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JEE (MAIN) 2026

MEMORY BASED QUESTIONS & TEXT SOLUTION

SHIFT-2

DATE & DAY: 28 January 2026 & Wednesday

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)

100% Scholarship on the basis of Class 10th, 12th
& JEE (Main) 2026 %ile / AIR

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MATHEMATICS

1. The sum of coefficients of x^{499} and x^{500} in the binomial expansion of $(1+x)^{1000} + (1+x)^{999}(x) + x^2(1+x)^{998} + \dots + x^{1000}$ is
 (1) $^{1002}C_{501}$ (2) $^{1002}C_{500}$ (3) $^{1001}C_{500}$ (4) $^{1001}C_{501}$
Ans. (2)
2. If $\sum_{r=1}^{25} \frac{r}{r^4+r^2+1} = \frac{p}{q}$, where p and q are coprime positive integer, then $p+q$ is equal to
 (1) 841 (2) 976 (3) 984 (4) 890
Ans. (2)
3. $\frac{6}{3^{26}} + \frac{10}{3^{25}} + \frac{10.2}{3^{24}} + \frac{10.2^2}{3^{23}} + \dots + \frac{10.2^{24}}{3}$ is equal to
 (1) 2^{26} (2) 2^{25} (3) 3^{26} (4) 3^{25}
Ans. (1)
4. The value of $\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \frac{12(3+[x])}{3+[\sin x]+[\cos x]} dx$ is equal to
 (1) $3+10\pi$ (2) $11\pi+4$ (3) $10\pi+2$ (4) $11\pi+2$
Ans. (4)
5. By the principal of inverse trigonometric function, the value of $\tan\left(2\sin^{-1}\left(\frac{2}{\sqrt{13}}\right) - 2\cos^{-1}\left(\frac{3}{\sqrt{10}}\right)\right)$ is equal to
 (1) $\frac{33}{56}$ (2) $\frac{31}{55}$ (3) $\frac{32}{59}$ (4) $\frac{38}{55}$
Ans. (1)
6. Let a triangle ABC such that $A \equiv (0,0)$ and vertices B and C lie on the parabola $y^2 = 8x$ such that $\left(\frac{7}{3}, \frac{4}{3}\right)$ is the centroid of the $\triangle ABC$ then $(BC)^2$ is equal to
 (1) 90 (2) 120 (3) 150 (4) 110
Ans. (2)
7. Let $A = \begin{bmatrix} 3 & -4 \\ 1 & -1 \end{bmatrix}$ and B be a 2×2 matrix such that $A^{100} = 100B + I$, then sum of all elements of B^{100} is:
Ans. (0)
8. Let $A = \{Z \in C : |Z-2| \leq 4\}$ and $B = \{Z \in C : |Z-2| + |Z+2| \leq 4\}$ then $\max\{Z_1 - Z_2 : Z_1 \in A \text{ and } Z_2 \in B\}$ is equal to
 (1) 6 (2) 8 (3) 4 (4) 5
Ans. (2)
9. If the arithmetic mean of $\frac{1}{a}$ and $\frac{1}{b}$ is $\frac{5}{16}$ and $a, 4, \alpha, b$ are in increasing A.P. then both the roots of the equation $\alpha x^2 - ax + 2(\alpha - 2b) = 0$ lie between
 (1) $(-3,0)$ (2) $(-2,3)$ (3) $(0,3)$ (4) $(-3,1)$
Ans. (2)
10. **Statement I:** $25^{13} + 20^{13} + 8^{13} + 3^{13}$ is divisible by 7.
Statement II: The integral value of $(7+4\sqrt{3})^{25}$ is an odd number
 (1) Neither statements are correct (2) Only statement I is correct
 (3) Only statement II is correct (4) Both the statements are correct
Ans. (4)

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11. Let $y = y(x)$ be the solution of the differential equation $x \frac{dy}{dx} - y = x^2 \cot x, x \in (0, \pi)$.

If $y\left(\frac{\pi}{2}\right) = \frac{\pi}{2}$, then $6y\left(\frac{\pi}{6}\right) - 8y\left(\frac{\pi}{4}\right)$ is

- (1) 2π (2) -3π (3) $-\pi$ (4) π

Ans. (3)

12. **Statement I:** The function F defined from $R \rightarrow R, F(x) = \frac{x}{1+|x|}$ is one-one

Statement II: The function F defined from $R \rightarrow R, F(x) = \frac{x^2+4x-30}{x^2-8x+18}$ is many-one

- (1) Statement I is correct but statement II is not correct
(2) Statement I and statement II both are correct
(3) Statement I is incorrect but statement II is correct
(4) Both statement are incorrect

Ans. (2)

13. Let $f(x) = \lim_{\theta \rightarrow 0} \frac{\cos \pi x - (x^2/\theta) \sin(x-1)}{1 + (x^2/\theta) \sin(x-1)}, x \in R$. Then which of the following is correct.

- (1) f is continuous at $x = 1$ and $f(1) = -1$
(2) f is discontinuous at $x = -1$ and $f(1) = -1$
(3) f is continuous at $x = 1$ and $f(1) = 1$
(4) f is discontinuous at $x = 1$ and $f(1) = 1$

Ans. (1)

14. Ellipse $\frac{x^2}{144} + \frac{y^2}{169} = 1$ and hyperbola $\frac{x^2}{16} - \frac{y^2}{\lambda^2} = -1$ have same focus and e and L denotes the eccentricity and length of latus rectum of hyperbola then $24(e + L)$ is

Ans. (296)

15. An ellipse has centre at $(1, -2)$ and one of the focus at $(3, -2)$ and one vertex at $(5, -2)$, then the length of its latus rectum is:

Ans. (6)

16. Consider the data:

$x:$	$4k$	$\frac{30}{7}k$	$\frac{32}{7}k$	$\frac{34}{7}k$	$\frac{36}{7}k$	$\frac{38}{7}k$	$\frac{40}{7}k$	$6k$
$p(x):$	$\frac{2}{15}$	$\frac{1}{15}$	$\frac{2}{15}$	$\frac{1}{5}$	$\frac{1}{15}$	$\frac{2}{15}$	$\frac{1}{5}$	$\frac{1}{15}$

If $E(x) = \frac{263}{15}$, then $P(x \leq 20)$ is equal to

- (1) $\frac{1}{15}$ (2) $\frac{8}{15}$ (3) $\frac{4}{15}$ (4) $\frac{14}{15}$

Ans. (4)

17. Let Q be the image of the point $P(3, 2, 1)$ in the line $\frac{x-1}{1} = \frac{y}{2} = \frac{z-1}{1}$, then the distance of Q from the line

$\frac{x-9}{3} = \frac{y-9}{2} = \frac{z-5}{-2}$ is

- (1) 3 (2) 4 (3) 5 (4) 7

Ans. (4)

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