DPP-5

1. If $\log_7 2 = m$, then the value of $\log_{49} 28$ is

(A) $2(1 + 2m)$ (B) $\frac{1+2m}{2}$ (C) $\frac{2}{1+2m}$ (D) $1 + m$

2. Let x, y and z be positive real numbers such that $x^{\log_2 7} = 8, y^{\log_3 5} = 81$ and $z^{\log_5 216} = \sqrt[3]{5}$. The value of $x^{(\log_2 7)^2} + y^{(\log_3 5)^2} + z^{(\log_5 216)^2}$, is

(A) 526 (B) 750 (C) 874 (D) 974

3. Suppose n be an integer greater than 1, let $a_n = \frac{1}{\log_n 2002}$. Suppose $b = a_2 + a_3 + a_4 + a_5$ and $c = a_{10} + a_{11} + a_{12} + a_{13} + a_{14}$. Then $(b - c)$ equals

(A) $\frac{1}{1001}$ (B) $\frac{1}{1002}$ (C) -1 (D) -2

4. Product of all the solution of equation $x^{\log_{10} x} = (100 + 2^{\sqrt{\log_2 3}} - 3^{\sqrt{\log_3 2}})\, x$ is

(A) $\frac{1}{10}$ (B) 1 (C) 10 (D) 100

5. If $L = \sum_{r=7}^{2400} \log_7 (\frac{r+1}{r})$, $M = \prod_{r=2}^{1023} \log_r (r + 1)$ and $N = \sum_{r=2}^{2011} (\frac{1}{\log_r p})$ where $p = (1 \cdot 2 \cdot 3 \cdot 4 \cdot 5 \cdot \ldots\ldots\ldots\ldots 2011)$, then

(A) $L + M = 13$

(B) $M^2 + N^2 = 101$

(C) $L - M + N = 6$

(D) $LMN = 30$

6. If $\prod_{r=3}^{26} \log_r (r + 1) = 3^x$, then find the value of x.

7. If $P = \log_5 (\log_5 3)$ and $3^{C+5^{-P}} = 405$ then C is equal to

(A) 3 (B) 4 (C) 81 (D) 5

8. If $x = 500, y = 100$ and $z = 5050$, then the value of $(\log_{xyz} x^z)(1 + \log_x yz)$ is equal to

(A) 500 (B) 100 (C) 5050 (D) 10

9. If $\frac{a+\log_4 3}{a+\log_2 3} = \frac{a+\log_8 3}{a+\log_4 3} = b$, then b is equal to

(A) $\frac{1}{2}$ (B) $\frac{2}{3}$ (C) $\frac{1}{3}$ (D) $\frac{3}{2}$

10. Which of the following vanishes?

(A) $\log \tan 1^\circ \cdot \log \tan 2^\circ \cdot \log \tan 3^\circ \ldots\ldots\ldots \log \tan 89^\circ$

(B) $\log \sin 1^\circ \cdot \log \sin 2^\circ \cdot \log \sin 3^\circ \ldots\ldots\ldots \log \sin 90^\circ$

(C) $7^{\log_3 5} + 3^{\log_5 7} - 5^{\log_3 7} - 7^{\log_5 3}$

(D) $\log \tan 1^\circ + \log \tan 2^\circ + \log \tan 3^\circ + \cdots\ldots\ldots + \log \tan 89^\circ$.

11.

	Column-I		**Column-II**
(A)	Given $x > 1$ and $\log_x(x^{(x^2)}) + \log_x(x^{(-5x)}) = \log_x(1/x^6)$. The sum of all values of x that satisfying the equation, is	(P)	2
(B)	Let $0 < x < \pi$, $3^{(\tan x)} = 27^{(\sin x)}$, then the value of $\sec x$, is	(Q)	3
(C)	Let $a = x - 2$ and $b = x - 4$. The value of x satisfying the equation $(\log_a(x-3)\log_b(x+10))/(\log_b(x-3)) = 2$, is	(R)	4
(D)	The real values of x so that all terms are real and satisfy the equation $\sqrt{2x} = \sqrt{x+7} - 1$, is	(S)	5
		(T)	6

ANSWER

1.	(B)	**2.**	(D)	**3.**	(C)	**4.**	(C)	**5.**	(ABD)	**6.**	(1)
7.	(B)	**8.**	(C)	**9.**	(C)	**10.**	(ABCD)				

11. (A)→ S; (B) →Q; (C) →T; (D) →P