MATHEMATICS

DPP
DAILY PRACTICE PROBLEMS

DPP No. 37

Total Marks : 30

Max. Time : 33 min.

Topics : Fundamentals of Mathematics, Logarithm

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]

1. 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

2. Statement-1 : $\log_{10}x < \log_{\pi}x < \log_{e}x < \log_{2}x$ (x > 0 and x ≠ 1)
   Statement-2 : If 0 < x < 1, then $\log_x a > \log_x b$ ⇒   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.

3. If $\log_6 \log_2 \left[\sqrt{4x + 2} + 2\sqrt{x} \right] = 0$, then x = _____.

4. Given, $\log_a x = \alpha$; $\log_b x = \beta$; $\log_c x = \gamma$ & $\log_d x = \delta$ (x ≠ 1), then $\log_{abcd} x$ has the value equal to _____

5. Solve the equation for x : $\log 4 + \left(1 + \dfrac{1}{2x}\right) \log 3 = \log \left(\sqrt[x]{3} + 27\right)$

6. Find all integral solutions of the equation $4 \log_{x/2} (\sqrt{x}) + 2 \log_{4x} (x^2) = 3 \log_{2x} (x^3)$

7. **Match the following**

   Column – I   **Column – II**

   (A)   If $\log_4 (x + 1) + \log_4 (x + 8) = \dfrac{3}{2}$, then value(s) of x is (are)   (p)   1

   (B)   If |x| + |x – 5| = 6 and x < 0, then $\left(x + \dfrac{3}{2}\right)$ is equal to   (q)   4

   (C)   The value of $4 \left(3\log_2 \dfrac{81}{80} + 5\log_2 \dfrac{25}{24} + 7\log_2 \dfrac{16}{15} \right)$ is   (r)   0

   (D)   The remainder when $2x^5 - x^3 + x^2 + 1$ is divided by   (s)   2

   (2x + 1) is k. Then $\dfrac{16k + 11}{16}$ is equal to

Answers Key

1. (A)   **2.** (D)   **3.** $x = \dfrac{1}{16}$

4. $\dfrac{1}{\alpha^{-1} + \beta^{-1} + \gamma^{-1} + \delta^{-1}}$ **5.** $x \in f$

6. 1, 4   **7.** (A)→(r),(B)→(p), (C)→(q), (D)→(s)