

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 $x \neq 1$)
 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.

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

4. 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 _____

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

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 $\log_4 (x + 1) + \log_4 (x + 8) = \frac{3}{2}$, 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

Answers Key

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

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

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

