

Exercise

- If $\log_3 x = -2$, then the value of x is
(a) $\frac{1}{9}$ (b) $-\frac{1}{9}$ (c) $\frac{1}{8}$ (d) $-\frac{1}{8}$
- The value of $\log_{\sqrt{2}}(32)$ is
(a) 15 (b) 10 (c) 5 (d) 16
- If $\log_a \sqrt{2} = \frac{1}{6}$, then the value of a is
(a) $(\sqrt{2})^6$ (b) $(6)^{1/2}$ (c) 3 (d) -6
- Find the logarithm of 1728 to the base $2\sqrt{3}$.
(a) 3.124 (b) 3.1732
(c) 6 (d) 5
- If $\log_x \frac{9}{16} = -\frac{1}{2}$, then x is
(a) $-\frac{2}{3}$ (b) $\frac{3}{2}$ (c) $\frac{81}{256}$ (d) $\frac{256}{81}$
- The value of $3 \log 3 + 2 \log 2$ is
(a) $\log 108$ (b) $\log 106$
(c) $\log 109$ (d) None of these
- What is the value of
 $(\log_{1/2} 2)(\log_{1/3} 3)(\log_{1/4} 4) \dots (\log_{1/1000} 1000)$?
(a) 1 (b) -1 (c) 1 or -1 (d) 0
(CDS 2007 II)
- One is the value of
(a) $\log_{10} 2$ (b) $\log_{10} 100$ (c) $\log_{10} 10$ (d) $\log_{10} 1000$
- The value of $\log_2 [\log_2 \log_2 \log_2 (65536)]$ is
(a) 8 (b) 16
(c) 4 (d) 1
- $\log_y x$ is equal to
(a) $\frac{x}{\log_e y}$ (b) $x \log_e y$ (c) $\frac{\log_e x}{\log_e y}$ (d) $\frac{\log_e y}{\log_e x}$

11. $\log_{10} 10 + \log_{10} 100 + \log_{10} 1000 + \log_{10} 10000$
 $+ \log_{10} 100000$ is
 (a) 23 (b) 15 (c) 21 (d) $13 \log_{10} 100$
12. The value of $\left(\frac{1}{3} \log_{10} 125 - 2 \log_{10} 4 + \log_{10} 32\right)$ is
 (a) $\frac{4}{3}$ (b) 3 (c) 1 (d) 7
13. What is the value of $\log_{100} 0.1$? **(CDS 2008 II)**
 (a) $1/2$ (b) $-1/2$ (c) -2 (d) 2
14. If $\log_4 (x^2 + x) - \log_4 (x + 1) = 2$, then the value of x is
 (a) 4 (b) 8 (c) 16 (d) 1
15. The value of $\log_y x \cdot \log_z y \cdot \log_x z$ is
 (a) $\log xyz$ (b) xyz (c) 1 (d) 0
16. The value of $\log_3 (27 \times \sqrt[4]{9} \times \sqrt[3]{9})$ is
 (a) 4 (b) $4\frac{1}{3}$ (c) $8\frac{1}{3}$ (d) $4\frac{1}{6}$
17. The value of $\frac{1}{\log_{xy} (xyz)} + \frac{1}{\log_{yz} (xyz)} + \frac{1}{\log_{zx} (xyz)}$ is
 equal to
 (a) xyz (b) 2 (c) 0 (d) 1
18. If $\log_4 x + \log_2 x = 6$, then the value of 'x' is
 (a) 16 (b) 4 (c) 2 (d) 1
19. What is the value of
 $2 \log (5/8) + \log (128/125) + \log (5/2)$? **(CDS 2009 I)**
 (a) 0 (b) 1 (c) 2 (d) 5
20. Given $\log_{10} 2 = 0.3010$, the value of $\log_{10} 5$ is
 (a) 0.6990 (b) 0.6919 (c) 0.6119 (d) 0.7525
21. If $\log_a x = m$, the value of $\log_{a^2} x$ is
 (a) $-\frac{1}{m}$ (b) m
 (c) $\frac{m}{2}$ (d) None of these
22. If $\log \frac{x}{y} + \log \frac{y}{x} = \log (x + y)$, then
 (a) $x + y = 1$ (b) $x - y = 0$ (c) $x - y = 1$ (d) $x = y$
23. If $\log_r 6 = m$ and $\log_r 3 = n$, then what is $\log_r (r/2)$ equal to? **(CDS 2009 I)**
 (a) $m - n + 1$ (b) $m + n - 1$ (c) $1 - m - n$ (d) $1 - m + n$
24. The characteristic in $\log 6.7482 \times 10^{-5}$ is
 (a) 6 (b) -4 (c) 5 (d) -5
25. If $10^x = 1.73$ and $\log_{10} 1730 = 3.2380$, then x equals to
 (a) 2.380 (b) 0.2380 (c) 2.2380 (d) 1.380
26. $(\log \tan 1^\circ \log \tan 2^\circ \dots \log \tan 50^\circ)$ is
 (a) 1 (b) -1 (c) 0 (d) $\frac{1}{\sqrt{2}}$
27. The value of $\frac{1}{1 + \log_x (yz)} + \frac{1}{1 + \log_y (xz)} + \frac{1}{1 + \log_z (xy)}$ is
 (a) 1 (b) $\frac{1}{xy^2}$ (c) $x = yz$ (d) 0

28. What is the value of $[\log_{13} (10)]/[\log_{169} (10)]$?
(CDS 2009 II)

- (a) $\frac{1}{2}$ (b) 2 (c) 1 (d) $\log_{10} 13$

29. If $2^{2x+3} = 6^{x-1}$, x equals to

- (a) $\frac{4 \log 2 + \log 3}{\log 3 - \log 2}$ (b) $\frac{3 \log 2 + 2 \log 3}{\log 3 - 2 \log 2}$
(c) $\frac{\log 48}{\log 7}$ (d) None of these

30. The value of $10^{\log_{10} m + 2 \log_{10} n + 3 \log_{10} p}$

- (a) $m^2 n p^3$ (b) $m n^2 p^3$
(c) $m^2 n p^2$ (d) None of these

31. Given that $\log_{10} 2 = 0.3010$, $\log_{10} 3 = 0.4771$ and $\log_{10} 7 = 0.8491$, then $\log_{10} \frac{108}{\sqrt{7}}$ is

- (a) 2.6123 (b) 1.6088 (c) 1.6320 (d) 2.4558

32. What is the value of

$$\left(\frac{1}{3} \log_{10} 125 - 2 \log_{10} 4 + \log_{10} 32 + \log_{10} 1 \right) ?$$

(CDS 2010 I)

- (a) 0 (b) $\frac{1}{5}$ (c) 1 (d) $\frac{2}{5}$

33. Which is not correct?

- (a) $\log_{10} (1 + 2 + 3) = \log_{10} (1 \cdot 2 \cdot 3)$
(b) $\log_{10} 1 = 0$
(c) $\log_{10} (2 + 3) = \log_{10} 2 \cdot 3$
(d) $\log_{10} 10 = 1$

34. If a, b and c are three consecutive integers, then $\log (ac + 1)$ is equal to

- (a) $\log (2b)$ (b) $(\log b)^2$
(c) $2 \log b$ (d) None of these

35. The solution of equation $\log_7 [\log_4 (x^2)] = 0$ is

- (a) $x = 1$ (b) $x = 2$ (c) $x = \pm 2$ (d) $x = -2$

36. What is the value of $\frac{1}{2} \log_{10} 25 - 2 \log_{10} 3 + \log_{10} 18$?

(CDS 2010 II)

- (a) 2 (b) 3 (c) 1 (d) 0

37. The value of $7 \log \frac{10}{9} - 2 \log \frac{25}{24} + 3 \log \frac{81}{80}$ is

- (a) 2 (b) $\log 2$ (c) 3 (d) $\log 3$

38. If $\log_r p = 2$, $\log_r q = 3$, then the value of $\log_p q$ is equal to

- (a) $\frac{1}{3}$ (b) $\frac{2}{3}$ (c) $\frac{3}{2}$ (d) 6

39. If $\log x^2 y^2 = a$ and $\log \frac{x}{y} = b$, then $\frac{\log x}{\log y}$ is equal to

- (a) $\frac{a - 3b}{a + 2b}$ (b) $\frac{a + 3b}{a - 2b}$ (c) $\frac{a + 2b}{a - 3b}$ (d) $\frac{a - 2b}{a + 3b}$

40. $2 \log a + 2 \log a^2 + 2 \log a^3 + 2 \log a^4 + 2 \log a^5$ is equal to

- (a) 30 (b) 10 (c) $10 \log a$ (d) $30 \log a$

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41. If $\log_{10} 5 = 0.70$, $\log_5 10$ is
 (a) 1.35 (b) 1.40 (c) 1.43143 (d) 1.56
42. The value of $\log_3 \left(1 + \frac{1}{3}\right) + \log_3 \left(1 + \frac{1}{4}\right) + \log_3 \left(1 + \frac{1}{5}\right) + \dots + \log_3 \left(1 + \frac{1}{24}\right)$
 (a) $-1 + 2 \log_3 5$ (b) 2
 (c) 3 (d) 4
43. What is the value of $[\log_{10} (5 \log_{10} 100)]^2$? (CDS 2011 I)
 (a) 4 (b) 3 (c) 2 (d) 1
44. Consider the following statements
 I. $(\log_{10} 0.1)^2 + \log_{10} 10 \cdot \log_{10} 100 = 3$
 II. $\log_{10} \log_{10} 10 = 1$
 III. $\log_{10} \sqrt{10} + \log_{10} \sqrt{10} = 1$
 Of the above statements
 (a) I and III are correct (b) II and III are correct
 (c) I and II are correct (d) All are correct
45. What is $\log_{10} \left(\frac{3}{2}\right) + \log_{10} \left(\frac{4}{3}\right) + \log_{10} \left(\frac{5}{4}\right) + \dots$ up to 8 terms equal to? (CDS 2011 II)
 (a) 0 (b) 1
 (c) $\log_{10} 5$ (d) None of these
46. If $\log(x+y) = \log x + \log y$ and $x = 1.1568$, then y is equal to
 (a) 7.3776 (b) $\bar{7}.3776$ (c) 5.3776 (d) 5.3116
47. If $\log_8 x + \log_4 x + \log_2 x = 11$. The value of x is
 (a) 128 (b) 16 (c) 32 (d) 64
48. If $\log a + \log b = \log(a+b)$, then
 (a) $ab = 1$ (b) $b = \frac{a}{a-1}$
 (c) $b = \frac{a-1}{a}$ (d) $a = b$
49. If $3^x \times 27^x = 9^{x+4}$, then what is x equal to? (CDS 2011 I)
 (a) 4 (b) 5 (c) 6 (d) 7
50. What is/are the real value(s) of $(256)^{0.16} \times (16)^{0.18}$ (CDS 2007 II)
 (a) -4 only (b) 4 only (c) 4, -4 (d) 2, -2
51. If $(x)^{1/m} = (y)^{1/n} = (z)^{1/p}$ and $xyz = 1$, then what is the value of $m+n+p$? (CDS 2007 II)
 (a) 0 (b) 1 (c) 2 (d) -1
52. If $a^x = c^y = b$ and $c^y = a^z = d$, then which one of the following is correct? (CDS 2009 I)
 (a) $\frac{x}{y} = \frac{q}{z}$ (b) $x+y = q+z$
 (c) $xy = qz$ (d) $x^y = q^z$
53. If $2^m + 2^{1-m} = 24$, then what is the value of m ? (CDS 2011 II)
 (a) 0 (b) $1/3$ (c) 3 (d) 6
54. If $(ab^{-1})^{2x-1} = (ba^{-1})^{x-2}$, then what is the value of x ? (CDS 2008 I)
 (a) 1 (b) 2 (c) 3 (d) 4
55. If $y = (a^x)^{(a^x)} \dots$, then which one of the following is correct? (CDS 2008 II)
 (a) $\log y = xy \log a$ (b) $\log y = x + y \log a$
 (c) $\log y = y + x \log a$ (d) $\log y = (y+x) \log a$
56. If $p^x = r^y = m$ and $r^w = p^z = n$, then which one of the following is correct? (CDS 2010 II)
 (a) $xw = yz$ (b) $xz = yw$
 (c) $x+y = w+z$ (d) $x-y = w-z$
57. If $a^x = b^y = c^z$ and $abc = 1$, then what is $xy + yz + zx$ equal to? (CDS 2009 II)
 (a) xyz (b) $x+y+z$
 (c) 0 (d) 1
58. A ball is dropped from a height 64 m above the ground and every time it hits the ground it rises to a height equal to half of the previous. What is the height attained after it hits the ground for the 16th time? (CDS 2009 I)
 (a) 2^{-12} m (b) 2^{-11} m (c) 2^{-10} m (d) 2^{-9} m

Answers

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|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1. (a) | 2. (b) | 3. (a) | 4. (c) | 5. (d) | 6. (a) | 7. (b) | 8. (c) | 9. (d) | 10. (c) |
| 11. (b) | 12. (c) | 13. (b) | 14. (c) | 15. (c) | 16. (d) | 17. (b) | 18. (a) | 19. (a) | 20. (a) |
| 21. (c) | 22. (a) | 23. (d) | 24. (d) | 25. (b) | 26. (c) | 27. (a) | 28. (b) | 29. (a) | 30. (b) |
| 31. (b) | 32. (c) | 33. (c) | 34. (c) | 35. (c) | 36. (c) | 37. (b) | 38. (c) | 39. (c) | 40. (d) |
| 41. (c) | 42. (a) | 43. (d) | 44. (a) | 45. (c) | 46. (a) | 47. (d) | 48. (b) | 49. (a) | 50. (b) |
| 51. (a) | 52. (c) | 53. (c) | 54. (a) | 55. (a) | 56. (a) | 57. (c) | 58. (c) | | |