**Logarithms**

**Choose the most appropriate option (a, b, c or d).**

Q 1. If log4 5 = a and log5 6 = b then log3 2 is equal to

(a)  (b)  (c) 2ab + 1 (d) 

Q 2. If logax x,logbx x, logcx x are in HP, where a,b,c, x belong to (1, +∞), then a, b, c are in

(a) AP (b) GP (c) HP (d) none of these

Q 3. If log5a. loga x = 2 then x is equal to

(a) 125 (b) a2 (c) 25 (d) none of these

Q 4. The value of 3log+5log +7log is

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

Q 5. Let f(x) = The set of all values of x for which f(x) is real, is

(a) [–1, 1] (b) [1, +∞) (c) (–∞, −1] (d) (–∞, −1] ∪ [1, +∞)

Q 6. The set of real values of x for which is

(a) (–∞, −1) ∪ (4, +∞) (b) (4, +∞) (c) (–1, 4) (d) none of these

Q 7. If a1, a2 a3… are positive numbers in GP then log an, log an+1, log an+2 are in

(a) AP (b) GP (c) HP (d) none of these

Q 8. IF x = loga (bc), y = logb (ca) and z = logc (ab) then which of the following is equal to 1 ?

1. x + y + z (b) (1 + x)−1 + (1 + y)−1 + (1 + z)−1

(c) xyz (d) none of these

Q 9. If xn > xn–1 > … > x2 > x1 > 1 then the value of is equal to



(a) 0 (b) 1 (c) 2 (d) none of these

Q 10. If log x : log y : log z = (y − z): (z − x): (x − y) then

(a) xy . yz. zx = 1 (b) xx yy zz = 1 (c)  (d) none of these

Q 11. is equal to

(a) x (b) y (c) z (d) none of these

Q 12. The number of zeros coming immediately after the decimal point in the value of (0.2)25 is (given log10 2 = 0.30103)

(a) 16 (b) 17 (c) 18 (d) none of these

Q 13. If [x] = the greatest integer less than or equal to x then [log10 6730.4] has the value

(a) 6 (b) 4 (c) 5 (d) none of these

Q 14. The number of solutions of log2 (x + 5) = − 6 − x is

(a) 2 (b) 0 (c) 3 (d) none of these

Q 15. The number of real values of the parameter k for which (log16 x)2 – log16 k = 0 with real coefficients will have exactly one solution is

(a) 2 (b) 1 (c) 4 (d) none of these

Q 16. If log0.5 sin x = 1 − log0.5 cos x then the number of solutions of x ∈ [–2π, 2π] is

(a) 3 (b) 2 (c) 1 (d) 4

Q 17. If logcos x tan x + logsin x cot x= 0 then the most general solutions of x are

(a)  (b)  (c)  (d) none of these

Q 18. The number of values of x ∈ [0, nπ], n ∈ , that satisfy log|sin| (1 + cos x) = 2, is

(a) 0 (b) n (c) 2n (d) none of these

Q 19. The value of is equal to

(a) 10 (b) 1 (c) 0 (d) none of these

Q 20. The solution set of log2 |4 – 5x| > 2 is

(a)  (b)  (c)  (d) none of these

Q 21. The set of real values of x for which log0.2 ≤ 1 is

(a)  (b)  (c) (–∞, – 2) ∪ (0, +∞) (d) none of these

Q 22. The set of real values of x satisfying log1/2 (x2 – 6x + 15) ≥ − 2 is

(a) (−∞, 2] (b) [2, 4] (c) [2, +∞) (d) none of these

Q 23. If log0.04 (x − 1) ≥ log0.2 (x − 1) then x belongs to the interval

(a) (1, 2] (b) (−∞, 2] (c) [2, +∞) (d) none of these

Q 24. If sin x > 0, x ∈ [0, 4π], then number of values of x which are integral multiple of ,is

(a) 6 (b) 12 (c) 3 (d) none of these

Q 25. If logcos xsin x ≥ 2 and 0 ≤ x ≤ 3π then sin x lies in the interval

(a)  (b)  (c)  (d) none of these

Q 26. If (sin x + 2cos x) ≥ 2, −2π ≤ x ≤ 2π, then the number of solutions of x is

(a) 0 (b) infinite (c) 3 (d) none of these

**Type 2**

**Choose the correct options. One or more options may be correct.**

Q 27. If logk x. log5 k = logx 5, k ≠ 1, k > 0, then x is equal to

(a) k (b)  (c) 5 (d) none of these

Q 28. If x2 + 4y2 = 12xy, x ∈ [1, 4], y ∈ [1, 4], then

(a) the greatest value of log2 (x + 2y) is 4

(b) the least value of log2 (x + 2y) is 3

(c) the range of values of log2 (x + 2y) is [2, 4]

(d) the number of integral values of (x, y) is 2 such that log2 (x + 2y) is equal to 3

Q 29. If ≤ log0.1 x ≤ 2 then

(a) then maximum value of x is  (b) x lies between and 

(c) x does not lie between  (d) the minimum value of x is 

Q 30. If then x has

(a) one positive integral value (b) one irrational value

(c) two positive rational value (d) none of these

**Answers**

1d 2b 3c 4a 5d 6a 7a 8b 9b 10b

11c 12b 13d 14d 15b 16b 17b 18a 19c 20c

21a 22b 23c 24a 25b 26d 27b,c 28a,c,d 29a,b,d, 30a,b,c