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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

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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 $z = (1+i)(1+2i)(1+3i)\ldots.(1+ni), n \in N$ 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

$$S = \left(\frac{1}{3}+\frac{4}{7}\right) + \left(\left(\frac{1}{3}\right)^2 + \left(\frac{4}{7}\right)^2 + \left(\frac{1}{3}\right)\left(\frac{4}{7}\right)\right) + \left(\left(\frac{1}{3}\right)^3 + \left(\frac{1}{3}\right)^2\left(\frac{4}{7}\right) + \left(\frac{1}{3}\right)\left(\frac{4}{7}\right)^2 + \left(\frac{4}{7}\right)^3\right) + \cdots, \text{ then } S$$

is equal to

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

Ans. **(2)**

6. The domain of $\text{Sin}^{-1}\left(\frac{1}{x^2-2x-1}\right)$ 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. $\lim\limits_{x\to 0} \frac{\tan(\tan x) - \tan(\sin x)}{\tan x - \sin x}$ is equal to

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

Ans. **(1)**

9. If $4x^2 + y^2 < 52, x, y, \in Z$, 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 $x = 0, x = 1, y = x^2, y = |\alpha x - 5| - |1 - \alpha x| + \alpha x^2$ 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 $x = \{1,2,3, \ldots 19\}$. 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 $P = [p_{jj}]_{3\times3}$ and $Q = [q_{ij}]_{3\times3}$ are 3×3 matrices, where $q_{jj} = 2^{i+j-1}p_{ij}$. If $|Q| = 2^{10}$, then the value of |adj(adj(P))| is

Ans. **(16)**

16. Let $y = y(x)$ be a differentiable function in interval $(0, \infty)$ such that $y(1) = 2, \lim_{t\to x}\left(\frac{t^2y(x) - x^2y(t)}{x - t}\right) = 3$, for each $x > 0$, Then $2y(2) =$

Ans. **(23)**