :**

1. ✖ $\begin{bmatrix} 1 & 0 \\ 1 & 0 \end{bmatrix}$

2. ✖ $\begin{bmatrix} 0 & 0 \\ 0 & 1 \end{bmatrix}$

3. ✔ $\begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix}$

4. ✖ $\begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$

**Question Number : 89 Question Id : 89040116301 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

If the system of equations $6x - 2y = 3$ and $kx - y = 2$ has a unique solution, then $k$ is not equal to _____

**Options :**

1. ✖ 1

2. ✖ 2

3. ✔ 3

4. ✖ 4

**Question Number : 90 Question Id : 89040116302 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

The system of linear equations $2x+y+z=0,\ y-z=0,\ x+y=0$ has

**Options :**

1. ✔ An infinite number of solutions

2. ✖ No solution

3. ✖ A unique solution

4. ✖ Two solutions

**Question Number : 91 Question Id : 89040116303 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Let $A$ be a square matrix of order 3. If $\det A=2$ then the value of $\det(adjA^3)$ is _____

**Options :**

1. ✖ $2^3$

2. ✔ $2^6$

3. ✖ $2^9$

4. ✖ $2^{12}$

**Question Number : 92 Question Id : 89040116304 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

If $\begin{vmatrix} p & q-b & r-c \\ p-a & q & r-c \\ p-a & q-b & r \end{vmatrix} = 0$ then the value of $\frac{p}{a}+\frac{q}{b}+\frac{r}{c} =$ _____

**Options :**

1. ✖ 0

2. ✔ 2

3. ✖ 4

4. ✖ 3

**Question Number : 93 Question Id : 89040116305 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

If the determinant of a matrix $A = \begin{bmatrix} 1 & 3 & 0 \\ 2 & 6 & 4 \\ -1 & 0 & 2 \end{bmatrix}$ is -12; then the determinant of the matrix $\begin{bmatrix} 2 & 6 & 0 \\ 4 & 12 & 8 \\ -2 & 0 & 4 \end{bmatrix}$ is___

**Options :**

1. ✖ -24

2. ✖ 24

3. ✔ -96

4. ✖ 96

**Question Number : 94 Question Id : 89040116306 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Consider the matrix $A=\begin{bmatrix}2 & 3\\ x & y\end{bmatrix}$. If the eigen values of $A$ are 4 and 8; then _____

**Options :**

1. ✖ $x=4, y=10$

2. ✖ $x=5, y=8$

3. ✖ $x=-3, y=9$

4. ✔ $x=-4, y=10$

**Question Number : 95 Question Id : 89040116307 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

If $P=\begin{bmatrix}1 & a & b\\ 0 & 2 & c\\ 0 & 0 & 1\end{bmatrix}$, a,b,c$\in Z$, than $P$ is diagonalizable iff _____

**Options :**

1. ✖

$a = bc$

2. ✖ $b = ac$

3. ✔ $c = ab$

4. ✖ $a = b = c$

**Question Number : 96 Question Id : 89040116308 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

If the eigen vectors of the matrix $\begin{bmatrix} 1 & 2 \\ 0 & 2 \end{bmatrix}$ are written in the form $\begin{bmatrix} 1 \\ a \end{bmatrix}$ and $\begin{bmatrix} 1 \\ b \end{bmatrix}$ then $a + b =$____

**Options :**

1. ✖ 0

2. ✔ $\frac{1}{2}$

3. ✖ 1

4. ✖ 2

**Question Number : 97 Question Id : 89040116309 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Let $V_2(C)$ be the inner product space with respect to the standard inner product.

Which of the following vector in $V_2(C)$ is orthogonal to the vector $(1 - i, 1 + i)$?

**Options :**

1. ✖ $(1+i, 1+i)$

2. ✖ $(-1+i, 1+i)$

3. ✔ $(1+i, 1-i)$

4. ✖ $(-1-i, 1-i)$

**Question Number : 98 Question Id : 89040116310 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

In an inner product vector space if vectors $\alpha, \beta$ are linearly dependent vectors then__

**Options :**

1. ✖ $|(\alpha, \beta)| \leq \|\alpha\|\|\beta\|$

2. ✖ $|(\alpha, \beta)| \geq \|\alpha\|\|\beta\|$

3. ✖ $|(\alpha, \beta)| < \|\alpha\|\|\beta\|$

4. ✔ $|(\alpha, \beta)| = \|\alpha\|\|\beta\|$

**Question Number : 99 Question Id : 89040116311 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

In an inner product space $V(F)$, for $a, b \in F$ and $\alpha, \beta \in V$, then $(a\alpha, b\beta) =$___

**Options :**

1. ✖ $ab(\alpha, \beta)$

2. ✔ $\overline{ab}(\alpha,\beta)$

3. ✖ $\overline{a}b(\alpha,\beta)$

4. ✖ $\overline{a}\overline{b}(\alpha,\beta)$

**Question Number : 100 Question Id : 89040116312 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

For $\alpha, \beta \in V$, in an inner product space $V(F)$, the triangle inequality states that __

**Options :**

1. ✖ $\|\alpha+\beta\| = \|\alpha\| + \|\beta\|$

2. ✖ $\|\alpha+\beta\| > \|\alpha\| + \|\beta\|$

3. ✖ $\|\alpha+\beta\| < \|\alpha\| + \|\beta\|$

4. ✔ $\|\alpha+\beta\| \leq \|\alpha\| + \|\beta\|$

## Analytical Ability

| | |
|---|---|
| **Section Id :** | 890401320 |
| **Section Number :** | 2 |
| **Section type :** | Online |
| **Mandatory or Optional :** | Mandatory |
| **Number of Questions :** | 44 |
| **Number of Questions to be attempted :** | 44 |
| **Section Marks :** | 50 |
| **Maximum Instruction Time :** | 0 |

**Sub-Section Number :** 1
**Sub-Section Id :** 890401344
**Question Shuffling Allowed :** Yes

**Question Number : 101 Question Id : 89040116313 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**
**Correct Marks : 1 Wrong Marks : 0**

**Note:** A question is followed by data in the form of two statements labeled as I and II.
**Using the data choose the correct option:**

What is the simple interest earned yearly on a deposit in a bank?

I) The amount deposited is rupees 10,000

II) The rate of interest is 8% per annum

**Options :**

1. ✖ Statement I alone is sufficient to answer the question

2. ✖ Statement II alone is sufficient to answer the question

3. ✔ Both the statements I and II are sufficient to answer the question but neither statement alone is not sufficient

4. ✖ Both the statements I and II together are not sufficient to answer the question and additional data is required

**Question Number : 102 Question Id : 89040116314 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**
**Correct Marks : 1 Wrong Marks : 0**

**Note:** A question is followed by data in the form of two statements labeled as I and II.
**Using the data choose the correct option:**

What is the percentage of profit on the sale of 50 books?

I) The cost price of each book is rupees 100

II) The sale price of each book is rupees 125

**Options :**

1. ✖ Statement I alone is sufficient to answer the question

2. ✖

Statement II alone is sufficient to answer the question

3. ✔ Both the statements I and II are sufficient to answer the question but neither statement alone is not sufficient

4. ✖ Both the statements I and II together are not sufficient to answer the question and additional data is required

**Question Number : 103 Question Id : 89040116315 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

**Note:** A question is followed by data in the form of two statements labeled as I and II.

**Using the data choose the correct option:**

What is the day of 31st December of an year?

I) In that year the first of March was Monday

II) That year was a leap year

**Options :**

1. ✔ Statement I alone is sufficient to answer the question

2. ✖ Statement II alone is sufficient to answer the question

3. ✖ Both the statements I and II are sufficient to answer the question but neither statement alone is not sufficient

4. ✖ Both the statements I and II together are not sufficient to answer the question and additional data is required

**Question Number : 104 Question Id : 89040116316 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

**Note:** A question is followed by data in the form of two statements labeled as I and II.

**Using the data choose the correct option:**

What is the rate per metre length of the fencing of the rectangular field?

I) The area of the field is 10,000 sq.metres.

II) The total cost for fencing the field is Rs. 1,00,000.

**Options :**

1. ✖ Statement I alone is sufficient to answer the question

2. ✖ Statement II alone is sufficient to answer the question

3. ✖ Both the statements I and II are sufficient to answer the question but neither statement alone is not sufficient

4. ✔ Both the statements I and II together are not sufficient to answer the question and additional data is required

**Question Number : 105 Question Id : 89040116317 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

**Note:** A question is followed by data in the form of two statements labeled as I and II.

**Using the data choose the correct option:**

The price of which of the mobile phones A and B is reduced more?

I) The price of A is reduced by 10%

II) The price of B is reduced by 12%

**Options :**

1. ✖ Statement I alone is sufficient to answer the question

2. ✖ Statement II alone is sufficient to answer the question

3. ✖ Both the statements I and II are sufficient to answer the question but neither statement alone is not sufficient

4. ✔ Both the statements I and II together are not sufficient to answer the question and additional data is required

**Question Number : 106 Question Id : 89040116318 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

**Note:** A question is followed by data in the form of two statements labeled as I and II.

**Using the data choose the correct option:**

Are a, b and c in arithmetic progression?

I) 5a, 5b and 5c are in arithmetic progression.

II) 2a, 3b and 4c are in arithmetic progression.

**Options :**

1. ✔ Statement I alone is sufficient to answer the question

2. ✖ Statement II alone is sufficient to answer the question

3. ✖ Both the statements I and II are sufficient to answer the question but neither statement alone is not sufficient

4. ✖ Both the statements I and II together are not sufficient to answer the question and additional data is required

**Question Number : 107 Question Id : 89040116319 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

**Note:** A question is followed by data in the form of two statements labeled as I and II.

**Using the data choose the correct option:**

Is the positive integer x odd?

I) $x^2$ is even II) 4x is even

**Options :**

1. ✔ Statement I alone is sufficient to answer the question

2. ✖ Statement II alone is sufficient to answer the question

3. ✖ Both the statements I and II are sufficient to answer the question but neither statement alone is not sufficient

4. ✖ Both the statements I and II together are not sufficient to answer the question and additional data is required

**Question Number : 108 Question Id : 89040116320 Question Type : MCQ Option Shuffling : No**
**Display Question Number : Yes**
**Correct Marks : 1 Wrong Marks : 0**

**Note:** A question is followed by data in the form of two statements labeled as I and II.
**Using the data choose the correct option:**
What is the slope of the straight line?
I) The straight line passes through the origin and the point (3, 2)
II) The straight line passes through (3, 3)

**Options :**

1. ✔ Statement I alone is sufficient to answer the question

2. ✖ Statement II alone is sufficient to answer the question

3. ✖ Both the statements I and II are sufficient to answer the question but neither statement alone is not sufficient

4. ✖ Both the statements I and II together are not sufficient to answer the question and additional data is required

**Question Number : 109 Question Id : 89040116321 Question Type : MCQ Option Shuffling : No**
**Display Question Number : Yes**
**Correct Marks : 1 Wrong Marks : 0**

**Note:** A question is followed by data in the form of two statements labeled as I and II.
**Using the data choose the correct option:**
What is the value of $2x + 3y$?
I) $x + y = 2$ II) $3x - 2y = 1$

**Options :**

1. ✖ Statement I alone is sufficient to answer the question

2. ✖ Statement II alone is sufficient to answer the question

3. ✔ Both the statements I and II are sufficient to answer the question but neither statement alone is not sufficient

4. ✖

Both the statements I and II together are not sufficient to answer the question and additional data is required

**Question Number : 110 Question Id : 89040116322 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

**Note:** A question is followed by data in the form of two statements labeled as I and II.

**Using the data choose the correct option:**

What is the cost price of the article?

I) The selling price of the article is Rs.50

II) The profit is 10%

**Options :**

1. ✖ Statement I alone is sufficient to answer the question

2. ✖ Statement II alone is sufficient to answer the question

3. ✔ Both the statements I and II are sufficient to answer the question but neither statement alone is not sufficient

4. ✖ Both the statements I and II together are not sufficient to answer the question and additional data is required

**Question Number : 111 Question Id : 89040116323 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

What is the missing number in the following sequence?

0, 15, 80,_____, 624

**Options :**

1. ✖ 95

2. ✖ 110

3. ✖ 205

4. ✔ 255

**Question Number : 112 Question Id : 89040116324 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

What is the missing number in the following sequence?

2, 6, 12, 20, _____, 42

**Options :**

1. ✖ 36

2. ✖ 32

3. ✔ 30

4. ✖ 24

**Question Number : 113 Question Id : 89040116325 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

What is missing in the blank below?

AEF: BIJ ::_____: OUV

**Options :**

1. ✖ NOP

2. ✖ MPQ

3. ✖ NOQ

4. ✔ NQR

**Question Number : 114 Question Id : 89040116326 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

What is missing in the blank below?

V, S, P, M, _____

**Options :**

1. ✖ I

2. ✔ J

3. ✖ K

4. ✖ L

**Question Number : 115 Question Id : 89040116327 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

What is missing in the blank below?

50: 65 :: 290:_____

**Options :**

1. ✖ 170

2. ✖ 226

3. ✖ 260

4. ✔ 325

**Question Number : 116 Question Id : 89040116328 Question Type : MCQ Option Shuffling : No**

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

What is missing in the blank below?

ABD, EFH,_____, MNP, QRT

Options :

1. ✖ GHI

2. ✖ IJK

3. ✔ IJL

4. ✖ JKM

Question Number : 117 Question Id : 89040116329 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

What is missing in the blank below?

BAT, EDW, IHA, _____

Options :

1. ✖ NMG

2. ✖ MNF

3. ✖ NME

4. ✔ NMF

Question Number : 118 Question Id : 89040116330 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

What is missing in the blank below?

25, 49, 121, 169, _____

**Options :**

1. ✖ 361

2. ✖ 225

3. ✔ 289

4. ✖ 441

**Question Number : 119 Question Id : 89040116331 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

What is missing in the blank below?

DFIK, GILN, JLOQ, _____

**Options :**

1. ✖ MORP

2. ✖ MPRO

3. ✔ MORT

4. ✖ MROP

**Question Number : 120 Question Id : 89040116332 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

What is missing in the blank below?

PALE : LEAP :: _____ : SHOP

**Options :**

1. ✖ SOAP

2. ✖ PSOH

3. ✔ POSH

4. ✖ SAOP

| | |
|---|---|
| **Sub-Section Number :** | 2 |
| **Sub-Section Id :** | 890401345 |
| **Question Shuffling Allowed :** | No |

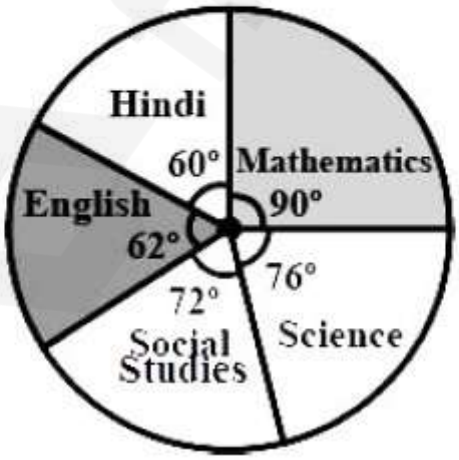
**Question Id : 89040116333 Question Type : COMPREHENSION Sub Question Shuffling Allowed : Yes Group Comprehension Questions : No Question Pattern Type : NonMatrix**

**Question Numbers : (121 to 127)**

Question Label : Comprehension

The following Pie diagram shows the marks secured by a student in different subjects in an examination.

If the student scored 135 marks in Mathematics, answer the question after studying the Pie-chart.




**Sub questions**

**Question Number : 121 Question Id : 89040116334 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

What is the total number of marks secured by the student in all the subjects put together?

**Options :**

1. ✖ 360

2. ✖ 450

3. ✔ 540

4. ✖ 720

**Question Number : 122 Question Id : 89040116335 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

How many marks did he score in Science?

**Options :**

1. ✖ 108

2. ✔ 114

3. ✖ 120

4. ✖ 136

**Question Number : 123 Question Id : 89040116336 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

The ratio of the marks scored by him in Hindi to the marks scored in Social Studies, is

**Options :**

1. ✖ 2 : 3

2. ✖ 3 : 4

3. ✖ 4 : 5

4. ✔ 5 : 6

**Question Number : 124 Question Id : 89040116337 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Out of the total marks scored by him in the examination, the percentage of marks scored in Social Studies is

**Options :**

1. ✖ 15

2. ✔ 20

3. ✖ 25

4. ✖ 30

**Question Number : 125 Question Id : 89040116338 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

What is the difference between marks of Hindi and Maths?

**Options :**

1. ✔ 45

2. ✖ 35

3. ✖

25

4. ✖ 30

**Question Number : 126 Question Id : 89040116339 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**
**Correct Marks : 1 Wrong Marks : 0**

What is the total of marks in Science and Social studies?

**Options :**

1. ✖ 249

2. ✖ 183

3. ✖ 225

4. ✔ 222

**Question Number : 127 Question Id : 89040116340 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**
**Correct Marks : 1 Wrong Marks : 0**

In which subject, the marks of the student are 93?

**Options :**

1. ✖ Hindi

2. ✔ English

3. ✖ Maths

4. ✖ Science

**Sub-Section Number :** 3
**Sub-Section Id :** 890401346
**Question Shuffling Allowed :** Yes

**Question Number : 128 Question Id : 89040116341 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**
**Correct Marks : 1 Wrong Marks : 0**

In a code language, $m^{th}$ letter is coded as $(m-1)^{th}$ letter if m is odd and $(m+1)^{th}$ letter if m is even.

Then the word that is coded as 'FZHO' is

**Options :**

1. ✖ GAIL

2. ✔ GAIN

3. ✖ RAIN

4. ✖ GARE

**Question Number : 129 Question Id : 89040116342 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**
**Correct Marks : 1 Wrong Marks : 0**

In a code language, $m^{th}$ letter is coded as $(m-1)^{th}$ letter if m is odd and $(m+1)^{th}$ letter if m is even.

Then the code word for 'BUST' is

**Options :**

1. ✖ CSRU

2. ✔ CTRU

3. ✖ CTRS

4. ✖ CTRR

**Question Number : 130 Question Id : 89040116343 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

In a code language, $m^{th}$ letter is coded as $(m-1)^{th}$ letter if m is odd and $(m+1)^{th}$ letter if m is even.

Then the code word for 'FRAME' is

**Options :**

1. ✖ GTZLD

2. ✖ GSBLD

3. ✔ GSZLD

4. ✖ GSALD

**Question Number : 131 Question Id : 89040116344 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

In a code language, $m^{th}$ letter is coded as $(m-1)^{th}$ letter if m is odd and $(m+1)^{th}$ letter if m is even.

Then which word is coded as 'LDZMR'?

**Options :**

1. ✔ MEALS

2. ✖ TRIMS

3. ✖ MEATS

4. ✖ TRAIN

**Question Number : 132 Question Id : 89040116345 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

In a code language BANK is coded as DCPM. Then the code for PHONE is

**Options :**

1. ✔ RJQPG

2. ✖ RQJPG

3. ✖ RJMPG

4. ✖ RKMPG

**Question Number : 133 Question Id : 89040116346 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

In a code language BANK is coded as DCPM. Then the code for SCHOOL is

**Options :**

1. ✖ UEMQQN

2. ✖ UFJQQN

3. ✔ UEJQQN

4. ✖ UJEQQN

**Question Number : 134 Question Id : 89040116347 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

In a code language BANK is coded as DCPM. Then which word is coded as ECET?

**Options :**

1. ✔ CACR

2. ✖ CACT

3. ✖ CACM

4. ✖ CACP

**Question Number : 135 Question Id : 89040116348 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

In a code language BANK is coded as DCPM. Then which word is coded as PWODGT?

**Options :**

1. ✖ COVERS

2. ✔ NUMBER

3. ✖ POWDER

4. ✖ GENDER

**Question Number : 136 Question Id : 89040116349 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

If the minutes hand of a clock is facing South, then the direction of the minutes hand after 210 minutes is

**Options :**

1. ✔ North

2. ✖ East

3. ✖ West

4. ✖ South-West

**Question Number : 137 Question Id : 89040116350 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

A is the mother of B and C. D is the husband of C . Then A is related to D as

**Options :**

1. ✔ Mother-in-law

2. ✖ Mother

3. ✖ Daughter-in-law

4. ✖ Father-in-law

**Question Number : 138 Question Id : 89040116351 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

$15^{th}$ August of a year falls on Wednesday. Then what day is $2^{nd}$ October of that year?

**Options :**

1. ✖ Wednesday

2. ✔ Tuesday

3. ✖ Monday

4. ✖ Sunday

**Question Number : 139 Question Id : 89040116352 Question Type : MCQ Option Shuffling : No**
**Display Question Number : Yes**
**Correct Marks : 1 Wrong Marks : 0**

The ages of a son and his father was in the ratio 2:5 seventeen years ago. If the present age of the son is 35 years, the age of the father 5 years hence, is

**Options :**

1. ✖ 62 years

2. ✖ 65 years

3. ✔ 67 years

4. ✖ 68 years

**Question Number : 140 Question Id : 89040116353 Question Type : MCQ Option Shuffling : No**
**Display Question Number : Yes**
**Correct Marks : 1 Wrong Marks : 0**

if $a * b = a^3 + b^3 - 3ab$, then $\frac{(2*1)*(2*1)}{(2*1)} =$

**Options :**

1. ✖ 1

2. ✖ 3

3. ✔ 9

4. ✖ 27

**Question Number : 141 Question Id : 89040116354 Question Type : MCQ Option Shuffling : No**
**Display Question Number : Yes**
**Correct Marks : 1 Wrong Marks : 0**

A person M starts walking from a point P straight towards East. After walking 10 feet he turns to left and walks 45 feet straight. He again turns left and walks a distance of 60 feet straight. Then he turns to the left and walks a distance of 45 feet. The distance between M and P in feet, is

**Options :**

1. ✖ 60

2. ✖ 55

3. ✖ 45

4. ✔ 40

**Question Number : 142 Question Id : 89040116355 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

If 5 @ 6 = 61 and 8 @ 10 = 164, then 7 @ 9 =

**Options :**

1. ✖ 124

2. ✖ 120

3. ✖ 32

4. ✔ 130

**Question Number : 143 Question Id : 89040116356 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

How many Integers from 1 to 100 exist such that each is divisible by 5 and also has 5 as a digit?

**Options :**

1. ✖ 10

2. ✔ 11

3. ✖ 12

4. ✖ 20

**Question Number : 144 Question Id : 89040116357 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

In a row Ajith is $16^{th}$ from left and $18^{th}$ from right, then total number of persons in the row is

**Options :**

1. ✖ 32

2. ✖ 34

3. ✖ 31

4. ✔ 33

**Question Number : 145 Question Id : 89040116358 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

The number of 3's that are preceded by 5 but not followed by 2 in the following sequence of digits is 3147531245321887538162537531675324

**Options :**

1. ✖ 7

2. ✖ 5

3. ✔ 4

4. ✖ 6

**Question Number : 146 Question Id : 89040116359 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

If the ratio of two numbers is 4:7. If 14 is added to each number then the ratio becomes 5:7 then the numbers are

**Options :**

1. ✖ 12, 21

2. ✖ 20, 35

3. ✔ 16, 28

4. ✖ 24, 42

**Question Number : 147 Question Id : 89040116360 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

The Angle between the Minutes hand and Hours hand of a clock when the Time is 8.30

**Options :**

1. ✖ 80°

2. ✔ 75°

3. ✖ 60°

4. ✖ 105°

**Question Number : 148 Question Id : 89040116361 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

**Use the following information to answer the question:**

I) A, B, C, D, E and F are sitting in a circle facing center.
II) A is between B and E.
III) C is between D and F.
IV) E is to the immediate right of D.

What is F's position related to E?

**Options :**

1. ✖ Immediate left

2. ✖ Second to the Right

3. ✔ Third to the Right

4. ✖ Second to the left

**Question Number : 149 Question Id : 89040116362 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

**Use the following information to answer the question:**

I) A, B, C, D, E and F are sitting in a circle facing center.
II) A is between B and E.
III) C is between D and F.
IV) E is to the immediate right of D.

Who is between E and C?

**Options :**

1. ✔ D

2. ✖ B

3. ✖ A

4. ✖ F

**Question Number : 150 Question Id : 89040116363 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

**Use the following information to answer the question:**

I) A, B, C, D, E and F are sitting in a circle facing center.
II) A is between B and E.
III) C is between D and F.
IV) E is to the immediate right of D.

Who is to the Immediate Right of A?

**Options :**

1. ✖ D

2. ✖ C

3. ✖ F

4. ✔ B

# Communicative English

| | |
|---|---|
| **Section Id :** | 890401321 |
| **Section Number :** | 3 |
| **Section type :** | Online |
| **Mandatory or Optional :** | Mandatory |
| **Number of Questions :** | 46 |
| **Number of Questions to be attempted :** | 46 |
| **Section Marks :** | 50 |
| **Maximum Instruction Time :** | 0 |
| **Sub-Section Number :** | 1 |
| **Sub-Section Id :** | 890401347 |
| **Question Shuffling Allowed :** | Yes |

**Question Number : 151 Question Id : 89040116364 Question Type : MCQ Option Shuffling : No**

Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

**Fill in the blanks with the correct article from the given options:**

She gave us _____ outstanding example of her tolerance.

Options :

1. ✔ an

2. ✖ a

3. ✖ the

4. ✖ No article needed

Question Number : 152 Question Id : 89040116365 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

**Fill in the blanks with the correct article from the given options:**

This is _____ best book on Mathematics.

Options :

1. ✖ an

2. ✔ the

3. ✖ a

4. ✖ No article is needed

Question Number : 153 Question Id : 89040116366 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

**Fill in the blank with appropriate preposition from the given options:**

They have been playing _____ three o' clock.

**Options :**

1. ✖ for

2. ✖ at

3. ✔ since

4. ✖ by

**Question Number : 154 Question Id : 89040116367 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

**Fill in the blank with appropriate preposition from the given options:**

There is a world map _____ the wall.

**Options :**

1. ✖ at

2. ✔ on

3. ✖ in

4. ✖ by

**Question Number : 155 Question Id : 89040116368 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Complete the sentence with the correct form of the verb from the given options:

He has just _____ a book on the table.

**Options :**

1. ✖ lay

2. ✖ lied

3. ✖ lies

4. ✔ laid

**Question Number : 156 Question Id : 89040116369 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Complete the sentence with the correct form of the verb from the given options:

She _____ her mobile phone-set last night.

**Options :**

1. ✖ lose

2. ✔ lost

3. ✖ last

4. ✖ loose

**Question Number : 157 Question Id : 89040116370 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Choose the right option to fill in the blank to change the voice of the sentence from active voice to passive voice.

I bought this pen. (AV). This pen _____ by me. (PV).

**Options :**

1. ✖ Is bought

2. ✔ was bought

3. ✖ is brought

4. ✖ was brought

**Question Number : 158 Question Id : 89040116371 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Fill in the blank with appropriate form of the verb from the given options:

I _____ him for a long time.

**Options :**

1. ✔ have known

2. ✖ know

3. ✖ am knowing

4. ✖ knows

**Question Number : 159 Question Id : 89040116372 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

**Fill in the blank with appropriate form of the verb from the given options:**

Not only the leader but also the followers _____ by the Police last evening.

**Options :**

1. ✖ caught

2. ✖ are caught

3. ✔ were caught

4. ✖ have caught

**Question Number : 160 Question Id : 89040116373 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

**Choose the correct question tag for the following statement:**

Everyone will attend the function, _____

**Options :**

1. ✔ won't they?

2. ✖ will they?

3. ✖ will he?

4. ✖ will she?

**Question Number : 161 Question Id : 89040116374 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Identify the **synonym** for the word, **INVINCIBLE**

**Options :**

1. ✔ invulnerable

2. ✖ inevitable

3. ✖ invisible

4. ✖ individual

**Question Number : 162 Question Id : 89040116375 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Identify the **synonym** for the word, **CALAMITY**

**Options :**

1. ✖ calmness

2. ✔ disaster

3. ✖ friendliness

4. ✖ helplessness

**Question Number : 163 Question Id : 89040116376 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Identify the **antonym** for the word, **DISAPPOINTMENT**

**Options :**

1. ✔ hope

2. ✖ appointment

3. ✖ disturbance

4. ✖ enjoyment

**Question Number : 164 Question Id : 89040116377 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Identify the **antonym** for the word, **DISMANTLE**

**Options :**

1. ✔ construct

2. ✖ remove

3. ✖ irritate

4. ✖ disintegrate

**Question Number : 165 Question Id : 89040116378 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Choose the ***one-word substitute*** for the given expression:

A person *who studies elections and voting statistics.*

**Options :**

1. ✖

Election officer

2. ✔ Psephologist

3. ✖ Philanthropist

4. ✖ voter

**Question Number : 166 Question Id : 89040116379 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Choose the ***one-word substitute*** for the given expression:

A person *who hates marriage.*

**Options :**

1. ✔ Misogamist

2. ✖ Misogynist

3. ✖ materialist

4. ✖ realist

**Question Number : 167 Question Id : 89040116380 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

**Choose a suffix/prefix for the word given in the bracket to fill in the blank with the right form of the word**

The _____(care) nature of the youngsters should be controlled by all elders.

**Options :**

1. ✖ -ful

2. ✔ -less

3. ✖ -free

4. ✖ -not

**Question Number : 168 Question Id : 89040116381 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

**Fill in the blanks with the right word:**

The bus_____ for Bangalore from our place is Rs. 800 only.

**Options :**

1. ✖ fair

2. ✔ fare

3. ✖ fere

4. ✖ fire

**Question Number : 169 Question Id : 89040116382 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

**Fill in the blank with the right word:**

I do not like this shirt, because it is very_____.

**Options :**

1. ✖ lose

2. ✖ lease

3. ✖ louse

4. ✔ loose

**Question Number : 170 Question Id : 89040116383 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

**Fill in the blank with the right word:**

You have to _____ those wet clothes before drying them up.

**Options :**

1. ✖ ring

2. ✖ wrong

3. ✔ wring

4. ✖ rang

**Question Number : 171 Question Id : 89040116384 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

**Identify the part of the sentence that has a mistake.**

My father / went school / to meet / the headmaster.

1 2 3 4

**Options :**

1. ✖ 1

2. ✔ 2

3. ✖ 3

4. ✖ 4

**Question Number : 172 Question Id : 89040116385 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

**Identify the part of the sentence that has a mistake.**

The student / enter into / the room / without my permission.

1 2 3 4

**Options :**

1. ✖ 1

2. ✔ 2

3. ✖ 3

4. ✖ 4

**Question Number : 173 Question Id : 89040116386 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

**Identify the part of the sentence that has a mistake.**

Some students / may having / many books / with them.

1 2 3 4

**Options :**

1. ✖ 1

2. ✔ 2

3. ✖ 3

4. ✖ 4

**Question Number : 174 Question Id : 89040116387 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

**Identify the part of the sentence that has a mistake.**

The train / was left / the station / half an hour ago.

1 2 3 4

**Options :**

1. ✖ 1

2. ✔ 2

3. ✖ 3

4. ✖ 4

**Question Number : 175 Question Id : 89040116388 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

**Identify the part of the sentence that has a mistake.**

All the children / have returned / back from / Mysore city.

1 2 3 4

**Options :**

1. ✖

1

2. ✖ 2

3. ✔ 3

4. ✖ 4

**Question Number : 176 Question Id : 89040116389 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Choose the correct alternative to replace the *italicized and underlined* part to improve the sentence:

*Unless you don't work hard you will not get the job.*

**Options :**

1. ✔ Unless you work hard

2. ✖ If you work hard

3. ✖ If you worked hard

4. ✖ no improvement is necessary

**Question Number : 177 Question Id : 89040116390 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Choose the correct alternative to replace the *italicized and underlined* part to improve the sentence:

He is my *oldest brother* and he works as a teacher.

**Options :**

1. ✖ older brother

2. ✔ eldest brother

3. ✖ old brother

4. ✖ no improvement necessary

**Question Number : 178 Question Id : 89040116391 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Choose the correct alternative to replace the *italicized and underlined* part to improve the sentence:

She *cannot* hardly move under these circumstances.

**Options :**

1. ✔ can

2. ✖ could not

3. ✖ does not

4. ✖ do not

**Question Number : 179 Question Id : 89040116392 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Choose the correct alternative to replace the *italicized and underlined* part to improve the sentence:

My close friend told me that *he will* tell a very important information.

**Options :**

1. ✖ he shall

2. ✔ he would

3. ✖ he may

4. ✖ he can

**Question Number : 180 Question Id : 89040116393 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Choose the correct alternative to replace the *italicized and underlined* part to improve the sentence:

*If you work hard,* you will get the job.

**Options :**

1. ✖ If you worked hard

2. ✖ If you had worked hard

3. ✖ If you will work hard

4. ✔ no improvement is necessary

**Question Number : 181 Question Id : 89040116394 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

**Find the meaning of the italicized word:**

The chain snatcher was beaten *black and blue* by the mob.

**Options :**

1. ✖

admired

2. ✔ thrashed severely

3. ✖ painted in black and blue colours

4. ✖ arrested

**Question Number : 182 Question Id : 89040116395 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**
**Correct Marks : 1 Wrong Marks : 0**

**Choose the exact meaning of the idiom/phrase italicized in the sentence below.**

She has proved to be *a snake in the grass.*

**Options :**

1. ✖ Very poisonous snake

2. ✖ a secret agent

3. ✔ an unrecognizable enemy

4. ✖ not a religious person

**Question Number : 183 Question Id : 89040116396 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**
**Correct Marks : 1 Wrong Marks : 0**

**Fill in the blank with the correct phrasal verb choosing from the given below:**

The car _____, while we were going to Vizag.

**Options :**

1. ✔

broke down

2. ✖ has broken down

3. ✖ broke in

4. ✖ broke out

**Question Number : 184 Question Id : 89040116397 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

**Fill in the blank with the correct phrasal verb choosing from the given below:**

The company has _____ a new book after the death of the writer.

**Options :**

1. ✖ bring forth

2. ✖ brought on

3. ✔ brought out

4. ✖ brought in

**Question Number : 185 Question Id : 89040116398 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

**Fill in the blank with the correct phrasal verb choosing from the given below:**

The factory workers have not yet _____ their strike.

**Options :**

1. ✔

called off

2. ✖ called for

3. ✖ called at

4. ✖ called in

**Sub-Section Number :** 2
**Sub-Section Id :** 890401348
**Question Shuffling Allowed :** No

**Question Id : 89040116399 Question Type : COMPREHENSION Sub Question Shuffling Allowed : Yes Group Comprehension Questions : No Question Pattern Type : NonMatrix**

**Question Numbers : (186 to 190)**

Question Label : Comprehension

**To answer the questions from 186 to 190 read the following passage carefully and choose the correct option.**

Bertrand Russell appeals to all concerned as human being, a member of the species, man whose continued existence is in doubt. A war with the hydrogen bombs puts an end to the human race. In his view, it seems the 'general public' have not realized the impact of a war with the atomic bombs. A Hydrogen bomb is 25000 times as powerful as that which destroyed Hiroshima. So, the stark, dreadful and inescapable problem before us is whether we shall put an end to the human race or we shall give up wars. He explains in great detail the role of ordinary people in the peace process and requests the 'general public' to be more aware and assertive so that the fate of the nations need not be decided by despotic leaders alone.

**Sub questions**

**Question Number : 186 Question Id : 89040116400 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**
**Correct Marks : 1 Wrong Marks : 0**

**According to Russel,**
**what puts an end to the human race?**

**Options :**

1. ✖ America

2. ✖ Russia

3. ✔ a war with hydrogen bombs

4. ✖ nature

**Question Number : 187 Question Id : 89040116401 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**
**Correct Marks : 1 Wrong Marks : 0**

**Who have not realized the real impact of a war with the atomic bomb?**

**Options :**

1. ✖ the heads of the states

2. ✖ the commanders

3. ✖ the newspapers

4. ✔ the general public

**Question Number : 188 Question Id : 89040116402 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**
**Correct Marks : 1 Wrong Marks : 0**

**The word, 'dreadful' means:**

**Options :**

1. ✔ fearful

2. ✖ deceitful

3. ✖

beautiful

4. ✖ dull

**Question Number : 189 Question Id : 89040116403 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**
**Correct Marks : 1 Wrong Marks : 0**

**The antonym of the word, 'Despotic' is:**

**Options :**

1. ✖ helpful

2. ✖ divine

3. ✔ democratic

4. ✖ evil

**Question Number : 190 Question Id : 89040116404 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**
**Correct Marks : 1 Wrong Marks : 0**

**"A war with the hydrogen bombs puts an end to the human race". Find out the antonym of the word 'end'?**

**Options :**

1. ✔ beginning

2. ✖ climax

3. ✖ finish

4. ✖ implementation

**Sub-Section Number :** 3
**Sub-Section Id :** 890401349
**Question Shuffling Allowed :** Yes

**Question Number : 191 Question Id : 89040116405 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**
**Correct Marks : 1 Wrong Marks : 0**

Choose the correct option to arrange the words in the jumbled sentence to make it meaningful.

Rose flowers / are plucking / the children / in the garden.
A B C D

**Options :**

1. ✖ BACD

2. ✔ CBAD

3. ✖ BCAD

4. ✖ CDBA

**Question Number : 192 Question Id : 89040116406 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**
**Correct Marks : 1 Wrong Marks : 0**

Choose the correct option to arrange the words in the jumbled sentence to make it meaningful.

A comic story / to the students / was told / by our new teacher.
A B C D

**Options :**

1. ✖ ADBC

2. ✔ ACBD

3. ✖ DCBA

4. ✖ BCDA

**Question Number : 193 Question Id : 89040116407 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Choose the correct option to arrange the words in the jumbled sentence to make it meaningful.

The young man / by the committee / was selected / for scoring 100 runs.

A B C D

**Options :**

1. ✖ ADBC

2. ✖ ABDC

3. ✔ ACBD

4. ✖ BCDA

**Question Number : 194 Question Id : 89040116408 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Choose the correct option to arrange the words in the jumbled sentence to make it meaningful.

By all the people / is always/ respected / an honest man.

A B C D

**Options :**

1. ✖ BADC

2. ✖ BCAD

3. ✔ DBCA

4. ✖ ACBD

**Question Number : 195 Question Id : 89040116409 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

Choose the correct option to arrange the words in the jumbled sentence to make it meaningful.

An interesting book / by my friend / to me / was given.

A B C D

**Options :**

1. ✖ BACD

2. ✔ ADCB

3. ✖ ADBC

4. ✖ ACDB

**Question Number : 196 Question Id : 89040116410 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

**Choose the correct option to show the function of the following sentence:**

Shall we go for a movie?

**Options :**

1. ✔ suggesting

2. ✖

requesting

3. ✖ complaining

4. ✖ apologising

**Question Number : 197 Question Id : 89040116411 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

**Choose the correct option to show the function of the following sentence:**

Hang the prisoner immediately.

**Options :**

1. ✖ requesting

2. ✔ commanding

3. ✖ suggesting

4. ✖ complaining

**Question Number : 198 Question Id : 89040116412 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

**Choose the correct option to show the function of the following sentence:**

Help me, please. I am not in a position to help myself.

**Options :**

1. ✖ order

2. ✖ suggestion

3. ✔ request

4. ✖ command

**Question Number : 199 Question Id : 89040116413 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

**Choose the correct option to show the function of the following sentence:**

I am sorry, I forgot to bring your book again.

**Options :**

1. ✔ apologising

2. ✖ advising

3. ✖ admiring

4. ✖ commanding

**Question Number : 200 Question Id : 89040116414 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**

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

**Choose the correct option to show the function of the following sentence:**

You have written a wonderful poem.

**Options :**

1. ✖ suggesting

2. ✔ appreciating

3. ✖ commanding

4. ✖ complaining.