



# JEE (MAIN) 2026

## MEMORY BASED QUESTIONS & TEXT SOLUTION

SHIFT-2

**DATE & DAY:** 23 January 2026 & Friday

**PAPER-1**

**Duration:** 3 Hrs.

**Time:** 03:00 PM – 06:00 PM

**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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## MATHEMATICS

1. If  $A = \begin{bmatrix} 0 & 2 & -3 \\ -2 & 0 & -1 \\ 3 & 1 & 0 \end{bmatrix}$  and if  $B(l - A) = (l + A)$ , where  $l$  is identity matrix of order 3, then trace of  $(BB^T)$  is

Ans. (3)

2. The area (in square units) between the curves  $x^2 + y^2 = 4$  and  $x^2 + (y - 2)^2 = 4$  is

(1)  $\frac{8\pi}{3} - 2\sqrt{3}$  (2)  $\frac{8\pi}{3} + \sqrt{3}$  (3)  $\frac{4\pi}{3} - 2\sqrt{3}$  (4)  $\frac{4\pi}{3} + 2\sqrt{3}$

Ans. (1)

3. Number of ways to distribute 6 identical oranges among 4 persons such that each gets atleast one orange is

(1) 8 (2) 10 (3) 12 (4) 13

Ans. (2)

4. The minimum value of  $\cos^2 \theta + 6\sin \theta \cos \theta + 3\sin^2 \theta + 3$  is

(1) -1 (2) 1 (3)  $5 + \sqrt{10}$  (4)  $5 - \sqrt{10}$

Ans. (4)

5. Let  $A = \{1, 2, 3, \dots, 9\}$ ;  $xRy$  iff  $x - y$  is multiple of 3.

 $S_1$  : Number of elements in  $R$  is 36 $S_2$ :  $R$  is equivalence relation

(1)  $S_1$  &  $S_2$  both are correct (2)  $S_1$  is correct but  $S_2$  is not correct  
(3)  $S_2$  is correct but  $S_1$  is not correct (4)  $S_1$  &  $S_2$  both are incorrect.

Ans. (3)

6. The sum of all the real solutions of equation  $\log_{(x+3)}(6x^2 + 28x + 30) = 5 - 2\log_{(6x+10)}(x^2 + 6x + 9)$  is equal to

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

Ans. (4)

7. If the points of intersection of the ellipses  $x^2 + 2y^2 - 6x - 12y + 23 = 0$  and  $4x^2 + 2y^2 - 20x - 12y + 35 = 0$  lie on a circle of radius  $r$  and centre  $(a, b)$  then the value of  $ab + 18r^2$  is

(1) 51 (2) 52 (3) 55 (4) 53

Ans. (3)

8. Let  $\vec{a}, \vec{b}, \vec{c}$  be three vectors such that  $\vec{a} \times \vec{b} = 2(\vec{a} \times \vec{c})$ . If  $|\vec{a}| = 1$ ,  $|\vec{b}| = 4$ ,  $|\vec{c}| = 2$ , and the angle between  $\vec{b}$  and  $\vec{c}$  is  $60^\circ$ , then  $|\vec{a} \cdot \vec{c}|$  is equal to

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

Ans. (1)

9.  $S$  = No. of 4-digit numbers  $abcd$  where product of digits is 20.  
 $P$  = No. of 5-digit number  $abcde$  where product of digits is 20, then  $S + P$  is equal to

Ans. (74)

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10. Let there are 2 bags  $A$  and  $B$ . Bag  $A$  has 9 white, 8 black balls and bag  $B$  has 6 white balls, 4 black balls. From a bag  $B$ , a ball is randomly selected and put into the bag  $A$ . Now, a ball is randomly selected from bag  $A$ . If the probability that selected ball is white is  $\frac{p}{q}$ ,  $\text{gcd}(p, q) = 1$ , then  $p + q$  is equal to

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

Ans. (2)

11. The value of  $\int \frac{dx}{(4x+6)\sqrt{4x^2+12x+7}}$  is equal to

(1)  $\frac{\sqrt{2}}{8} \tan^{-1} \left( \frac{4x^2+12x+7}{\sqrt{2}} \right) + c$  (2)  $\frac{\sqrt{2}}{8} \tan^{-1} (4x^2 + 12x + 7) + c$   
 (3)  $\frac{1}{2} \tan^{-1} \left( \frac{4x^2+12x+7}{2} \right) + c$  (4)  $\frac{\sqrt{2}}{4} \tan^{-1} \left( \frac{4x^2+12x+7}{\sqrt{2}} \right) + c$

Ans. (1)

12. Let  $A$  and  $B$  are points on parabola  $y^2 = 4x$  such that  $OAB$  is an equilateral triangle such that  $O$  is the vertex of parabola and  $AB$  is perpendicular to axis of parabola, then the minimum distance of circle is  $A$  and  $B$  as diametric points from the point  $O$  is

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

Ans. (2)

13. The mean and variance of following data is  $\mu$  and 19, respectively.

Class interval	4 – 8	8 – 12	12 – 16	16 – 20
$f$ (frequency)	3	$\lambda$	4	7

The value of  $\lambda + \mu$  is

(1) 19 (2) 20 (3) 13 (4) 17

Ans. (1)

14. The system of linear equations  $x + y + z = 6, 2x + 5y + az = 36, x + 2y + 3z = b$  has

(1) infinitely many solutions for  $a = 8, b = 16$   
 (2) unique solutions for  $a = 8, b = 16$   
 (3) unique solutions for  $a = 8, b = 14$   
 (4) infinitely many solutions for  $a = 8, b = 14$

Ans. (4)

15.  $Z = \frac{\sqrt{3}}{2} + \frac{i}{2}, i = \sqrt{-1}$  then  $(Z^{201} - i)^8$  is equal to

Ans. (256)

16. Let  $A(1,2)$  and  $C(-3, -6)$  be two diagonally opposite vertices of a rhombus, whose sides  $AD$  and  $BC$  are parallel to the line  $7x - y = 14$ . If  $B(\alpha, \beta)$  and  $D(\gamma, \delta)$  are the other two vertices, then  $|\alpha + \beta + \gamma + \delta|$  is equal to:

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

Ans. (1)

17. Let  $S$  be the set defined as

$S = \{x : \int_0^x t^2 \sin(t-x) dt = x^2 \text{ and } x \in [0, 1000]\}$ , then number of elements in  $S$  is

Ans. (1)

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