LOGARITHM PRACTICE SHEET 2

1. $\frac{1}{\log_2 n}+\frac{1}{\log_3 n}+\frac{1}{\log_4 n}+....+\frac{1}{\log_{43} n}=$
   a. 1
   b. $\log_{43!} n$
   c. $\log_n 43!$
   d. None of these

2. If a, b, c are the sides of a right angled triangle in which c > a, b and c – b ≠ 1, c + b ≠ 1, then the value of $\frac{\log_{c+b} a+\log_{c-b} a}{\log_{c+b} a \,.\log_{c-b} a}$ is
   a. 1
   b. 2
   c. 1/2
   d. None of these

3. If $\frac{1}{\log_2 a}+\frac{1}{\log_4 a}+\frac{1}{\log_8 a}+\frac{1}{\log_{16} a}+....+\frac{1}{\log_{2^n} a}=\frac{n(n+1)}{\lambda}$, then λ equals
   a. $\log_2 a$
   b. $\log_2 4$
   c. $\log_2 a^2$
   d. none of these

4. If $\log_4 5 = x$ and $\log_5 6 = y$, then $\log_3 2$ is equal to
   a. $\frac{1}{2x+1}$
   b. $\frac{1}{2y+1}$
   c. 2xy + 1
   d. $\frac{1}{2xy-1}$

5. If log a : log b : log c = (b – c) : (c – a) : (a – b), then
   a. $a^b b^c c^a = 1$
   b. $a^a b^b c^c = 1$
   c. $\sqrt[a]{a}\sqrt[b]{b}\sqrt[c]{c}=1$
   d. None of these

6. If a, b, c are positive real number, then $\frac{1}{\log_{\sqrt{bc}} abc}+\frac{1}{\log_{\sqrt{ca}} abc}+\frac{1}{\log_{\sqrt{ab}} abc}$ is equal to
   a. 0
   b. 1/2
   c. 1
   d. 2

7. If $x^{\left\{\frac{3}{4}(\log_3 x)^2+(\log_3 x)-\frac{5}{4}\right\}}=\sqrt{3}$, then x has
   a. All integral values
   b. Two integral values and irrational values
   c. All irrational values
   d. Two rational values and an irrational value

8. The number of solutions of the equation $x^{\log_{\sqrt{x}} 2x}=4$ is
   a. 0
   b. 1
   c. 2
   d. Infinitely many

9. The value of $\sum_{r=1}^{89}\log_{10}\tan\frac{\pi r}{180}$ is equal to
   a. 10
   b. 1
   c. 0
   d. None of these

10. If n = 1999!, then $\sum_{x=1}^{1999}\log_n x$ is equal to
    a. 1
    b. 0
    c. $\sqrt[1999]{1999}$
    d. – 1

11. The value of $7\log\frac{16}{15}+5\log\frac{25}{24}+3\log\frac{81}{80}$, is
    a. log 2
    b. log 3
    c. log 5
    d. none of these

12. The value of $\frac{\log 49\sqrt{7} + \log 25\sqrt{5} - \log 4\sqrt{2}}{\log 17.5}$ is
    a. 5
    b. 2
    c. 5/2
    d. 3/2

13. The value of $5^{\sqrt{\log_5 7}} - 7^{\sqrt{\log_7 5}}$ is
    a. log 2
    b. 1
    c. 0
    d. none of these

14. The value of $2^{\log_3 7} - 7^{\log_3 2}$ is
    a. log 2
    b. 1
    c. 0
    d. none of these

15. The value of $\frac{3 + \log 343}{2 + \frac{1}{2}\log\left(\frac{49}{4}\right) + \frac{1}{3}\log\left(\frac{1}{125}\right)}$ is
    a. 3
    b. 2
    c. 1
    d. 3/2

16. If $\log_{10} 3 = x$, $\log_{30} 5 = y$, then $\log_{30} 8 =$
    a. 3 (1 – x – y)
    b. x – y + 1
    c. 1 – x – y
    d. 2(x – y + 1)

17. If $\log_a x$, $\log_b x$, $\log_c x$ in A.P., where $x \neq 1$, then $c^2 =$
    a. $(ab)^{\log_a b}$
    b. $(ac)^{\log_a b}$
    c. $(ab)^{\log_b a}$
    d. $(ac)^{\log_b a}$

18. If $a^2 + 4b^2 = 12ab$, then $\log (a + 2b) =$
    a. $\frac{1}{2}(\log a + \log b - \log 2)$
    b. $\log\frac{a}{2} + \log\frac{b}{2} + \log 2$
    c. $\frac{1}{2}(\log a + \log b + 4\log 2)$
    d. $\frac{1}{2}(\log a - \log b + 4\log 2)$

19. If $9a^2 + 4b^2 = 18ab$, then $\log (3a + 2b) =$
    a. log 5 + log 3 + log a + log 5b
    b. log 5 + log 3 + log 3a + log b
    c. log 5 + log a + log b
    d. none of these

20. If $\log(x - y) - \log 5 - \frac{1}{2}\log x - \frac{1}{2}\log y = 0$, then $\frac{x}{y} + \frac{y}{x} =$
    a. 25
    b. 26
    c. 27
    d. 28

21. If $2^{\log_{10} 3\sqrt{3}} = 3^{k \log_{10} 2}$, then k =
    a. 1/2
    b. 3/2
    c. 3
    d. 2

22. If $\log_{10} 2 = 0.3010$, then $\log_5 64 =$
    a. 602/233
    b. 233/602
    c. 202/633
    d. 633/202

23. If $4^{\log_9 3} + 9^{\log_2 4} = 10^{\log_x 83}$, then x =
    a. 4
    b. 9
    c. 83
    d. 10

24. The value of $3^{\frac{4}{\log_4 9}} + 27^{\frac{1}{\log_{36} 9}} + 81^{\frac{1}{\log_5 3}}$, is
    a. 890
    b. 860
    c. 857
    d. None of these

25. If $\log_2 x + \log_4 x + \log_{16} x = \frac{21}{4}$, then x equal to
    a. 8
    b. 4
    c. 2
    d. 16

26. If $y = 2^{1/\log_x 8}$, then x equal to
    a. y
    b. y^2
    c. y^3
    d. none of these

27. If $\log_y x = \log_z y = \log_x z$, then
    a. $x < y < z$
    b. $x > y \geq z$
    c. $x < y \leq z$
    d. $x = y = z$

28. If $3^{2x+1} \cdot 4^{x-1} = 36$, then x =
    a. $\log_{36} 48$
    b. $\log_{48} 36$
    c. $\log_{24} 12$
    d. $\log_{12} 24$

29. If $\frac{1}{\log_x 10} = \frac{2}{\log_a 10} - 2$, then x =
    a. a/2
    b. a/100
    c. $a^2/10$
    d. $a^2/100$

30. If $2^{\frac{3}{\log_3 x}} = \frac{1}{64}$, then x =
    a. 3
    b. 1/3
    c. $\frac{1}{\sqrt{3}}$
    d. $-\frac{1}{\sqrt{3}}$

Answer Keys

1.	C	11.	A	21.	B
2.	B	12.	C	22.	A
3.	C	13.	C	23.	D
4.	D	14.	C	24.	C
5.	B	15.	A	25.	A
6.	C	16.	A	26.	C
7.	D	17.	B	27.	D
8.	A	18.	C	28.	A
9.	C	19.	D	29.	D
10.	A	20.	C	30.	C