DPP No: 01

Maximum Time 50 Min

MATHS

TARGET JEE-MAIN

SYLLABUS : FUNDEMENTALS OF MATHEMATICS

1. Number of integer values of x satisfying $-5 \le x < 10$ and $0 \le x \le 15$ is

(A) 10 (B) 11 (C) 12 (D) 13

2. The number of positive integers satisfying the inequality $\frac{x^2-1}{2x+5} < 3$ is

(A) 10 (B) 9 (C) 8 (D) 7

3. The complete set of values of 'x' which satisfy the inequations : $5x + 2 < 3x + 8$ and $\frac{x+2}{x-1} < 4$ is

(A) $(-\infty, 1)$ (B) $(2, 3)$ (C) $(-\infty, 3)$ (D) $(-\infty, 1) \cup (2, 3)$

4. The number of the integral solutions of $x^2 + 9 < (x + 3)^2 < 8x + 25$ is :

(A) 1 (B) 2 (C) 3 (D) none of these

5. The complete solution set of the inequality $\frac{x^4-3x^3+2x^2}{x^2-x-30} \ge 0$ is:

(A) $(-\infty, -5) \cup (1, 2) \cup (6, \infty) \cup \{0\}$ (B) $(-\infty, -5) \cup [1, 2] \cup (6, \infty) \cup \{0\}$

(C) $(-\infty, -5] \cup [1, 2] \cup [6, \infty) \cup \{0\}$ (D) none of these

6. Number of positive integral values of x satisfying the inequality

$$\frac{(x-4)^{2013}.(x+8)^{2014}(x+1)}{x^{2016}(x-2)^3.(x+3)^5.(x-6)(x+9)^{2012}} \le 0 \text{ is}$$

(A) 0 (B) 1 (C) 2 (D) 3

7. The number of real roots of the equation $|x|^2 - 3|x| + 2 = 0$ is :

(A) 1 (B) 2 (C) 3 (D) 4

8. The minimum value of $f(x) = |x - 1| + |x - 2| + |x - 3|$ is equal to

(A) 1 (B) 2 (C) 3 (D) 0

9. Solution of $|4x + 3| + |3x - 4| = 12$ is

(A) $x = -\frac{7}{3}, \frac{3}{7}$ (B) $x = -\frac{5}{2}, \frac{2}{5}$ (C) $x = -\frac{11}{7}, \frac{13}{7}$ (D) $x = -\frac{3}{7}, \frac{7}{5}$

10. If $||x-1|-5| = 2$, then number of distinct values of x is

(A) 1 (B) 2 (C) 3 (D) 4

11. Solve for $x \in R$ $|x^2 - x - 6| = x + 2$.

(A) $x \in \{2, 4\}$ (B) $x \in \{-2, 4\}$ (C) $x \in \{-2, 2\}$ (D) $x \in \{-2, 2, 4\}$

12. If $||x-3|-4| = 1$ the sum of values of x is

(A) 3 (B) 6 (C) 9 (D) 12

13. Sum of the solutions of the equations $x^2 - 5|x| - 4 = 0$ is

(A) 8 (B) 2 (C) 10 (D) 0

14. The complete set of real 'x' satisfying $||x-1|-1| \le 1$ is :

(A) [0, 2] (B) [– 1, 3] (C) [– 1, 1] (D) [1, 3]

15. Solution set of the inequalities $|x^2 + x - 2| \le 0$ and $|x^2 - x + 2| \ge 0$ is

(A) $x \in [-2, 1]$ (B) [–2, –1] (C) {–2, 1} (D) {–2, –1, 1, 2}

16. If $a^4 \cdot b^5 = 1$ then the value of $\log_a(a^5b^4)$ equals

(A) 9/5 (B) 4 (C) 5 (D) 8/5

17. $\frac{1}{1+\log_b a+\log_b c} + \frac{1}{1+\log_c a+\log_c b} + \frac{1}{1+\log_a b+\log_a c}$ has the value equal to

(A) abc (B) $\frac{1}{abc}$ (C) 0 (D) 1

18. $\frac{1}{\log_{\sqrt{bc}} abc} + \frac{1}{\log_{\sqrt{ca}} abc} + \frac{1}{\log_{\sqrt{ab}} abc}$ has the value equal to :

(A) 1/2 (B) 1 (C) 2 (D) 4

19. Which one of the following is the smallest?

(A) $\log_{10}\pi$ (B) $\sqrt{\log_{10}\pi^2}$ (C) $\left(\frac{1}{\log_{10}\pi}\right)^3$ (D) $\left(\frac{1}{\log_{10}\sqrt{\pi}}\right)$

20. $\log_{10}(\log_2 3) + \log_{10}(\log_3 4) + \log_{10}(\log_4 5) + \ldots\ldots + \log_{10}(\log_{1023} 1024)$ simplifies to

(A) a composite (B) a prime number

(C) rational which is not an integer (D) an integer

21. The solution set of the inequality $\log_{\sin\left(\frac{\pi}{3}\right)}(x^2-3x+2) \ge 2$ is

(A) $\left(\frac{1}{2}, 2\right)$ (B) $\left(1, \frac{5}{2}\right)$ (C) $\left[\frac{1}{2}, 1\right) \cup \left(2, \frac{5}{2}\right]$ (D) None of these

22. If $\log_{0.3}(x-1) < \log_{0.09}(x-1)$, then x lies in the interval

(A) (2, ∞) (B) (1, 2) (C) (– 2, – 1) (D) none of these

23. Solution set of the inequality $2 - \log_2 (x^2 + 3x) \geq 0$ is :

(A) $[-4, 1]$ (B) $[-4, -3) \cup (0, 1]$

(C) $(-\infty, -3) \cup (1, \infty)$ (D) $(-\infty, -4) \cup [1, \infty)$

24. If $x, |x + 1|, |x - 1|$ are three terms of an A.P., then number of possible values of x is –

(A) 1 (B) 2 (C) 3 (D) 4

25. Number of real solution(s) of the equation $|x-3|^{3x^2-10x+3} = 1$ is :

(A) exactly four (B) exactly three (C) exactly two (D) exactly one

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ANSWER KEY OF DPP NO. : 01

1.	**(A)**	**2.**	**(D)**	**3.**	**(D)**	**4.**	**(D)**	**5.**	**(B)**
6.	**(D)**	**7.**	**(B)**	**8.**	**(B)**	**9.**	**(C)**	**10.**	**(D)**
11.	**(D)**	**12.**	**(D)**	**13.**	**(D)**	**14.**	**(B)**	**15.**	**(C)**
16.	**(A)**	**17.**	**(D)**	**18.**	**(B)**	**19.**	**(A)**	**20.**	**(D)**
21.	**(C)**	**22.**	**(A)**	**23.**	**(B)**	**24.**	**(B)**	**25.**	**(B)**