

Tripura JEE Sample Paper 2025 for Mathematics

1. Let, P be the relation on \mathbb{R} (set of all real numbers) defined by $P = \{(a, b) : a, b \in \mathbb{R}, a^2 + b^2 = 1\}$, then P is

- (A) symmetric and transitive
- (B) symmetric but neither reflexive nor transitive
- (C) transitive but neither reflexive nor symmetric
- (D) None of the above

2. If $[x]$ denotes the greatest integer less than or equal to x , then the range of the function

$f(x) = [x] - x$ is

- (A) $[0, 1)$ (B) $(-1, 0]$
- (C) $[2, 0.9)$ (D) $(1, 1)$

3. Z is a complex number such that $|z-1| + |z+1| < 4$. Then z lies in the Argand plane

- (A) on the boundary and in the interior of an ellipse
- (B) on the boundary and in the interior of a circle
- (C) in the interior of a hyperbola
- (D) None of the above

4. Solution of the differential equation $x''(x^2 + y^2) + 2y(xdy - ydx) = 0$, subject to the condition $y(1) = 0$, is

- (A) $(x^2 + y^2)(x-2) = 4x^2$ (B) $(x^2 + y^2)(x+2) = 9x^2$
- (C) $(x^2 - y^2)(x+2) = 4x^2$ (D) $(x^2 - y^2)(x-2) = 9x^2$

5. The mean and standard deviation of 100 observations were found to be 40 and 10 respectively. If at the time of calculation, two observations were wrongly taken as 30 and 70 in place of 3 and 27 respectively, then the correct standard deviation is

- (A) 8.24
- (B) 9.24
- (C) 10.24

(D) 7-24

6. The normals to the curve $y = x^2 - x + 1$, drawn at the points with the abscissa $x = 0, X_1, X_2, \dots, X_n$ are

- (A) parallel to each other
- (B) pairwise perpendicular
- (C) concurrent
- (D) not concurrent

7. The area of the region bounded by $y = |x|$ and $y = -|x| + 2$ is

- (A) 4 sq. units
- (B) 3 sq. units
- (C) 2 sq-units
- (D) 1 sq. units

8. If C_0, C_1, C_2 denote the coefficients in the expansion of $(1+x)^n$, then the value of $C_0^2 + 2C_1C_2 + 3C_2^2 + \dots + nC_n^2$ is

- (A) $(n+1)^2$
- (B) n^2
- (C) $(n+1)^2$
- (D) $(n+2)^2$

9. If $\sec ax + \sec bx = 0$, then the values of x form

- (A) two arithmetic progressions
- (B) two geometric progressions
- (C) one arithmetic progression and one geometric progression
- (D) None of the above

10. How many 5-digit numbers divisible by 3 can be formed by using the digits 0,1,2,3,4 and 5, without repetition of digits?

- (A) 148
- (B) 224
- (C) 336
- (D) 216

11. If $[x]$ denotes the greatest integer less than or equal to x , then $\lim_{x \rightarrow 0} \frac{[x]}{x} = ?$

- (A) 0

- (B) 1
- (C) Does not exist
- (D) -1

12. The equation of the plane passing through the line of intersection of the planes $2x+3y-5z+7=0$, $7x-4y+3z-11=0$ and parallel to the line joining the points $(3,1,-2)$ and $(1,-2,4)$ is

- (A) $333x - 124y + 49z - 361 = 0$
- (B) $124x - 333y + 49z + 361 = 0$
- (C) $49x + 124y + 33z + 61 = 0$
- (D) $330x + 120y + 40z + 361 = 0$

13. The equation of the straight line through the point $(3, 2)$ which makes an angle 45° with the line $x-2y=3$ is |

- (A) $3x + y + 7 = 0$
- (B) $3x - y - 7 = 0$
- (C) $3x + 2y - 7 = 0$
- (D) $2x - 3y + 7 = 0$

14. An equation of the circle passing through the points of intersection of two circles $x^2 + y^2 - 3x - 6y + 8 = 0$ and $x^2 + y^2 - 2x - 4y + 4 = 0$ and touching the straight line $x + 2y = 5$, is

- (A) $x^2 + y^2 - x - 2y = 0$
- (B) $x^2 + y^2 - 4x - 2y = 0$
- (C) $x^2 + y^2 + x + 4 + 2y = 0$
- (D) $x^2 + y^2 + 2x + y = 0$

15. $\int \sin^2 x \cos x \, dx = \frac{1}{4} \sin^2 x - \frac{1}{12} \cos^2 x + c$

- (A) $\sin 2x + c$
- (B) $-\frac{5}{12} \sin^2 x + c$
- (C) $\frac{1}{4} \sin^2 x + c$
- (D) $-\frac{1}{12} \sin^2 x + c$

16. If X and Y are two sets defined by $X = \{8^n - 7n - 1 : n \in \mathbb{N}\}$ $Y = \{49(n-1) : n \in \mathbb{N}\}$ (N is the set of natural numbers) then

- (A) $X \subset Y$
- (B) $Y \subset X$
- (C) $X = Y$
- (D) None of these

