

JEE MAIN 29 JANUARY 2025 SHIFT 1

MATHEMATICS QUESTION PAPER WITH ANSWER KEY

Q.No.	Questions	Answers
1	The minimum value of n for which the number of integer terms in the binomial expansion of $(7^{1/3} + 11^{1/2})^n$ is 183, is	2184
2	$\lim_{n \rightarrow \infty} \sum_{k=1}^n [(k^3 + 6k^2 + 11k + 5)/(k + 3)!] = ?$	5/3
3	Sum of first three terms of an AP with integral common difference is 54 and sum of first twenty terms lies between 1600 to 1800, find a_{11} .	90
4	Area enclosed by $y \geq x - 1 $, $y + x \leq 3$, $x^2 \leq 2y - 3$ is A , then $6A$ is (in sq. units)	10
5	Find $I = 80 \int_0^{\pi/2} [(\sin x + \cos x) / (9\sin x + 16\cos x)] dx$	$(80/337) [(25\pi/2) + 7 \ln(9/16)]$
6	If R be a relation defined on $(0, \pi/2)$ such that $xRy \iff \sec^2 x - \tan^2 y = 1$, then the relation R is	Reflexive and transitive only
7	Number of 7 digit numbers made with the digits 1, 2, 3 such that sum of the digits is 11 is equal to	16!
8	If z_1 lies on $ z - 8 + 2i = 1$ and z_2 lies on $ z - 2 - 6i = 2$, then $ z_1 - z_2 _{\min}$ is (where $i = \sqrt{-1}$)	7
9	If $\cos^{-1} x = \pi + \sin^{-1} x + \sin^{-1}(2x - 1)$, then find the sum of all values of x .	0
10	Find the minimum value of p such that $\lim_{x \rightarrow 0^+} \{ x ([1/x] + [2/x] + \dots + [p/x]) - x^2 ([1/x^2] + [2/x^2] + \dots + [9/x^2]) \}$	24