DPP
DAILY PRACTICE PROBLEMS

CLASS : XIth **SUBJECT : MATHS**
DATE : **DPP NO. :7**

Topic :-LINEAR INEQUALITIES

1. If a,b,c are positive real numbers such that $a+b+c=2$ then, which one of the following is true?
   a) $(2-a)(2-b)(2-c) \geq 8abc$
   b) $\frac{1}{a}+\frac{1}{b}+\frac{1}{c} \geq 2$
   c) $(2-a)(2-b)(2-c) < 8abc$
   d) $\frac{1}{a}+\frac{1}{b}+\frac{1}{c}=2$

2. If x,y,z are positive real numbers such that $x^2+y^2+z^2=27$, then $x^3+y^3+z^3$ has
   a) Minimum value 81 b) Maximum value 81 c) Minimum value 27 d) Maximum value 27

3. If x satisfies the inequations $2x-7<11, 3x+4<-5$, then x lies in the interval
   a) $(-\infty, 3)$ b) $(-\infty, 2)$ c) $(-\infty, -3)$ d) $(-\infty, \infty)$

4. $x^8-x^5-\frac{1}{x}+\frac{1}{x^4}>0$,is satisfied for
   a) Only positive values of x
   b) Only negative values of x
   c) All real numbers except zero
   d) Only for $x>1$

5. The solution set of the inequation $5^{(1/4)(\log_5 x)^2} \geq 5\, x^{(1/5)(\log_5 x)}$, is
   a) $(0, 5^{-2\sqrt{5}}]$ b) $[5^{2\sqrt{5}}, \infty)$ c) $(0, 5^{-2\sqrt{5}}] \cup [5^{2\sqrt{5}}, \infty)$ d) $(0, \infty)$

6. If $a+b=8$, then ab is greater when
   a) $a=4, b=4$ b) $a=3, b=5$ c) $a=6, b=2$ d) None of these

7. The number of solutions of the equation $\cos x + |x| = 0$ is
   a) 0 b) 1 c) 2 d) 3

8. If $0<x<\frac{\pi}{2}$, then the minimum value of $\frac{\cos^3 x}{\sin x}+\frac{\sin^3 x}{\cos x}$ is
   a) $\sqrt{3}$ b) $\frac{1}{2}$ c) $\frac{1}{3}$ d) 1

9. If $x^2 + 4ax + 2 > 0$ for all values of x, then a lies in the interval
   a) (-2, 4) b) (1, 2) c) $(-\sqrt{2}, \sqrt{2})$ d) $\left(-\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}\right)$

10. If a and b are two different positive real numbers then which of the following statement is true?
   a) $2\sqrt{ab} > a + b$ b) $2\sqrt{ab} < a + b$ c) $2\sqrt{ab} = a + b$ d) None of these

11. The number of negative integral solutions of $x^2 \cdot 2^{x+1} + 2^{|x-3|+2} = x^2 \cdot 2^{|x-3|+4} + 2^{x-1}$, is
   a) None b) Only one c) Two d) Four

12. The number of ordered 4-tuples (x,y,z,w) where $x,y,z,w \in [0,10]$ which satisfy the inequality $2^{\sin^2 x} \times 3^{\cos^2 y} \times 4^{\sin^2 z} \times 5^{\cos^2 w} \geq 120$, is
   a) 81 b) 144 c) 0 d) Infinite

13. If $a > 1, b > 1, c > 1, d > 1$, then the minimum value of $\log_b a + \log_a b + \log_d c + \log_c d$ is
   a) 1 b) 2 c) 3 d) 4

14. The solution set of inequation $\log_{1/3}(2^{x+2} - 4^x) \geq -2$, is
   a) $(-\infty, 2 - \sqrt{13})$ b) $(-\infty, 2 + \sqrt{13})$ c) $(-\infty, 2)$ d) None of these

15. If $\frac{2x}{2x^2 + 5x + 2} > \frac{1}{x + 1}$, then
   a) $-2 > x > -1$ b) $-2 \geq x \geq -1$ c) $-2 < x < -1$ d) $-2 < x \leq -1$

16. The number of real solutions of $\log_2 x + |x| = 0$, is
   a) 0 b) 1 c) 3 d) None of these

17. If $xyz = abc$, then the least value of $bcx + cay + abz$ is
   a) $3abc$ b) $6abc$ c) abc d) $4abc$

18. The number of solution(s) of the inequation $\sqrt{3x^2 + 6x + 7} + \sqrt{5x^2 + 10x + 14} \leq 4 - 2x - x^2$, is
   a) 1 b) 2 c) 4 d) Infinitely many

19. A stick of length 20 units is to be divided into n parts so that the product of the lengths of the parts is greater than unity. The maximum possible value of n is
   a) 18 b) 19 c) 20 d) 21

20. If a,b,c are different positive real number such that $(b + c - a), (c + a - b)$ and $(a + b - c)$ are positive, then $(a + b - c)(b + c - a)(c + a - b) - abc$ is
   a) Positive b) Negative c) Non-positive d) Non-negative