JEE Main April 2026

Question Paper With Text Solution

02 April | Shift-1

MATHEMATICS

MATRIX

JEE Main & Advanced | XI-XII Foundation| VI-X Pre-Foundation

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JEE MAIN APRIL 2026 | 2ND APRIL SHIFT-1

SECTION – A

Question ID : 6911211

1. Let $\alpha, \alpha+2; \alpha \in Z$ be the roots of the quadratic equation $x(x+2)+(x+1)(x+3)+(x+2)(x+4)+\ldots+(x+n-1)(x+n+1)=4n$ for some $n \in N$. Then $n+\alpha$ is equal to :

(1) 0 (2) 1 (3) 2 (4) 3

Ans. (3)

Sol.

Question ID : 6911212

2. Let x and y be real numbers such that $50\left(\frac{2x}{1+3i}-\frac{y}{1-2i}\right)=31+17i$ where $i=\sqrt{-1}$. Then the value of $10(x-3y)$ is: :

(1) 20 (2) 31 (3) 35 (4) 75

Ans. (4)

Sol.

Question ID : 6911213

3. Let $\alpha, \beta \in R$ be such that the system of linear equations

$x+2y+z=5,$

$2x+y+\alpha z=5$

$8x+4y+\beta z=18$ has no solution. Then $\frac{\beta}{\alpha}$ is equal to: :

(1) –4 (2) 4 (3) 8 (4) –8

Ans. (2)

Sol.

Question ID : 6911214

4. Let $A=\begin{bmatrix}1 & 2\\ 1 & \alpha\end{bmatrix}$ and $B=\begin{bmatrix}3 & 3\\ \beta & 2\end{bmatrix}$ and $B^2-5B-6I=O$, then among the two statements:

(S1): $[(B-A)(B+A)]^T=\begin{bmatrix}13 & 15\\ 7 & 10\end{bmatrix}$

(S2): $\det(\text{adj}(A+B))=-5$,

(1) only (S1) is correct

(2) only (S2) is correct

(3) both (S1) and (S2) are correct

(4) both (S1) and (S2) are wrong

Ans. (2)

Sol.

Question ID : 6911215

5. Let A be the set of first 101 terms of an A.P. whose first term is 1 and common difference is 5 and B be the set of first 71 terms of an A.P. whose first term is 9 and common difference is 7. Then the number of elements in $A \cap B$ which are divisible by 3 is :

(1) 4 (2) 5 (3) 6 (4) 7

Ans. (2)

Sol.

Question ID : 6911216

6. The number of seven-digit numbers, that can be formed by using the digits 1, 2, 3, 5 and 7 such that each digit is used at least once, is :

(1) 15400 (2) 17800 (3) 16800 (4) 29400

Ans. (3)

Sol.

Question ID : 6911217

7. The number of elements in the set $\left\{S=\{(r,k): k\in\mathbb{Z} \text{ and } {}^{36}C_{r+1}=\frac{6\binom{35}{r}}{k^2-3}\right\}$, is :

(1) 2 (2) 4 (3) 8 (4) 16

Ans. (2)

Sol.

Question ID : 6911218

8. If the mean of the data

Class	5 – 10	10 – 15	15 – 20	20 – 25	25 – 30	30 – 35
Frequency	2	k	28	54	k + 1	5

is 21, then k is one of the roots of the equation :

(1) $2x^2 - 23x - 10 = 0$ (2) $4x^2 - 35x + 24 = 0$ (3) $2x^2 - 19x - 10 = 0$ (4) $2x^2 - 35x + 98 = 0$

Ans. (3)

Sol.

Question ID : 6911219

9. Let the mid points of the sides of a triangle ABC be $\left(\frac{5}{2},7\right),\left(\frac{5}{2},3\right)$ and (4, 5). If its incentre is (h, k), then 3h + k is equal to: :

(1) 11 (2) 12 (3) 13 (4) 14

Ans. (3)

Sol.

Question ID : 69112110

10. Let an ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1, a<b$, pass through the point (4, 3) and have eccentricity $\frac{\sqrt{5}}{3}$. Then the length of its latus rectum is :

(1) $\frac{4\sqrt{5}}{3}$ (2) $2\sqrt{5}$ (3) $\frac{7\sqrt{5}}{3}$ (4) $\frac{8\sqrt{5}}{3}$

Ans. (4)

Sol.

Question ID : 69112111

11. If $\sin\left(\frac{\pi}{18}\right)\sin\left(\frac{5\pi}{18}\right)\sin\left(\frac{7\pi}{18}\right)=K$, then the value of $\sin\left(\frac{10K\pi}{3}\right)$ is :

(1) $\frac{\sqrt{3}+1}{2\sqrt{2}}$ (2) $\frac{\sqrt{3}-1}{\sqrt{2}}$ (3) $\frac{\sqrt{3}}{2}$ (4) $\frac{1}{2}$

Ans. (1)

Sol.

Question ID : 69112112

12. Let $S=\{x\in[-\pi,\pi]:\sin x(\sin x+\cos x)=a, a\in\mathbb{Z}\}$. Then n(S) is equal to :

(1) 3 (2) 6 (3) 7 (4) 9

Ans. (4)

Sol.

Question ID : 69112113

13. If the point of intersection of the lines $\frac{x+1}{3}=\frac{y+a}{5}=\frac{z+b+1}{7}$ and $\frac{x-2}{1}=\frac{y-b}{4}=\frac{z-2a}{7}$ lies on the xy-plane, then the value of a + b is :

(1) 2 (2) 5 (3) 7 (4) 9

Ans. (3)

Sol.

Question ID : 69112114

14. If $\vec{a}$ and $\vec{b}$ are two vectors such that $|\vec{a}| = 2$ and $|\vec{b}| = 3$, then the maximum value of $3\left|\left(3\vec{a} + 2\vec{b}\right)\right| + 4\left|\left(3\vec{a} - 2\vec{b}\right)\right|$ is :

(1) 30 (2) 36 (3) 60 (4) 72

Ans. (3)

Sol.

Question ID : 69112115

15. Let a line L passing through the point (1, 1, 1) be perpendicular to both the vectors $2\hat{i} + 2\hat{j} + \hat{k}$ and $\hat{i} + 2\hat{j} + 2\hat{k}$. If P(a, b, c) is the foot of perpendicular from the origin on the line L, then the value of 34(a +b + c) is :

(1) 50 (2) 80 (3) 100 (4) 120

Ans. (3)

Sol.

Question ID : 69112116

16. If $\lim\limits_{x\to 2} \dfrac{\sin\left(x^3 - 5x^2 + ax + b\right)}{\left(\sqrt{x-1} - 1\right)\log_e(x-1)} = m$, then a + b + m is equal to :

(1) 5 (2) 6 (3) 8 (4) 10

Ans. (2)

Sol.

Question ID : 69112117

17. If the curve y = f(x) passes through the point (1, e) and satisfies the differential equation dy = y(2+ $\log_e$x)dx, x > 0, then f(e) is equal to :

(1) e^e (2) e^{e^2} (3) e^{2e} (4) e^{2^e}

Ans. (3)

Sol.

Question ID : 69112118

18. The number of critical points of the function $f(x)=\begin{cases}\left|\frac{\sin x}{x}\right|, & x\neq 0\\ 1, & x=0\end{cases}$ in the interval $(-2\pi, 2\pi)$ is equal to :

(1) 1 (2) 3 (3) 5 (4) 7

Ans. (3)

Sol.

Question ID : 69112119

19. Let $[\cdot]$ denote the greatest integer function. Then the value of $\int_0^3\left(\frac{e^x+e^{-x}}{[x]!}\right)dx$ is :

(1) $e^2+e^3-\frac{1}{e^2}-\frac{1}{e^3}$ (2) $\frac{1}{2}\left(e^2+e^3-\frac{1}{e^2}-\frac{1}{e^3}\right)$

(3) $e^2+e^3-\frac{1}{2e^2}-\frac{1}{2e^3}$ (4) $\frac{1}{2}\left(e^2+e^3\right)-\frac{1}{e^2}-\frac{1}{e^3}$

Ans. (2)

Sol.

Question ID : 69112120

20. Let $y=y(x)$ be the solution curve of the differential equation $(1+\sin x)\frac{dy}{dx}+(y+1)\cos x=0$, $y(0)=0$. If the curve passes through the point $\left(\alpha,-\frac{1}{2}\right)$, then a value of α is :

(1) $\frac{\pi}{6}$ (2) $\frac{\pi}{4}$ (3) $\frac{\pi}{3}$ (4) $\frac{\pi}{2}$

Ans. (4)

Sol.

SECTION – B

Question ID : 69112121

21. If the domain of the function $f(x)=\sqrt{\log_{(0.6)}\left(\left|\frac{2x-5}{x^2-4}\right|\right)}$ is $(-\infty,a]\cup\{b\}\cup[c,d)\cup(e,\infty)$, then the value of $a+b+c+d+e$ is_____.

Ans. (4)

Sol.

Question ID : 69112122

22. If $\sum_{k=1}^{n} a_k = 6n^3$, then $\sum_{k=1}^{6}\left(\frac{a_{k+1}-a_k}{36}\right)^2$ is equal to: _____.

Ans. (91)

Sol.

Question ID : 69112123

23. Let a, b, c $\in$ {1, 2, 3, 4}. If the probability, that $ax^2+2\sqrt{2}bx+c>0$ for all x $\in$ R, is $\frac{m}{n}$, where gcd(m, n) = 1, then m + n is equal to_____.

Ans. (81)

Sol.

Question ID : 69112124

24. Let a circle C have its centre in the first quadrant, intersect the coordinate axes at exactly three points and cut off equal intercepts from the coordinate axes. If the length of the chord of C on the line $x+y=1$ is $\sqrt{14}$, then the square of the radius of C is_____.

Ans. (8)

Sol.

Question ID : 69112125

25. If $\alpha = \int_0^{2\sqrt{3}} \log_2(x^2+4)dx + \int_2^4 \sqrt{2^x-4}dx$, then α^2 is equal to_____.

Ans. (192)

Sol.