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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**

Selections in JEE (Advanced)/  
IIT-JEE Since 2002

**52979**

Classroom: 35901 | Distance: 17078

Selections in JEE (Main)/  
AIEEE Since 2009

**262693**

Classroom: 194471 | Distance: 68222

Selections in NEET (UG)/  
AIPMT/AIIMS Since 2012

**22733**

Classroom: 15409 | Distance: 7324

**Admission Open for 2026-27**

**Target:** JEE (Advanced) | JEE (Main) | NEET (UG) | PCCP (Class V to X)

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& JEE (Main) 2026 %ile / AIR

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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. (0)
3. The coefficient of  $x^{48}$  in  $1 \cdot (1+x) + 2 \cdot (1+x)^2 + 3 \cdot (1+x)^3 + \dots + 100 \cdot (1+x)^{100}$  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  $M = \{1, 2, 3, \dots, 16\}$  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)

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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  $\alpha$  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  $S = \{1, 2, \dots, 50\}$ , two numbers  $\alpha$  and  $\beta$  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  $90^\circ$  at the vertex of parabola then  $(x_1 x_2 - y_1 y_2)$  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  $\frac{15p_1 p_2 p_3 p_4}{q_1 q_2 q_3 q_4}$  is

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

Ans. (2)

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