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JEE (MAIN) 2026

MEMORY BASED QUESTIONS & TEXT SOLUTION

SHIFT-1

DATE & DAY: 22 January 2026 & Thursday

PAPER-1

Duration: 3 Hrs.
Time: 09:00 – 12:00 IST

SUBJECT: MATHEMATICS

REGISTERED & CORPORATE OFFICE (CIN: U80302RJ2007PLC024029):
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MATHEMATICS

1. If sum of first 4 terms of an A.P is 6 and sum of first 6 terms is 4, then sum of first 12 terms of an A.P is

(1) – 23 (2) – 21 (3) – 22 (4) – 24

Ans. **(1)**

2. Find the number of real solutions $x|x+4|+3|x+2|+10=0$

Ans. **()**

3. The coefficient of x^{48} in $1\cdot(1+x)+2\cdot(1+x)^2+3\cdot(1+x)^3+\cdots\ldots+100\cdot(1+x)^{100}$ is

(1) $({}^{101}C_{46})-100$ (2) $100({}^{101}C_{49})-{}^{101}C_{50}$

(3) $100({}^{101}C_{46})-{}^{101}C_{47}$ (4) ${}^{101}C_{47}-{}^{101}C_{46}$

Ans. **(2)**

4. If $A=\begin{bmatrix}2 & 3\\ 3 & 5\end{bmatrix}$, then the value of $|A^{2025}-3A^{2024}+A^{2023}|$ is

(1) 18 (2) 17 (3) 20 (4) 16

Ans. **(4)**

5. If the domain of the function $\frac{1}{\ln(10-x)}+\sin^{-1}\left(\frac{x+2}{2x+3}\right)$ is $(-\infty,-a]\cup(-1,b)\cup(b,c)$, then $(b+c+3a)$ is equal to

(1) 22 (2) 23 (3) 24 (4) 21

Ans. **(3)**

6. Let $M=\{1,2,3,\ldots,16\}$ and R be a relation on M defined by xRy if and only if $4y=5x-3$. Then, the number of elements required to added in R to make it symmetric is

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

Ans. **(1)**

7. The solution of the differential equation $xdy-ydx=\sqrt{x^2+y^2}dx$ is (where c is integration constant)

(1) $\sqrt{x^2+y^2}=cx+y$ (2) $\sqrt{x^2+y^2}=cx^2+y$

(3) $\sqrt{x^2+y^2}=cx-y$ (4) $\sqrt{x^2+y^2}=cx^2-y$

Ans. **(4)**

8. The number of values of x satisfying $\tan^{-1}(4x)+\tan^{-1}(6x)=\frac{\pi}{6}$ and $x\in\left[-\frac{1}{2\sqrt{6}},\frac{1}{2\sqrt{6}}\right]$ is

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

Ans. **(4)**

9. The value of $\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}}\frac{dx}{[x]+4}$ is Where [.] denotes greatest integer function.

(1) $\frac{\pi}{20}+\frac{7}{20}$ (2) $\frac{7\pi}{20}+\frac{1}{60}$ (3) $\frac{7\pi}{20}-\frac{1}{60}$ (4) $\frac{7\pi}{20}-\frac{7}{60}$

Ans. **(4)**

10. If the area of the region $\{(x, y): x^2 + 1 \leq y \leq 3 - x\}$ is divided by the line $x = -1$ in the ratio $m: n$ (where m and n are coprime natural numbers). Then, the value of $m + n$ is:

Ans. **( )**

11. The value of α for which the line $\alpha x + 2y = 1$ never touches the hyperbola $\frac{x^2}{9} - \frac{y^2}{1} = 1$ is

(1) $R - \left\{-\frac{\sqrt{5}}{2}, \sqrt{\frac{5}{2}}\right\}$ (2) $R - \{-\sqrt{5}, \sqrt{5}\}$

(3) $R - \left\{-\frac{\sqrt{5}}{3}, \frac{\sqrt{5}}{3}\right\}$ (4) R

Ans. **(3)**

12. If probability distribution is given by

x	0	1	2	3	4	5	6	7
$P(x)$	k	$2k^2$	$6k^2$	$2k^2 + k$	$4k$	k	k	k

Then, the value of $P(3 < x \leq 6)$ is

(1) 0.6 (2) 0.8 (3) 0.4 (4) 0.2

Ans. **(1)**

13. If the image of the point $P(3,2,a)$ reflected about the line $\frac{x-3}{2} = \frac{y-5}{5} = \frac{z-2}{-2}$ is $(5, b, c)$. Then the value of $a^2 + b^2 + c^2$ is

(1) $\frac{4849}{8}$ (2) $\frac{4245}{4}$ (3) $\frac{3947}{8}$ (4) $\frac{2429}{4}$

Ans. **(1)**

14. If $S = \{1,2 \ldots .50\}$, two numbers α and β are selected at random find the probability that product is divisible by 3:

(1) $\frac{664}{1225}$ (2) $\frac{646}{1225}$ (3) $\frac{527}{1225}$ (4) $\frac{461}{1225}$

Ans. **(1)**

15. If the end points of chord of parabola $y^2 = 12x$ are (x_1, y_1) and (x_2, y_2) and it subtend 90° at the vertex of parabola then $(x_1x_2 - y_1y_2)$ equals:

(1) 288 (2) 280 (3) 290 (4) not possible

Ans. **(1)**

16. If $\int (\cos x)^{-5/2}(\sin x)^{-11/2}dx = \frac{p_1}{q_1}(\cot x)^{9/2} + \frac{p_2}{q_2}(\cot x)^{5/2} + \frac{p_3}{q_3}(\cot x)^{1/2} - \frac{p_4}{q_4}(\cot x)^{-3/2} + c$

(where c is constant of integration), then value of $\frac{15p_1p_2p_3p_4}{q_1q_2q_3q_4}$ is

(1) 14 (2) 16 (3) 10 (4) 9

Ans. **(2)**