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# JEE (MAIN) 2026

MEMORY BASED QUESTIONS & TEXT SOLUTION

SHIFT-2

**DATE & DAY:** 24 January 2026 & Saturday

**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

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## MATHEMATICS

1. If words are arranged in a dictionary alphabetically, then rank of UDAYPUR is?

Ans. (1580)

2. The maximum value of  $n$  for which  $40^n$  divides  $60!$  is equal to

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

Ans. (4)

3. If  $z = (1+i)(1+2i)(1+3i) \dots (1+ni)$ ,  $n \in N$  and  $|z|^2 = 44200$ , then  $n$  is equal to

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

Ans. (2)

4. The image of the parabola  $x^2 = 4y$  in the line  $x - y = 1$  is

- (1)  $(y-1)^2 = 4(x+1)$  (2)  $(y+1)^2 = 4(x-1)$   
(3)  $(y+1)^2 = 4(x+1)$  (4)  $(y-1)^2 = 4(x-1)$

Ans. (2)

5. The value of sum

$$S = \left(\frac{1}{3} + \frac{4}{7}\right) + \left(\left(\frac{1}{3}\right)^2 + \left(\frac{4}{7}\right)^2 + \left(\frac{1}{3}\right)\left(\frac{4}{7}\right)\right) + \left(\left(\frac{1}{3}\right)^3 + \left(\frac{1}{3}\right)^2\left(\frac{4}{7}\right) + \left(\frac{1}{3}\right)\left(\frac{4}{7}\right)^2 + \left(\frac{4}{7}\right)^3\right) + \dots$$

is equal to

- (1)  $\frac{3}{2}$  (2)  $\frac{5}{2}$  (3)  $\frac{1}{2}$  (4) 2

Ans. (2)

6. The domain of  $\sin^{-1}\left(\frac{1}{x^2-2x-1}\right)$  is  $(-\infty, \alpha] \cup [\beta, \delta] \cup [\lambda, \infty)$ . The value of  $\alpha + \beta + \delta + \lambda$  is equal to

- (1) 17 (2) 4 (3) 3 (4) 6

Ans. (2)

7. Consider these statements regarding the function  $f(x) = ||nx| - |x-1||$

**Statement 1:**  $f(x)$  is differentiable for all  $x > 0$

**Statement 2:**  $f(x)$  is increasing in  $(1, \infty)$

**Statement 3:**  $f(x)$  is decreasing in  $(0, 1)$

- (1) Statement 1 and statement 3 is true (2) All Statement are correct  
(3) Statement 2 and statement 3 are correct (4) Statement 1 and statement 2 are correct

Ans. (1)

8.  $\lim_{x \rightarrow 0} \frac{\tan(\tan x) - \tan(\sin x)}{\tan x - \sin x}$  is equal to

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

Ans. (1)

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9. If  $4x^2 + y^2 < 52$ ,  $x, y \in \mathbb{Z}$ , then the number of ordered pairs  $(x, y)$  is

- (1) 67 (2) 87 (3) 77 (4) 38

Ans. (3)

10.  $3f(x) + 2f\left(\frac{M}{19x}\right) = 15x$ ,  $M = \sum_{i=1}^9 i^2$ ,  $f(5) - f(2) = ?$

Ans. (54)

11. If  $f(\alpha)$  is the area bounded in the first quadrant by

$x = 0, x = 1, y = x^2, y = |ax - 5| - |1 - ax| + ax^2$  then find  $f(0) + f(1)$ .

- (1)  $\frac{23}{4}$  (2)  $\frac{26}{3}$  (3)  $\frac{23}{3}$  (4)  $\frac{21}{4}$

Ans. (3)

12. If  $\int \frac{7x^{10} + 9x^8}{(1+x^2+2x^9)^2} dx = f(x) + c$  and  $f(1) = \frac{1}{4}$ . Then  $f(x)$  is

- (1)  $\frac{x^9}{2x^2+9+x^9}$  (2)  $\frac{x^9}{2+x^2+x^9}$  (3)  $\frac{x^9}{1+x^2+2x^9}$  (4)  $\frac{x^9}{1+x^9+2x^2}$

Ans. (3)

13. Let  $x = \{1, 2, 3, \dots, 19\}$ . If new data  $Y = \{y_i : y_i = x_i + b, x_i \in x\}$ . Such that mean and variance of  $y$  is 30 and 120 respectively then the sum of value (s) of  $b$  is:

- (1) 50 (2) 60 (3) 40 (4) 30

Ans. (2)

14. Let point  $(h, k)$  lies on  $x^2 + y^2 = 4$ , and  $(2h + 1, 3k + 2)$  lies on ellipse having eccentricity  $e$ . Then the value of  $\frac{5}{e^2}$ .

Ans. (9)

15. Given  $P = [p_{jj}]_{3 \times 3}$  and  $Q = [q_{ij}]_{3 \times 3}$  are  $3 \times 3$  matrices, where  $q_{jj} = 2^{i+j-1} p_{ij}$ . If  $|Q| = 2^{10}$ , then the value of  $|\text{adj}(\text{adj}(P))|$  is

Ans. (16)

16. Let  $y = y(x)$  be a differentiable function in interval  $(0, \infty)$  such that

$$y(1) = 2, \lim_{t \rightarrow x} \left( \frac{t^2 y(x) - x^2 y(t)}{x - t} \right) = 3, \text{ for each } x > 0, \text{ Then } 2y(2) =$$

Ans. (23)

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