DPP-2

1. If a, b, c are positive numbers such that $a^{\log_3 7} = 27, b^{\log_7 11} = 49, c^{\log_{11} 25} = \sqrt{11}$, then the sum of digits of $S = a^{(\log_3 7)^2} + b^{(\log_7 11)^2} + c^{(\log_{11} 25)^2}$ is :

    (A) 15   (B) 17   (C) 19   (D) 21

2. Let $P = \dfrac{5}{\frac{1}{\log_2 x} + \frac{1}{\log_3 x} + \frac{1}{\log_4 x} + \frac{1}{\log_5 x}}$ and $(120)^P = 32$, then the value of x be :

    (A) 1   (B) 2   (C) 3   (D) 4

3. If $\log_{12} 27 = a$, then $\log_6 16 =$

    (A) $2\left(\dfrac{3-a}{3+a}\right)$ (B) $3\left(\dfrac{3-a}{3+a}\right)$ (C) $4\left(\dfrac{3-a}{3+a}\right)$ (D) None of these

4. Suppose that a and b are positive real numbers such that $\log_{27} a + \log_9 b = \dfrac{7}{2}$ and $\log_{27} b + \log_9 a = \dfrac{2}{3}$. Then the value of $a \cdot b$ is :

    (A) 81   (B) 243   (C) 27   (D) 729

5. The number of zeros after decimal before the start of any significant digit in the number $N = (0.15)^{20}$ are :

    (A) 15   (B) 16   (C) 17   (D) 18

6. $\log_{(x-1)}(3) = 2$

    (A) $\sqrt{3}$ (B) $1 - \sqrt{3}$ (C) 1   (D) None of these

7. $\log_2 [\log_4 (\log_{10} 16^4 + \log_{10} 25^8)]$ simplifies to

    (A) an irrational   (B) an odd prime   (C) a composite   (D) unity

8. The sum of all the solutions to the equation $2\log x - \log(2x - 75) = 2$:

    (A) 30   (B) 350   (C) 75   (D) 200

9. Product of all values of x satisfying the equation $\sqrt{2^x \sqrt[3]{4^x (0.125)^{1/x}}} = 4(\sqrt[3]{2})$ is :

    (A) $\dfrac{14}{5}$ (B) 3   (C) $-\dfrac{1}{5}$ (D) $-\dfrac{3}{5}$

10. If $a^x = b^y = c^z = d^w$, then $\log_a(bcd) =$

    (A) $z\left(\dfrac{1}{x} + \dfrac{1}{y} + \dfrac{1}{w}\right)$ (B) $y\left(\dfrac{1}{x} + \dfrac{1}{z} + \dfrac{1}{w}\right)$

    (C) $x\left(\dfrac{1}{y} + \dfrac{1}{z} + \dfrac{1}{w}\right)$ (D) $\dfrac{xyz}{w}$

11. If $(4)^{\log_9 3} + (9)^{\log_2 4} = (10)^{\log_x 83}$, then x is equal to :

    (A) 2   (B) 3   (C) 10   (D) 30

12. $x^{\log_{10}\left(\frac{y}{z}\right)} \cdot y^{\log_{10}\left(\frac{z}{x}\right)} \cdot z^{\log_{10}\left(\frac{x}{y}\right)}$ is equal to :

    (A) 0   (B) 1   (C) -1   (D) 2

13. $\log_3(3^x - 8) = 2 - x$

    (A) 1   (B) 3   (C) 4   (D) 2

ANSWER KEY

1.	C	2.	B	3.	C	4.	B	5.	B	6.	D	7.	D
8.	D	9.	D	10.	C	11.	C	12.	B	13.	D		