

**MULTIPLE CHOICE QUESTIONS
&
ASSERTION-REASON BASED QUESTIONS****Type I - Multiple Choice Questions :**

1. The value of $(512)^{-2/3}$ is

(a) $\frac{1}{16}$

(b) $\frac{1}{64}$

(c) $\frac{1}{32}$

(d) $\frac{1}{8}$

2. The value of $\left(\frac{32}{243}\right)^{-\frac{4}{5}}$

(a) $\frac{9}{4}$

(b) $\frac{4}{9}$

(c) $\frac{16}{81}$

(d) $\frac{81}{16}$

3. The value of $(5)^{\frac{1}{4}} \times (125)^{0.25}$ is

(a) $\sqrt{5}$

(b) 5

(c) $5\sqrt{5}$

(d) 625

4. $(256)^{0.16} \times (256)^{0.09}$ is equal to

(a) 4

(b) 16

(c) 32

(d) 64

5. The value of $(8^{-25} - 8^{-26})$ is

(a) 7×8^{-25}

(b) 7×8^{-26}

(c) 8×8^{-26}

(d) 8×8^{-25}

6. If $\sqrt{2^n} = 64$, then the value of n is

(a) 2

(b) 4

(c) 8

(d) 12

7. If $8^{x+1} = 64$, then the value of 3^{2x+1} is

(a) 27

(b) 3

(c) 9

(d) 15

8. If $\left(\frac{a}{b}\right)^{x-1} = \left(\frac{b}{a}\right)^{x-3}$, then the value of x is

(a) -2

(b) 1

(c) 2

(d) -1

9. If a, b, c are positive real numbers, then $\sqrt{a^{-1}b} \times \sqrt{b^{-1}c} \times \sqrt{c^{-1}a}$ is equal to

(a) abc

(b) 1

(c) $\sqrt{abc}$

(d) $\frac{1}{abc}$

10. If $\frac{3^{2x-8}}{225} = \frac{5^3}{5^x}$, then the value of x is

(a) 1

(b) 2

(c) 5

(d) 7

11. If $\frac{9^n \times 3^5 \times 27^3}{3 \times 81^4} = 27$, then the value of n is
(a) 1 (b) 2 (c) 3 (d) 9
12. If $3^x - 3^{x-1} = 18$, then the value of x^x is
(a) 8 (b) 27 (c) 64 (d) 216
13. The value of $\log_5 \left(\frac{1}{125} \right)$ is
(a) 1 (b) 3 (c) -3 (d) $\frac{1}{3}$
14. The value of $\log_{\sqrt{2}} 32$ is
(a) $\frac{1}{5}$ (b) 5 (c) 10 (d) $\frac{1}{10}$
15. The value of $\log_{2\sqrt{3}} (1728)$ is
(a) 8 (b) 6 (c) 5 (d) 9
16. If $\log_5 (0.04) = x$, then the value of x is
(a) 1 (b) 4 (c) -4 (d) -2
17. If $\log_3 x = -2$, then the value of x is
(a) 4 (b) 6 (c) $-\frac{1}{3}$ (d) $\frac{1}{9}$
18. If $\log_x 4 = \frac{1}{4}$, then the value of x is
(a) 4 (b) 36 (c) 64 (d) 256
19. If $\log_a (ab) = x$, then $\log_b (ab)$ is equal to
(a) $\frac{1}{x}$ (b) $\frac{x}{x+1}$ (c) $\frac{x}{x-1}$ (d) none of these
20. The value of $\frac{\log 8 - \log 2}{\log 32}$ is
(a) $\frac{1}{5}$ (b) $\frac{1}{4}$ (c) $\frac{2}{5}$ (d) $\frac{1}{3}$
21. If $\log_{10} 125 + \log_{10} 8 = x$, then the value of x is
(a) 2 (b) -2 (c) 3 (d) -3
22. If $a = b^x$, $b = c^y$ and $c = a^z$, then the value of xyz is
(a) 0 (b) -1 (c) 1 (d) 3

23. Characteristic of $\log 436.6$ is
 (a) 1 (b) 2 (c) 3 (d) 4
24. If $\log 520.4 = 2.7163$ and $\log x = \bar{3}.7163$, then the value of x is
 (a) 0.007163 (b) 0.0007163
 (c) 5.204 (d) 0.07163
25. If $\log_{10} 2 = 0.3010$, then the value of $\log_{10} 5$ is
 (a) 0.3241 (b) 0.1724
 (c) 0.6990 (d) 0.1440

Type II - Assertion-Reasoning Questions :

In the following questions a statement of assertion (A) is followed by a statement of reason (R). Choose the correct option from the given options.

- (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
 (b) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A).
 (c) Assertion (A) is true but Reason (R) is false.
 (d) Assertion (A) is false but Reason (R) is true.
26. Assertion : $\left(\frac{5}{2}\right)^{-3} \times \left(\frac{2}{5}\right)^2 = \left(\frac{2}{5}\right)^5$
 Reason : $a^{-n} = \left(\frac{1}{a}\right)^n$ and $a^m \times a^n = a^{m+n}$.
27. Assertion : If $4^{2x} = \frac{1}{32}$, then the value of x is $-\frac{5}{4}$
 Reason : If $a^m = a^n$, then $m = n$.
28. Assertion : The value of $(8^{-2} \times 9^{3/4})^{-2/3}$ is $\frac{3}{16}$.
 Reason : When any expression of the type a^m is raised to any power, then the powers are multiplied i.e., $(a^m)^n = a^{mn}$
29. Assertion : $\log_3 64 = 8$
 Reason : If $a^x = N$, then $\log_a N = x$.
30. Assertion : The value of $\log_3 27\sqrt{729}$ is 6.
 Reason : $\log_a (m)^n = n \log_a m$
31. Assertion : Characteristics of $\log 2375.001$ is 3.
 Reason : The characteristics of the logarithm of any number, which has n digits in its integral part is $n + 1$.

32. Assertion : If $\log (x + 1) + \log (x - 1) = \log 11 + 2 \log 3$, then $x = 10$.

Reason : $\log_a mn = \log_a m + \log_a n$

33. Assertion : The value of $\log 360$ is 2.5562.

Reason : $\log 2 = 0.3010$ and $\log 3 = 0.4771$

ANSWERS

Type I - Multiple Choice Questions :

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| 1. (b) | 2. (d) | 3. (b) | 4. (a) |
| 5. (b) | 6. (d) | 7. (a) | 8. (c) |
| 9. (b) | 10. (c) | 11. (c) | 12. (b) |
| 13. (c) | 14. (c) | 15. (b) | 16. (d) |
| 17. (d) | 18. (d) | 19. (c) | 20. (c) |
| 21. (c) | 22. (c) | 23. (b) | 24. (a) |
| 25. (c) | | | |

Type II - Assertion-Reasoning Questions :

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| 26. (a) | 27. (a) | 28. (d) | 29. (d) |
| 30. (b) | 31. (c) | 32. (a) | 33. (b) |