JEE MAIN 29 JANUARY 2025 SHIFT 2

MATHEMATICS QUESTION PAPER WITH ANSWER KEY

Q.No.	Questions	Answers
1	If the letters of the word "KANPUR" are arranged in dictionary, then the 440th word is	PRKAUN
2	If 3^{107} is divided by 23, then remainder is	6
3	Let aij = $(\sqrt{2})^{i+j}$, A = $[a_{ij}]_{3x3}$ If sum of third row of A^2 is $\alpha + \beta\sqrt{2}$, then $\alpha + \beta$is	224
4	Let f(x) = $\int_0^x t(t^2 - 3t + 20)\, dt$, x ∈ (1, 3) and range of f(x) is (α, β), then α + β is equal to	185/2
5	lim (x→0) [cosecx $((2\cos^2 x + 3\cos x)^{1/2} - (\cos^2 x + \sin x + 4)^{1/2}$] = ?	$-1/2\sqrt{5}$
6	Let the line L be (x - 1)/1 = (y - 4)/3 = (z - 7)/5 = λ and foot of perpendicular from (1, -2, -1) to L is (α, β, γ), then find the value of α + β + γ.	-102/35
7	If the exhaustive values of a for which the equation $2x^2 + (a - 5)x + 15 = 3a$ has no real roots is (α, β), then 14(α + β) | is equal to	56
8	Area enclosed between the curves $\|y\| = 1 - x^2$ and $x^2 + y^2 = 1$ is (π - α) sq. units, then 9α is	24
9	If log y = x log (2/5), x ∈ ℕ ∪ {0}. Then sum of all values of y equals to	5/3
10	There is an arithmetic progression $a_1, a_2, a_3, \ldots a_{2024}$ and $a_1 + (a_5 + a_{10} + a_{15} - a_{2020}) + a_{2024} = 2233$. Find the value of $a_1 + a_2 + a_3 + \ldots a_{2024}$.	11132
11	Two points (4, 2) and (0, 2) lie on the circle whose centre lies on 3x + 2y + 2 = 0 then the length of the chord whose mid-point is (1, 2), is	$2\sqrt{3}$