JEE Main 7 April 2025 Shift 1

Mathematics Question Paper with Answer Key

Q. No.	Question	Answers
1	The remainder when $64^{64\,64}$ is divided by 7 is equal to	1
2	Let A be a set defined as A = {2. 3, 6, 9}. Find the number of singular matrices of order 2 * 2 such that elements are from the set A.	36
3	Area bounded by the curves $y = 4 - x^2/4$ and $y = x - 4/2$ (in square units) is	125/3
4	If X_1, X_2, X_3, X_4 are in GP, then we subtract 2, 4, 7, 8 from X_1, X_2, X_3, X_4 respectively, then the resultant numbers are in AP, then the value of $1/24 (X_1 . X_2 . X_3 . X_4)$ is	$2^3/3^9$
5	If $f(x) = (x^2/2) - [\sqrt{x}]\ \forall\ x \in [0, 4]$, where [.] denotes the greatest integer function, then number of points of discontinuity of f(x) is	8
6	Solve: $\int_0^{\pi} \frac{(x+3)\sin x}{1+3\cos^2 x}dx$	$\pi(\pi + 6)/3\sqrt{3}$
7	If α and ß are negative real roots of the quadratic equation $x^2 – (p + 2)x + (2p + 9) = 0$ and pe ε (α, β). Then the value of $ß^2 – 2α$ is	13

8	Let the straight line AB: x + y − 2 = 0, AC: 3y – x = 2 intersects x-axis at B and C respectively. If P is the orthocentre of the triangle ABC, then area of the triangle CPB is	6 sq. units
9	**Statement 1:** If (z+i/z-i) is purely real, then there are exactly 2 complex numbers z. **Statement 2:** If (z+1/z-1) is purely imaginary, then there are infinite such complex numbers z. Then,	Statement 2 is true.
10	The value of the limit $\lim_{x \to 0^+} \frac{(\tan^{-1} 5x^{1/3})^2 \cdot \log_e(1+3x^2) \cdot (e^{5x^{4/3}} - 1)}{(\sin^{-1}(3\sqrt{x}))^8}$ is	$5^3/3^7$
11	Line L passes through (1, 1, 1) and line L intersects L_1 & L_2 when L_1: x-1/2 = y+1/3 = z/4 and L_2: x-1/1 = y-3/4 = z/1 then L passes through	(9, 15, 18)