

JEE Main 2024 Mathematics Question Paper

Jan 29 Shift 1 (B.E./B.Tech)

JEE Main Mathematics Questions

Ques 1. Let a die rolled till 2 is obtained. The probability that 2 obtained on even numbered toss is equal to:

- A. $5/11$
- B. $5/6$
- C. $1/11$
- D. $6/11$

Ans. A

Ques 2.

$$\text{Evaluate: } \lim_{x \rightarrow \frac{\pi}{2}^-} \frac{\int_{x^3}^{\left(\frac{\pi}{2}\right)^3} \cos t^{\frac{1}{3}} dt}{\left(x - \frac{\pi}{2}\right)^2}$$

- A. $3\pi^2/4$
- B. $3\pi/4$
- C. $3\pi^2/8$
- D. $3\pi/8$

Ans. C

Ques 3. $\frac{C_1^{11}}{2} + \frac{C_2^{11}}{3} + \dots + \frac{C_9^{11}}{10} = \frac{m}{n}$. Then $m+n$ is

Ans. 2041

Ques 4. Rank of the word 'GTWENTY' in dictionary is

Ans. 553

Ques 5. If $|2A|^3 = 21$ and $A = \begin{bmatrix} 1 & 0 & 0 \\ 0 & \alpha & \beta \\ 0 & \beta & \alpha \end{bmatrix}$, then α is (if $\alpha, \beta \in \mathbb{I}$)

- A. 5**
- B. 3**
- C. 9**
- D. 17**

Ans. A

Ques 6. In a 64 terms GP if sum of total terms is seven times sum of odd terms, then common ratio is:

- A. 3**
- B. 4**
- C. 5**
- D. 6**

Ans. D

Ques 7. If $\frac{dy}{dx} - \left(\frac{\sin 2x}{1 + \cos^2 x} \right) y = \frac{\sin x}{1 + \cos^2 x}$ and $y(0) = 0$ then $y(\pi/2)$ is

- A. -1**
- B. 1**
- C. 0**
- D. 2**

Ans. B

Ques 8. If $4 \cos \theta + 5 \sin \theta = 1$, then all possible values of $\tan \theta$, is/are where $\theta \in (-\pi/2, \pi/2)$

- A. 1
- B. 3
- C. 2
- D. 4

Ans. C

Ques 9. Given data 60, 60, 44, 58, 68, α , β , 56 has mean 58, variance = 66.2 then find $\alpha^2 + \beta^2$

Ans. 7182

Ques 10. If : $|z + 1| = \alpha z + \beta(i + 1)$ and $z = 1/2 - 2i$, find $\alpha + \beta$.

Ans. 3