JEE MAIN 7 APRIL 2025 SHIFT 2

MATHEMATICS QUESTION PAPER WITH ANSWER KEY

Q. No.	Question	Answers
1	If $x\,|x - 3| + 3\,|x - 2| + 1 = 0$, then the number of real solution is	1
2	$\operatorname{Re}\left(\dfrac{2z+i}{z-i}\right) + \operatorname{Re}\left(\dfrac{2\bar{z}-i}{\bar{z}-i}\right) = 2$ is a circle of radius r and centre (a, b), then $15ab/r^2$ is equal to	0
3	If two vectors $\vec{a}$ and $\vec{b}$ satisfies $\dfrac{|\vec{a}+\vec{b}|+|\vec{a}-\vec{b}|}{|\vec{a}+\vec{b}|-|\vec{a}-\vec{b}|} = \sqrt{2} + 1$, then the value of $\dfrac{|\vec{a}+\vec{b}|^2}{|\vec{a}-\vec{b}|^2}$ is equal to	$3 + 2\sqrt{2}$
4	Let $f(x) = x-5/x^2-3x+2'$, if range of f(x) is $(-\infty, \alpha)\ \cup\ (\beta, \infty)$. There $\alpha^2 + \beta^2$ equals to	194
5	If a box contains 19 unbiased coins and 1 biased coin with both faces head. If a coin is randomly chosen out of this box and tossed. If the head appears, then the probability that the unbiased coin was selected	19/21
6	If $f(\theta) = \tan(\tan\theta) - \tan(\sin\theta)/\tan\theta - \sin\theta$ is continuous at $\theta = 0$, then the value of $f(\theta)$ at $\theta = 0$ is equal to	1
7	Let $y = y(x)$ and $(1 + x^2)y' - 2xy = (x^4 + 2x^2 + 1)\cos x$. If $y(0) = 1$, then $\int_{-3}^{3} y(x)dx$ equals to	24

8	The sum of series $^2C_1 \cdot (1 \times 2) + ^3C_2 \cdot (2 \times 3) + ^4C_3 \cdot (3 \times 4) + ... + ^{19}C_{18} \cdot (18 \times 19)$ is S, then S/295 is equal to	114