

Topics : Fundamentals of Mathematics, Logarithm Total Marks : 30 Max. Time : 33 min. DPP. NO.-14

Type of Questions		M.M., Min.
Single choice Objective (no negative marking) Q.1	(3 marks, 3 min.)	[3, 3]
Assertion and Reason (no negative marking) Q.2	(3 marks, 3 min.)	[3, 3]
Subjective Questions (no negative marking) Q.3,5,6	(4 marks, 5 min.)	[12, 15]
Fill in the Blanks (no negative marking) Q.4	(4 marks, 4 min.)	[4, 4]
Match the Following (no negative marking) Q.7	(8 marks, 8 min.)	[8, 8]

- The complete solution set of the inequation $\sqrt{x+18} < 2-x$, is
(A) $[-18, -2]$ (B) $[-18, -5]$ (C) $(-18, 5)$ (D) none of these
- Statement-1 : $\log_{10}x < \log_{\pi}x < \log_e x < \log_2 x$ ($x > 0$ and $x \neq 1$)
Statement-2 : If $0 < x < 1$, then $\log_x a > \log_x b \Rightarrow a < b$.
(A) Statement-1 is True, Statement-2 is True; Statement-2 is a correct explanation for Statement-1.
(B) Statement-1 is True, Statement-2 is True; Statement-2 is NOT a correct explanation for Statement-1.
(C) Statement-1 is True, Statement-2 is False.
(D) Statement-1 is False, Statement-2 is True.
- If $\log_6 \log_2 [\sqrt{4x+2} + 2\sqrt{x}] = 0$, then $x =$ _____.
- Given, $\log_a x = \alpha$; $\log_b x = \beta$; $\log_c x = \gamma$ & $\log_d x = \delta$ ($x \neq 1$), then $\log_{abcd} x$ has the value equal to _____
- Solve the equation for x : $\log 4 + \left(1 + \frac{1}{2x}\right) \log 3 = \log (\sqrt[3]{3} + 27)$
- Find all integral solutions of the equation $4 \log_{x/2} (\sqrt{x}) + 2 \log_{4x} (x^2) = 3 \log_{2x} (x^3)$
- Match the following**

Column – I	Column – II
(A) If $\log_4 (x+1) + \log_4 (x+8) = \frac{3}{2}$, then value(s) of x is (are)	(p) 1
(B) If $ x + x-5 = 6$ and $x < 0$, then $\left(x + \frac{3}{2}\right)$ is equal to	(q) 4
(C) The value of $4 \left(3 \log_2 \frac{81}{80} + 5 \log_2 \frac{25}{24} + 7 \log_2 \frac{16}{15}\right)$ is	(r) 0
(D) The remainder when $2x^5 - x^3 + x^2 + 1$ is divided by $(2x+1)$ is k . Then $\frac{16k+11}{16}$ is equal to	(s) 2

Topics : Fundamentals of Mathematics, Logarithm Total Marks : 24 Max. Time : 23 min. DPP. NO.-15

Type of Questions

Type of Questions	M.M., Min.
Single choice Objective (no negative marking) Q.1,2,3	(3 marks, 3 min.) [9, 9]
Multiple choice objective (no negative marking) Q.4	(5 marks, 4 min.) [5, 4]
True or False (no negative marking) Q.5	(2 marks, 2 min.) [2, 2]
Fill in the Blanks (no negative marking) Q.6,7	(4 marks, 4 min.) [8, 8]

1. The expression $E = 81^{\log_{0.3} \left(\frac{1}{\sqrt{4+2\sqrt{3}} - \sqrt{4-2\sqrt{3}}} \right)}$ is simplified to.

- (A) 16 (B) 4 (C) 2 (D) $\frac{1}{2}$

2. The complete solution set of $x - \sqrt{1-|x|} < 0$ is

- (A) $\left[-1, \frac{-1+\sqrt{5}}{2} \right)$ (B) $[-1, 1]$ (C) $\left(-1, \frac{-1+\sqrt{5}}{2} \right)$ (D) $\left(\frac{-1+\sqrt{5}}{2}, \frac{1+\sqrt{5}}{2} \right)$

3. If $\sqrt{1-x} > \sqrt{1+x}$, then the complete solution set of x is

- (A) $(-\infty, 0)$ (B) $[-1, 1]$ (C) $(0, 1]$ (D) $[-1, 0)$

4. For the equation $\log_{3\sqrt{x}} x + \log_{3x} \sqrt{x} = 0$, which of the following do not hold good?

- (A) no real solution (B) one prime solution
(C) one integral solution (D) no irrational solution

5. State whether the following statements are **True** or **False**.

- (i) If $\log_a x = \log_b y$, then each is equal to $\log_{ab} xy$.
(ii) The value of x satisfying the equation $\log_3 x + \log_9 x + \log_{27} x = 11$ is a perfect square as well as a perfect cube

6. The value of 'x' satisfying the equation, $4^{\log_9 3} + 9^{\log_2 4} = 10^{\log_x 83}$ is _____.

7. Real x satisfying the equation $9^{\log_3(\log_2 x)} = \log_2 x - (\log_2 x)^2 + 1$ is _____.